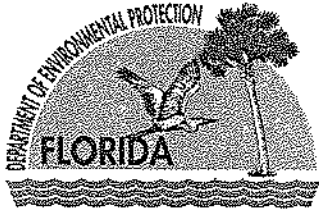


Course B:
FDEP REGULATORY AND POLICY UPDATE

**FDEP Technical Advisory Committees
(TACs)
and
Contaminated Media Forum**



**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

BOB MARTINEZ CENTER
2600 BLAIRSTONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

Agenda

**Fourth Meeting of the Technical Advisory Committee for Bacteria and
Pathogen Risks in Recreational Waters**

NOTE: This meeting is open to the public.

DATE: Wednesday, May 14, 2014
TIME: 9:00 a.m.
PLACE: Florida Department of Environmental Protection, Southwest District
Office, 13051 N. Telecom Parkway, Temple Terrace, FL

- I. Opening Remarks
 - A. Call to Order and Introductions
 - B. Summary of Third Meeting
 - C. Purpose of Meeting
- II. Background Information
 - A. Quick Review of Main Elements of the Initiative
 - B. Flow Chart
- III. Proposed Elements of Restoration Plan
 - A. Responsible Entities
 - B. Walk the WBID Exercise
 - D. Restoration Plan Submittal
 - E. Proposed Restoration Activities
- IV. Bacteria Source Tracking
 - A. Presentation by Dave Whiting
 - B. TAC Discussion
- V. Public Comment
- VI. Wrap-up and Adjourn

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Eric Shaw, Department of Environmental Protection, Standards Development Section, MS #6511, 2600 Blair Stone Road, Tallahassee, FL 32399-2400, (850)245-8429 or e-mail: Eric.Shaw@dep.state.fl.us. If you are hearing or speech impaired, please contact the agency.

Restoration of Bacteriologically Impaired Waters

The information that follows outlines the draft proposal for potentially required activities to be undertaken to restore bacteriologically impaired surface waters.

Listing

The Department proposes to include a list of waters verified as impaired for bacteria under the Impaired Waters Rule (Chapter 62-303, F.A.C.) in its Final Order adopting the Verified List of impaired waters for each basin.

Total Maximum Daily Load

The final order would identify these waters as being covered under the Total Maximum Daily Load (TMDL) for bacteria adopted in rule 62-304.900, F.A.C.

Responsible Entities

Unless otherwise designated by DEP based on characteristics of the watershed, the following are designated as "Responsible Entities" (RE) for carrying out responsibilities associated with bacteriological restoration.

- The owner (local government, utility, special district) for the sanitary sewer system.
- Municipal Separate Storm Sewer Systems (MS4s) for stormwater infrastructure for which the MS4 is responsible.
- Department of Health (DOH), local county health unit for septic tanks.
- Florida Department of Agriculture and Consumer Services (FDACS) for agriculture.
- Local government for trash

Walk the WBID Exercise

Within the first year of the waterbody being identified as impaired, a designated local "Coordinator" would be required to coordinate with other local stakeholders to "Walk-the-WBID" (WTW) to evaluate potential sources of bacterial contamination. The WTW Coordinator would be the lead MS4 permittee in basins within a Phase 1 MS4 and would be the Department in other basins unless another entity voluntarily agrees to be the WTW Coordinator. If the WTW Coordinator is responsible for multiple impaired WBIDs in a given year, the WTW Coordinator may submit documentation to the Department supporting the need for additional time, and a proposed schedule. The Department would approve or deny the schedule within sixty (60) days.

- A WTW involves [We may reference the Bacteria Tool Box.]:
 - Coordinating with stakeholders to solicit participation in the WTW.
 - Creating a watershed map, including information on land uses and potential sources.
 - Evaluating available bacteria data to identify potential hotspots for detailed evaluation.

¹ A WBID (Waterbody Identification unit) represents a portion or portions of waterbodies and is the primary assessment unit used by DEP to determine impairments.

- Holding a “maps on the table” planning meeting with stakeholders.
- Conducting a comprehensive field exploration of the WBID, taking notes and photos of potential sources of bacteria.
 - Participants should cover as much of the waterbody and riparian areas as possible along with potential sources throughout the watershed.
- Collaborating with participants in preparing a detailed summary of observations.
 - Major source categories to be addressed are sanitary sewer systems, stormwater systems, septic systems, and agriculture operations; however, all identified potential sources should be documented.
- Providing the final summary of the observations, including recommendations for further evaluation, to DEP and representatives of identified potential sources within 3 months of the WTW.

Submittal of Restoration Plan

Within three months after the final results of the WTW have been distributed, each RE would be required to submit a plan to DEP that:

- Identifies necessary restoration projects or management activities based on the potential sources found.
- Prioritizes restoration projects and management activities.
- Includes a proposed schedule for completion of all restoration activities as soon as practicable, taking into account regional significance, threats to human health, available funding, and public access.

If an RE disagrees with the WTW findings, it would be allowed to submit documentation that 1) it is not legally responsible for the source(s) attributed to it, 2) an identified source is not a valid source of bacterial contamination, or 3) the bacteriological exceedances are due to natural (non-anthropogenic) sources.

DEP will approve or deny the plan within sixty (60) days. Restoration activities must begin within 12 months of plan approval, and must be completed in accordance with the approved plan.

Required Corrective Actions

The following corrective actions are considered the default requirements in response to the identification of specific potential sources during the WTW and in the future as part of the wastewater system SSEMP or other assessment program. If a Responsible Entity believes that alternative management activities would more effectively address identified sources, it may submit information to DEP documenting that the alternatives will be equally or more effective than required default activities.

Sanitary Sewer System Owners

- Participate in the WTW to identify sources, including those from the stormwater system.

- If sanitary sewer system components are observed to be in need of repair or maintenance or if Sanitary Sewer Overflows have been documented to occur within the watershed during the past 3 years, the sanitary sewer system owner would be required to develop and implement a Sanitary Sewer Evaluation and Maintenance Program (SSEMP).
 - Systems connected to a wastewater treatment facility with a treatment capacity greater than 0.5 MGD would be required to develop a SSEMP consistent with "Core Attributes of Effectively Managed Wastewater Systems," dated July 2010, along with the additional requirements described in Appendix A.
 - Smaller systems would be required to develop a SSEMP consistent with "Core Attributes of Effectively Managed Wastewater Systems." They would not be required to develop ArcGIS inventory of collection system assets or use maintenance management system software, but would be required to complete a checklist (Appendix B.)

[DEP has solicited feedback on SSEMP requirements for small systems from the Florida Rural Water Association.]

- If leaking sewer lines are observed, the owner would be required to repair or replace the lines as soon as practicable.
- If visibly pitted sewer pipes are observed crossing stormwater conveyances or streams, the owner would be required to evaluate the structural integrity of the pipes and schedule the pipes for replacement or repair if structural integrity is poor.
 - If pipes are privately owned, the sewer system owner would be required to contact the private owner and ensure that any existing bacteriological contamination or imminent contamination is addressed promptly (time to be specified), and follow up until the pipes are replaced or repaired.
- If multiple sanitary sewer overflows have been documented at a specific lift station or manhole over the prior three years, the owner of the system would be required to evaluate the causes, determine optimal spill prevention actions, and increase the frequency of inspections until the causes are identified and fixed. Until a permanent fix is in place, interim measures to capture overflow must be implemented.
 - If overflows were caused by power failures, the owner would be required to promptly provide onsite backup power (time to be specified).
 - Lift stations with more than three overflows in the prior three years must be replaced or connected to an electronic notification communication system within two years.

Permitted Municipal Separate Storm Sewer System Operators (MS4)

- Participate in the WTW to identify sources, including those from the stormwater system.
- If illicit discharges are identified in the WTW, the MS4 would be required to provide results of their Illicit Discharge Detection & Elimination Program relevant to the bacteria impairment;

- If the WTW team cannot cover the entire MS4 inside the watershed during the field day, the MS4 permittees will walk their conveyances inside the watershed within one year of the WTW and report findings in the annual report.
- If pet waste is observed in the WTW or pet waste is indicated based on available bacteria source tracking results, the MS4 would be required to implement a pet waste program that, at a minimum, includes a public education component targeting dog owners in the area.
- If stormwater infrastructure such as grates, inlets, conveyance pipes, ditches, baffle boxes, ponds, etc., is observed to be in need of maintenance, or is blocked, the MS4 or local government would be required to perform appropriate maintenance and maintain a proper operation and maintenance program in the future.

Agricultural Operations

- Where agricultural operations are expected in the watershed, FDACS will participate in the WTW to identify sources, including those from agricultural operations.
- If there are agricultural operations in the watershed, FDACS would be required to contact the operators and require they submit a Notice of Intent (NOI) to implement applicable Best Management Practices adopted by FDACS.

Department of Health (Septic Systems and Sewer Lines)

- Participate in the WTW to identify sources, including those from septic tanks.
- If septic systems are identified in the watershed, the County Health Department would be required to distribute public education materials with recommended maintenance and management to neighborhoods on septic systems.
- If human waste is indicated based on in-stream sampling results near an area with septic systems, the local health department would be required to investigate the area for pooling, surface flow, or other indications of failing systems.
 - If system failure is observed, the local health department would be required to further investigate the site within 7 days, if necessary, and issue a notice to the property owner requiring correction of the problem. If central sewer system is available, the health department, in conjunction with the sewer system owner, will require the property owner to connect to the system.
- If communities have home-to-public line laterals with pooling or running sewage at the ground's surface, the local health department would be required to investigate and enforce or refer the case to the appropriate county code department, which must require the homeowner to repair the failing lateral.

Local Governments (Trash)

- If trash or garbage is exposed to rainfall, or has been observed to reach surface waters, the local government would be required to seek out the source and contact the responsible party or property owner to eliminate the source.

- If dumpsters with open or missing lids are observed, the local government would be required to notify the property owner to provide lids and keep them shut.
- If a rusted out dumpster is observed, the local government would be required to notify the local waste service to replace the dumpster.
- If litter prevents proper hydraulic performance of stormwater conveyances, which results in flooding that causes inundation of septic drainfields or infiltration of sanitary sewer lines, the local government would be required to increase the frequency of trash removal for proper performance and flood prevention.
- If litter with potential human pathogens is observed to accumulate in the watershed, the local government would be required to increase the frequency of trash removal at this site. [Question for BAC TAC - In addition to diapers, human waste, and needles, what should be considered pathogen carrying litter?]

Marine Vessels (pending)

- [BAC TAC - What programs would be best for reduction in vessel waste dumping at marinas and in transit? Clean Marina Program elements? Public education?]

Annual Reporting Requirements

Responsible Entities must submit annual reports to DEP by March 15 of each year describing the status of restoration activities. (Details of the required report to follow.)

Appendix A

Requirements for Large Sanitary Sewer Systems under the Core Attributes Document

Core Attribute 1: System Inventory and Information Management

The Asset Identification and Documentation element shall include a geo referenced inventory of collection system assets, the Information Management Plan Development and Implementation elements shall include a tool to prioritize maintenance activities to reduce infiltration and exfiltration and Sanitary Sewer Overflows (SSOs), and the Process Monitoring Adjustments element shall include development of a Root Cause Program that requires 1) an evaluation of each SSO event to identify the cause, 2) the site to be cleaned and inspected, 3) an assessment of short-term responses to determine potential improvement, and 4) determination of appropriate long-term solution.

Core Attribute 2: Implement Maintenance Management System as described in Core Attributes document.

Core Attribute 3: While safety is very important, this is not required under the BRP.

Core Attribute 4: Implement Overflow Emergency Response Plan as described in Core Attributes document.

Core Attribute 5: Collection System Maintenance (Design of Maintenance Program)

Under the Preventative Maintenance Practices element, the sewer system owner shall prioritize collection system assets. An analysis of system performance, maintenance history, age, materials, or structural risk analysis should be used to help prioritize collection system assets, and assets near stormwater conveyances or the surface waters identified as impaired due to bacteria shall be assigned high priority. Assets with a history of SSOs or cave-ins or identified to have increased potential for exfiltration shall also be given a high priority. The sewer system owner shall provide a schedule for inspection of all high priority assets to the Department within one year of coverage under the BRP, and the schedule shall not exceed 4 years. The frequency of inspections and preventive maintenance of pump stations shall be conducted at least monthly if the pump station has a history of SSOs (and shall not reduce the frequency of inspections). Preventative maintenance practices shall include programs to inspect Air Release Valves (ARVs) and check manholes for infiltration and potential for exfiltration.

Core Attribute 6: Source Control

Implement Source Control as described in the Core Attributes document, however, Under the Fats, Oils, and Grease (FOG) Control element, the FOG program shall include all elements proposed for "consideration."

Core Attribute 7: Implement Structural Condition Assessment and Evaluation as described in the Core Attributes document, and consistent with submitted schedule for high priority areas. When bacteria source tracking information indicate that exceedances of the bacteria criteria are

due, at least in part, to human waste, sewer lines/infrastructure upgradient of the monitoring site shall be inspected using TV, smoke test, or dye trace, as appropriate, and line or replace infrastructure as needed.

Core Attribute 8: Implement System Hydraulic Capacity Assessment, Evaluation, and Assurance as described in the Core Attributes document.

DRAFT

Appendix B
Demonstration Checklist for Small Sanitary Sewer Systems

(under development)

DRAFT

SUMMARY OF PUBLIC MEETING OF THE BACTERIA TECHNICAL ADVISORY COMMITTEE (TAC)

FEBRUARY 19, 2014

JACKSONVILLE, FLORIDA

Tom Frick opened the meeting and welcomed the TAC members and audience. TAC members present included **Dr. Andy Ouellette, Mark Heidecker, Joel Hansel, Bob Vincent, and Dr. Chris Sinigalliano**. **Tom Frick** reviewed the Department's proposed concept that is intended to expedite waterbody restoration. He noted that bacteria TMDLs are somewhat unique compared to other parameters in that TMDL development is a predictable process and BMAP activities are also very similar.

Proposed Revisions to Chapter 62-303

Daryll Joyner briefly reviewed the proposed changes to Rule 62-302.530, Florida Administrative Code (FAC). He mentioned that if the 5 sample minimum sample size requirement in the proposed criteria for the monthly geometric mean was removed from the criteria (Rule 62-302.530, FAC), then it could still be implemented in Chapter 62-303, FAC. However, he questioned whether a single sample would be assessed under the monthly geometric mean criteria if a facility only sampled once a month. **Joel Hansel** said that this would be the correct interpretation.

Robin Cook (City of Daytona Beach) noted that the City is required to sample for enterococci at least five times per month in their current permit.

Russ Frydenborg recalled that David Whiting (DEP) did a study several years ago that indicated there was a lot of variability, which supports a need for lots of samples. He recommended that the 5 sample requirement remain in Rule 62-302.530, FAC.

Mark Heidecker, Andy Ouellette, and Chris Sinigalliano all agreed that the 5 sample requirement should remain in Rule 62-302.530, FAC, while **Joel Hansel** disagreed. **Joel Hansel** mentioned that Florida is one of the first states to address bacteria criteria since the 2012 EPA guidance was released. He stated that EPA is still debating frequency in the standard.

Andy Ouellette asked what the distinction was for permittees if the frequency component was retained in Chapter 62-302, FAC, versus Chapter 62-303, FAC. **Daryll Joyner** pointed out that Chapter 62-303, FAC, is only used to assess waters for impairment and is not used for permit conditions.

Ron Stewart (Florida Pulp and Paper Association) asked if EPA would approve a permit that had a frequency component if frequency was not included in Chapter 62-302, FAC. **Joel Hansel** replied that it depends on how FDEP permits activities.

Daryll Joyner wondered whether leaving the 5 sample requirement in Chapter 62-302, FAC, would force permit monitoring frequency requirements.

Tom Frick summarized the frequency discussion by noting that the majority of the TAC recommends retaining the 5 sample requirement in Chapter 62-302, FAC, but that DEP needs to work with EPA Headquarters.

Bob Vincent mentioned that, under the Florida Department of Health's (DOH) current grant program, DOH does single sample Statistical Threshold Value (STV) and does not use geometric means.

Discussion then moved to consideration of changes to the Impaired Waters Rule (IWR), Chapter 62-303, FAC.

Andy Ouellette wondered whether we should be more consistent when using "30-day" versus "monthly". **Daryll Joyner** agreed and noted that the Department tries to be consistent.

Russ Frydenborg (Frydenborg EcoLogic) asked if the Landscape Development Index (LDI) would be used to determine whether a waterbody has anthropogenic sources. **Daryll Joyner** replied that this was a good suggestion, but that the Department may need to do more in-depth studies.

Steve Peene (Applied TM, representing the Florida Department of Transportation) inquired whether EPA would be okay with Florida not calculating a percent reduction in the TMDL rule but just in the TMDL supporting documentation. **Daryll Joyner** thought EPA would be okay with this approach as long as the percent reduction was identified somewhere. He noted that EPA would want percent reductions for each waterbody segment with no averaging over a watershed.

Daryll Joyner then presented several questions to the TAC for discussion purposes.

1. Does the TAC support the use of the binomial approach (with a 10% exceedance rate) for assessment of the STV?

Andy Ouellette stated that this seems like a good idea. **Tom Frick** followed up on the question by asking whether bacteria criteria should be treated differently from other criteria. **Robin Cook** agreed that they should be treated differently, because they are living organisms. **Daryll Joyner** noted that the 10% is intended to address variability and error and that maybe with bacteria criteria, this number should be higher. **Andy Ouellette** reiterated that the binomial approach is a good way to address this concern. **Joel Hansel** added that this is done over a ten-year period, which helps address variability. He agreed that the binomial approach is fine.

Anita Nash (DEP) asked if the data set that was used for the EPA document was based on nationwide sampling, noting that Florida has warm water. **Joel Hansel** stated that the studies used data from a number of sites, including southern waters.

Russ Frydenborg commented that the binomial approach works well for water quality parameters such as copper. He suggested that the 10% be relaxed, however, for bacteria criteria due to higher variability.

2. When in the assessment process should the Department conduct source identification? Do the new IWR Study List provisions provide the needed flexibility to address sources prior to development of the TMDL and BMAP?

Bob Vincent, referring to laboratory quality assurance (QA), wanted to know how QA will be assessed. **Dave Whiting** stated that a weight-of-evidence approach would be used with multiple indicators. **Daryll Joyner** wondered whether the Department had Standard Operating Procedures (SOPs) to address this. **Dave Whiting** remarked that the Department does not have certification for this yet, and **Bob Vincent** noted there are no rejection criteria yet. **Tom Frick** agreed that the methodologies are new, but wondered whether there aren't already SOPs built in. **Chris Sinigalliano** noted that laboratories that are doing this work have participated in multi-laboratory sampling and blind studies. **Chris Sinigalliano** asked whether the Department will look at QA for third party laboratories doing source identification work. **Daryll Joyner** suggested that the Department will probably need to add text to the rule to address QA.

Robin Cook wondered whether this discussion was for qPCR. **Chris Sinigalliano** noted that qPCR already has controls built into it.

Mark Heidecker asked whether this method would differentiate between dogs, cattle, humans, wildlife, etc, or does it differentiate between human versus non-human? **Dave Whiting** verified that this approach can differentiate between the two.

Joel Hansel stated that the Study List provides the Department with the needed flexibility. **Steve Peene** requested for specificity for how a waterbody would be placed on the Study List, noting that this was very important. **Daryll Joyner** commented that, although the text in the rule is brief, the Department wants flexibility.

Andy Ouellette requested that the Department provide a more in-depth presentation from Dave Whiting at the next TAC meeting. **Daryll Joyner** stated that originally the Department thought there would only be three TAC meetings, but now sees the need for at least one more.

Andy Ouellette commented that it was confusing changing from months to samples. **Joel Hansel** noted that this goes to a binomial table, which is not included in the rule text that was sent out. **Andy Ouellette** wondered if the table should be changed. **Daryll Joyner** agreed that the Department needs to clarify this. **Joel Hansel** also agreed that additional clarification is needed.

Beck Frydenborg (Frydenborg EcoLogic) noted that there are other technologies besides qPCR and that maybe Florida should look at those as well. **Chris Sinigalliano** stated that, although there are other

technologies, qPCR is very developed in comparison. He commented that using Sucralose is a good method. He also recommended leaving flexibility in the rule to allow for the use of these other technologies. **Dave Whiting** noted that the rule language does not specifically mention any particular technology (e.g., qPCR), so the flexibility is already there. **Robin Cook** stated that TNI is aware of these emerging technologies and is striving to build in quality control.

Proposed Revisions to TMDL Rule Language

Following a short break, **Moira Rojas** gave a presentation on proposed changes to Rule 62-304.900, FAC.

Andy Ouellette noted that the TMDL documents indicate significant work to calculate the percent reduction, and asked how this would be done under the revised rule. **Moira Rojas** noted that the methods to calculate the TMDL and percent reductions have changed over time. **Mark Heidecker** wanted to know if the proposed rule meant that waterbodies would not go to the IWR Verified List, but would instead go straight to a TMDL. **Daryll Joyner** verified this was the case.

Winston Borkowski (Hopping Green and Sams) asked what the legal authority was to do this, noting that this eliminates a point of entry for third parties. He also stated that, regardless of what the source is, regulated entities are affected without being able to provide input.

Daryll Joyner described how impaired waters would be identified as part of the 303(d) list adoption process. **Tom Frick** noted that the IWR Study List can be used as an "off ramp" to address this issue. **Winston Borkowski** expressed concern that this could lead to perpetual source tracking, noting that it's very challenging to demonstrate that the bacteria is solely non-anthropogenic.

Mark Heidecker asked if we really needed to go to a BMAP, noting we could just go from TMDL to MS4 required restoration. **Tom Frick** noted this approach only works for MS4s.

Winston Borkowski followed this question up with an inquiry as to whether the Department plans to do the TMDL separate from the requirements in Chapter 62-304, FAC. **Tom Frick** noted that the Department is not trying to take away points of entry. **Daryll Joyner** stated that the Department could list the waters that are covered under the TMDL as part of the TMDL. **Mark Heidecker** asked if this could be challenged. **Daryll Joyner** verified that it could be challenged.

Noting that the IWR Study List allows third parties to provide additional information, **Andy Ouellette** asked whether a third party could request placement of a waterbody on the Study List. **Dave Whiting** stated yes, and added that the Department would need to determine if there are anthropogenic causes. If so, a TMDL would be needed.

Steve Peene commented that there have been waterbodies listed as impaired with subsequent TMDL development, but that third parties challenged these TMDLs and the Department then withdrew them.

Russ Frydenborg brought up the example of the Ichetucknee River, noting that the river had elevated fecal coliform levels and the Department first thought this was due to swimmers. However, the Department found that coliform levels were higher in the morning, so it couldn't be due to swimmers and was, in fact, naturally occurring. He asked where in the process such a study could be done. **Chris Sinigalliano** agreed that this was a good question, noting that there are bathing beaches with natural populations of bacteria. **Russ Frydenborg** then asked what level (percentage) of anthropogenic sources would cause the Department to take action.

Daryll Joyner noted that the Study List was intended to address these issues. **Tom Frick** said we would list the water if we had evidence there were human markers. **Dave Whiting** noted that there is higher risk associated with human sources, and we can use other markers, like sucralose, to focus on human sources. **Winston Borkowski** noted that Reedy Creek showed correlation between bird populations and exceedances, but it still led to endless do-loop of studies.

Russ Frydenborg suggested that the Department may need to develop a guidance document to incorporate into the rule.

Chris Sinigalliano asked what would be the threshold separating the Study List and the Verified List. He provided an example of a waterbody that has high non-anthropogenic bacteria loads but which also has a small sporadic human component. What would the Department do in that case? **Anita Nash** noted that we only have a limited number of tools, and added that the Department would have to ask whether a source had done all it could. **Daryll Joyner** asked if it was truly important to identify the specific source species if we identified appropriate restoration activities whenever an anthropogenic source was identified.

Ed Cordova (Jacksonville Electric Authority (JEA)) commented that the "walk the WBID" approach can't find all of the sources because there are many diffuse sources such as leaky sewer lines. He added that no utility has the ability to "smoke test" their entire system.

Joel Hansel felt that the draft language in Rule 62-304.900, FAC, was fine.

Referring back to earlier discussion, **Mark Heidecker** asked Joel why EPA needs the percent reduction, and **Joel** said to [miss response].

Elements of "Walk the WBID"

Anita Nash gave a presentation on the elements of "walk the WBID."

Steve Peene asked how the "lead entity" is chosen. **Anita Nash** explained that this is not defined, but is usually the county.

Winston Borkowski asked if the data that are collected during "walk the WBID" are put into STORET. **Anita Nash** stated that the data are not put into STORET, including any follow-up sampling.

Potential Sources to be Addressed and Potential Management Activities

Following lunch, **Anita Nash** gave another presentation on potential sources to be addressed and potential management activities, starting with the CMOM Program for sanitary sewers.

Andy Ouellette asked what was contained in EPA's Root Cause Program. **Anita Nash** explained that this is a documentation programs that tracks the causes of sewer overflows. **Mike Heidecker** followed up with an explanation of FOG, an educational program that addresses clogs in sewers due to fats, oils and grease.

Bob Vincent asked if chlorides are monitored in sanitary sewers near coastal areas as a sign of infiltration. **Ed Cordova** stated that they weren't monitored.

Daryll Joyner asked if the program was recommended rather than required. **Joel Hansel** mentioned that CMOM is usually used in Consent Orders. **Ed Cordova** stated that JEA voluntarily implemented CMOM, but added it is not for everybody and would be challenging for small utilities. He added that the Root Cause Program is excellent and should be required of all utilities. He thought the program could be trimmed down.

Anita Nash inquired whether it would be better to require just certain preventative components of CMOM instead of the entire program. **Andy Ouellette** asked how it can be "proactive" if it's implemented in response to impairment.

Winston Borkowski wondered what the cost would be of implementing CMOM. **Ed Cordova** said JEA has 2 dedicated staff and as such was probably "six figures." **Bob Vincent** noted it can save money too. **Andy Ouellette** suggested that it might be good to streamline CMOM for this purpose. **Joel Hansel** followed this suggestion up with the idea that smaller utilities could be treated differently so that expense isn't as great. **Daryll Joyner** stated that we can discuss this at the next TAC meeting.

Regarding FOG, **Ed Cordova** felt it is good for commercial areas, but harder for residential areas where it involves public education. **Mark Heidecker** suggested that perhaps the program could be required after the Walk the WBID. **Tom Frick** stated that Department would try to identify the most important components of Root Cause, CMOM, and FOG for the next TAC meeting.

After Anita described the inspection program in CMOM, **Joel Hansel** asked if inspection of conveyance lines and manholes are one-time events, and if not, what is the recommended frequency? **Anita Nash** said they were not one-time events. **Winston Borkowski** asked if these are required, noting that these will be expensive for small communities. He added that they should not be required until a source is identified. **Tom Frick** suggested that they could be required as part of an NPDES permit. **Ed Cordova** commented that a utility can look at approximately 10% of its system annually. **Mark Heidecker** said

the owner should be given the flexibility to tell the Department how much needs to be done. **Tom Frick** noted that the Department needs to sit down with utilities to discuss what is doable.

Mark Heidecker noted that the Illicit Connection Detection Program is different than the Dry Weather Screening Program. **Steve Peene** asked if the Illicit Connection Detection Program satisfied MS4 requirements. **Winston Borkowski** asked if the Department would designate MS4s as part of the BMAP, and **Daryll Joyner** said that was an option that Department staff had discussed. **Steve Peene** noted that even some MS4s didn't have sufficient authority.

Bob Vincent asked if "livestock operations" included chickens. **Anita Nash** verified that chickens were included.

Steve Peene inquired if all responsibility falls on the lead agency and how the lead agency was chosen? **Tom Frick** explained that it depends on the waterbody. **Anita Nash** also explained that local governments and utilities usually volunteer to be the lead agency. **Mark Heidecker** reiterated his concern that a single entity might be responsible for multiple WBIDs at the same time, and in those cases, the lead agency would need more time.

Mark Heidecker, referring to Table 2, asked whether Table 2 activities can be done via "walk the WBID." **Anita Nash** verified that they could be done during "walk the WBID."

Ed Cordova noted that, regarding home-to-public line connections, public utilities do not have jurisdiction to require replacement, but that the Florida Department of Health can address these situations as public health nuisances. If they are widespread, perhaps MS4s can address them. **Bob Vincent** added that they can be addressed through code compliance.

Regarding SSOs, **Mark Heidecker** noted that small systems can't afford a notification system. **Andy Ouellette** asked who is notified by the notification system. **Anita Nash** explained that the utility is notified.

As part of a discussion on how to focus required actions, **Ed Cordova** mentioned that JEA uses 5,000 as a threshold for determining if "human waste is clearly indicated." **Mark Heidecker** gave an example where there were single, high values. **Daryll Joyner** suggested that the Department could add a persistence requirement.

Regarding septic tanks, **Bob Vincent** noted that the Department of Health has records for pump outs. **Mark Heidecker** asked who would pay for a public education campaign. **Bob Vincent** replied that the Department of Health has educational materials. Regarding the clause "inundation of drainfields", **Mark Heidecker** recommended adding "investigate options to alleviate flooding," but also asked about the timing of these investigations relative to the Walk the WBID. **Anita Nash** said it was needed both during and after the Walk the WBID. **Bob Vincent** noted that DOH has the authority to require homeowners with failed septic systems to hook up to central sewer if it was available.

During the discussion on calculation of repair rates under the proposal, **Bob Vincent** noted that DOH has a database that could be used. **Mark Heidecker** asked if the rate would be calculated by neighborhood or by WBID, and **Anita Nash** said that by watershed would be best.

During the discussion on inundated systems, **Mark Heidecker** asked how we would define “inadequate” stormwater management, and suggested the text should require the system to investigate options to alleviate flooding. **Chris Sinigalliano** noted it should require to alleviate if possible or connect to sewer.

Regarding street sweeping, **Chris Sinigalliano** stated that it may not be relevant to bacteria impairment. **Steve Peene** noted that it is not really a pathogen source. **Mark Heidecker** felt it was impractical and recommended that it be deleted. **Chris Sinigalliano** said he didn’t think it was related to pathogens, and asked if we are trying to control the indicator.

Regarding litter, **Steve Peene** asked if this is the same as particulates (street sweeping). **Dave Whiting** said that litter is often a vector for pathogens. **Chris Sinigalliano** also noted that there are biofilms in sewers that are not pathogens. **Mark Heidecker** asked if the litter collection was envisioned as a 1-time event, and **Anita Nash** said that while it could be interpreted as such as written, she intended it to be long-term, with the frequency increasing as needed. **Andy Ouellette** said he could see how litter could impact bacteria levels if in the stream.

As part of the wrap-up for the meeting, **Tom Frick** noted that the Department had more work to do, and that Department staff would work with representatives of the key sources to better refine the proposed restoration actions. The proposed date for the TAC meeting was identified as Wednesday, May 14, 2014. The meeting was then adjourned.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Technical Advisory Group Meeting AGENDA*

Chapter 62-762, F.A.C.

July 15, 2014 | 9:00 a.m. – 4:00 p.m. (EDT)

Bob Martinez Office Building
Room 609
2600 Blair Stone Rd
Tallahassee, FL

THIS MEETING IS OPEN TO THE PUBLIC

1. 9:00 a.m. – 9:15 a.m. Call to Order, statement of purpose of meeting, establish an outcome for this meeting and introduction of DEP Staff.
2. 9:15 a.m. – 10:30 a.m. Revisit proposals for Definitions and Applicability (Rules 62-762.201, F.A.C., and 62-762.301, F.A.C.), from May 20, 2014, TAG Meeting in Port Everglades.
3. 10:30 a.m. – 12:00 noon Discussion of Incidents, Discharges and Notification, (Rules 62-762.431, 62-762.441, & 62-762.411, F.A.C.).
4. 12:00 noon – 1:30 p.m. Lunch Break {on your own}
5. 1:30 p.m. Reconvene to discuss Storage Tank System Requirements (Rule 62-762.501, F.A.C.).
6. 4:00 p.m. Plan for next meeting and adjourn.

*The above includes a general timeframe and topics related to Chapter 62-762, F.A.C., for the meeting which can be changed at any time during the meeting after input from the participants present.

Teleconference Info:

Lync Meeting URL: <https://meet.lync.com/floridadep/kimberley.curran/08G1R9PP>

If using Lync Meeting, please choose "Don't Join Audio" when connecting to meeting.

Audio Only:

Call-in Number: 1-888-670-3525

Participant Code: 813 505 3297 #


[DEP Home](#)
[About DEP](#)
[Programs](#)
[Contact](#)
[Site Map](#)
[Search](#)


Programs

[Waste Home](#)
[Permitting and Compliance Assistance](#)
[Petroleum Restoration](#)
[Waste Cleanup](#)

Information

[Division & Program Contacts](#)
[Data Reports](#)
[DEP Public Notices](#)
[Forms](#)
[News](#)
[Publications and Reports](#)
[Rules](#)

Navigation

[Agency Site Map](#)
[Division Site Map](#)

Contaminated Media Forum Main Page



DEP's Contaminated Soils Forum was originally established in 1998 to provide an open forum for external and internal interested parties. In response to numerous requests, the forum has been re-established and renamed Contaminated Media Forum to provide that open forum and to come to consensus on how to apply the lessons learned from Risk Based Corrective Action (RBCA) implementation over the last several years.

Contaminated Media Forum

The Contaminated Media Forum serves as a venue for interested parties to discuss a wide variety of topics relating to evolving policy, scientific, and application issues associated with contaminated site cleanup and the re-use of a variety of media using risk-based management principles. Initial workgroups have been established to make recommendations on Background; Direct Exposure, Institutional Controls/Engineering Controls and Leachability; ECO Risk; and 62-777/CTLs. In addition, the forum will hold meetings throughout the state at later dates.

Application of Direct Exposure Soil Cleanup Target Levels NEW!

The Department is posting this document for comment and discussion at the next Contaminated Media Forum Meeting:

[Chapter 62-780, F.A.C., Supplemental Guidance for Application of Direct Exposure Soil Cleanup Target Levels for Subsurface Soils](#)

Probabilistic Risk Assessment Subgroup NEW!

Notes and Materials from the 06-23-14 Meeting:

[Notes](#) (posted for comments)

Please send any comments to Brian.Dougherty@dep.state.fl.us by 07-07-14

[Example slides on effects of start age and soil ingestion rate resampling](#)
[Sign in sheet](#) & [Webinar Attendance Report](#) for the meeting

A follow up meeting will be scheduled for further discussion of PRA issues.

Original announcement and agenda

The recent changes to Chapter 62-780, F.A.C., to clarify the requirements for preparing Probabilistic Risk Assessments (PRAs) has led to the formation of a new subgroup of the Contaminated Media Forum to discuss issues regarding parameters and input assumptions for PRAs. Specific topics to be addressed are:

- Testing the reliability of back-calculated outputs (run forward calculations to see if results match)
- PRAs based upon both variability and uncertainty distributions and 2D-PRA approaches
- Distributions (uniform, triangular, etc.) based on professional judgment due to lack of available data
- Distributions for toxicity values and toxic equivalency factors

Highlights

[CMF Main Page](#)
[Contacts](#)
[Contaminated Soils Forum Archive](#)
[Workgroups](#)
[62-777/CTLs](#)
[Background](#)
[Direct Exposure](#)
[IC/EC & Leachability](#)
[Ecological Risk](#)

Exposure start age, and focus on protection of children for other exposure factors
Adjusting the soil ingestion distribution
Relative Bioavailability (literature-based variability distributions versus site-specific bioavailability studies)

Updates

[Miami-Dade County Background Study](#)
[Draft Ecological Risk Assessment Guidance](#) (Posted 04/22/14)
[Alternative Risk Assessment Scenarios](#)

Presentations from the February 27, 2014 Meeting

[Direct Exposure, IC/EC and Leachability Workgroup](#)
[Summary of the CTL/62-777 Workgroup Recommendations](#)
[CTLs/62-777 Workgroup Presentation](#)
[Sign-in Sheets from February 26-27, 2014 Meeting](#)

Recent Meetings

[Agenda for November 20, 2013 Meeting](#)
[Contaminated Media Forum Meeting Minutes from November 20, 2013](#)
[Contaminated Media Forum Participants November 20, 2013](#)

Historical Contaminated Soils Forum Meetings

[Year 2000](#)
[Year 1999](#)
[Year 1998](#)

Historical Methodology Focus Group Meetings

[Year 2001](#)
[Year 2000](#)
[Year 1999](#)

Last updated: July 15, 2014

District & Business Support #850-245-8927 MS #4505

Division of Waste Management #850-245-8705 MS #4500
2600 Blair Stone Road, Tallahassee, Florida 32399-2400

[Questions & Comments Form](#)

[DEP Home](#) | [About DEP](#) | [Contact Us](#) | [Search](#) | [Site Map](#)

Memorandum

Florida Department of Environmental Protection

TO: Clifford D. Wilson III, P.E., Deputy Secretary
Regulatory Programs

FROM: Jorge Caspary, P.G., Director
Division of Waste Management

DATE: <Date>

SUBJECT: Chapter 62-780, F.A.C., Supplemental Guidance for Application of Direct
Exposure Soil Cleanup Target Levels for Subsurface Soils

The following discussion relates to the application of Direct Exposure (DE) Soil Cleanup Target Levels (SCTLs) referenced in Table II of Chapter 62-777, Florida Administrative Code (F.A.C.), as they apply to Chapter 62-780, F.A.C. This memo explains how to apply SCTLs to site rehabilitation and final closure decisions and includes several options to qualify for a Site Rehabilitation Completion Order (SRCO) when the default SCTLs are not met. It also provides an explanation of the engineering and/or institutional controls that are applicable for site closure when contaminated soil remains. The strategies described in this memorandum are also depicted in flow charts of Risk-Based Corrective Action options (referenced in Subsection 62-780.100(3)), F.A.C.).

Table II of Chapter 62-777, F.A.C., lists two types of SCTLs: those based on Direct Exposure (human health) and those based on Leachability (protection of groundwater). There are two sets of Direct Exposure SCTLs (columns 1 and 2) for residential and commercial/industrial scenarios. There are four sets of SCTLs based on Leachability (columns 3 through 6), which are derived (back calculated) from the groundwater cleanup target levels (GCTLs) and surface water cleanup target levels (SWCTLs) referenced in Table I of Chapter 62-777, F.A.C. This relationship between the SCTL Table and the Groundwater and Surface Water CTLs means that soil with concentrations at or below the concentrations specified in columns 3 through 6 of the SCTL Table is not expected to leach at concentrations exceeding the Groundwater and Surface Water CTLs. To qualify for an SRCO without conditions, the Contaminants of Concern (COCs) detected in soil samples from the unsaturated (vadose) zone must meet both the Direct Exposure SCTLs for a residential scenario and the Leachability-based SCTLs based on the applicable GCTLs and/or SWCTLs. This memo provides guidance on the applicability of Direct Exposure SCTLs.

Depth to Which Direct Exposure SCTLs Apply

In establishing the Department's authority to develop rules for risk-based corrective action in Florida, the Legislature based its statutory direction on the expectation that most potential

MEMORANDUM

<Date>

Page two

exposures during routine activities for a resident are limited to the top two feet of contaminated soil¹. Excavation deeper than two feet below the surface is usually performed to install or repair utilities or for construction; thus exposure to contaminated soil at a particular location would be of limited duration and can be eliminated by routine implementation of health and safety plans and adequate notification. Given Florida's surficial lithology, deeper excavation often requires specialized equipment not readily available to a resident, including the need for shoring, shielding, or sloping due to the threat of collapse. Consequently, Direct Exposure residential SCTLs should not apply to soils deeper than X² feet. Exposure to soil below X feet is typically restricted to a construction worker scenario with short-term exposure provided all such soil is returned to the excavation at depth and not re-used as surface soil.

Please note that the terms "residential" and "commercial/industrial" combine many possible land uses into two general categories and the category of "residential" applies to several types of land uses other than residential dwellings, such as schools, day care facilities and parks. The "Land-Use Restrictions" section under paragraph G. 2. of "Attachment 3: Form A" of the Department's Institutional Controls Procedures Guidance (<ftp://ftp.dep.state.fl.us/pub/reports/wc/icpg.docx>) should be consulted for an explanation of the different land uses that are classified as "residential" for the purposes of applying the DE SCTLs to closure decisions.

In general, engineering and/or institutional control requirements apply when the top two feet of soil exceeds direct exposure SCTLs due to the higher likelihood of contact with soil at that shallow depth. If the only contaminated soil exceeding DE SCTLs is greater than X feet below land surface, a restrictive covenant is not required for a conditional closure if another method is used. In such cases, listing the site in the Department's Institutional Controls Registry (<http://www.dep.state.fl.us/waste/categories/brownfields/pages/ICR.htm>) and including a precautionary statement on the Conditional SRCO can serve as another method. In addition, deed notices may be used to help ensure prospective property owners are aware of the contaminated soil at depth.

The following are examples of several common scenarios of Direct Exposure SCTL exceedances along with a description of the conditional closure options.

1. If the concentrations of COCs in the top X feet exceed the DE Residential SCTLs but do not exceed the DE Commercial/Industrial SCTLs, a conditional SRCO would be appropriate if the property is currently in commercial/industrial use and an institutional control such as a restrictive covenant is implemented to ensure that the property will remain commercial/industrial. Even if the property is in an area zoned commercial or

¹ See ss. 376.30701(2), 376.3071(5), 376.3078(4), and 376.81, F.S.

² The specific depth for the applicability of DE SCTLs is a proposed subject for discussion. Internal discussion has suggested the depth for applicability to be within the range of 2 to 15 feet, inclusive.

MEMORANDUM

<Date>

Page three

industrial, an institutional control may be necessary to ensure the property remains commercial/industrial and that any excavated soil will be properly managed. This example assumes that soil concentrations do not increase with depth (i.e. commercial/industrial DE SCTLs are not exceeded below X feet). If soil below X feet exceeds the commercial/industrial DE SCTLs further controls or action may be necessary.

2. If the concentrations of COCs in the top X feet exceed DE Commercial/Industrial SCTLs, a conditional SRCO may also be appropriate, provided the contaminated soil is under some type of "cap"; i.e., an engineering control (e.g., paved asphalt parking lot, a concrete pad, or covered with two feet of clean fill). In this case, a conditional SRCO would be appropriate if engineering controls (with a restrictive covenant to maintain the engineering control) are implemented to provide assurance that the cap will be properly maintained and not removed; that if construction is ever performed on the property, construction workers will be notified that contamination exists, and that if the contaminated soil is ever excavated it must be handled and disposed of properly.
3. If the concentrations of COCs that exceed the DE Residential SCTLs are only at depths below X feet, a conditional SRCO would be appropriate if an institutional control or other method is implemented to provide assurance that at least two feet of clean soil above the depth at which soil contamination begins will be maintained and not removed in the event of future property development, and that if the contaminated soil below X feet is ever excavated it will be handled and disposed of properly. In this case, the other method may consist of listing the site in the Department's Institutional Controls Registry and the Conditional Site Rehabilitation Completion Order will include a precautionary statement.

When performing site assessment of soil that exceeds DE SCTLs at depths greater than X feet below land surface, once it is established that the levels of contaminants in soil greater than X feet below land surface exceed DE SCTLs, the continued vertical delineation to greater depths is still necessary even if the responsible party intends to accept the institutional controls or other methods associated with contaminated soil greater than X feet below land surface (listing of site on the Department's Institutional Controls Registry), because the full vertical extent of soil contamination above the groundwater table will need to be established. Note that the criteria for leachability must also be met and this may also require further delineation of soil contamination.

All three Risk Management Options (RMOs) include options to perform a calculation of average soil concentrations in an exposure unit to compare with the DE SCTLs. This procedure is applicable to SCTLs which are based on long-term exposure to the soil on the property and so it would generally not be beneficial to perform the calculations for any intervals where the DE SCTL is not being applied. This procedure is based on the assumption that an individual using the property will have equal and random exposure to soil at different locations over a long

MEMORANDUM

<Date>

Page four

period of time, and therefore, the average (mean) concentration of a contaminant in soil per exposure event will be the average concentration of the contaminant in the soil of the exposure unit. This procedure requires a statistical treatment of the results from multiple soil samples from the same depth using the 95% Upper Confidence Limit (UCL) approach. There are several practical limitations which should be considered including that no single soil analytical result can have a concentration greater than 3 times a DE SCTL; a minimum of 10 representative samples must be collected, at least 7 of which must have detections of the target chemical(s); and if more than one contaminant is present which is a carcinogen, or a non-carcinogen with the same target organ, then the SCTLs of the contaminants that are present must be apportioned. Section XV of the Technical Report: Development of Cleanup Target Levels (CTLs) for Chapter 62-777, F.A.C., Final Report, dated February 2005, should be consulted for more information on procedures for performing the 95% UCL approach for comparison of mean concentrations of contaminants in the soil to the DE SCTLs.

Do I need soil samples in the smear zone or below the water table?

There is often a benefit from the collection of soil samples from the smear zone and below the water table to determine contaminant mass at that depth for remedial decision-making, as knowledge of the mass of contaminant below the water table may have a direct bearing on the best means to accomplish groundwater cleanup objectives. However, soil below the groundwater table does not need to be sampled for comparison to the DE or leachability SCTLs because SCTLs do not apply to soil below the groundwater table.

Variability in water table elevation and applicability of SCTLs

When verifying that SCTLs have been met, it is sometimes found that the elevation of the groundwater table is different than when soil samples were previously collected, resulting in either a greater depth of unsaturated zone where soil samples have not previously been collected, or that soil which was previously unsaturated is now submerged. Chapter 62-780, F.A.C., does not specify how to address this issue, therefore, professional judgment will apply to determine the need for additional soil sample collection when there has been a variation in water table elevation.

Verification that SCTLs Have Been Achieved at the Conclusion of Site Rehabilitation

Cleanup progress is commonly based on the analysis of groundwater samples collected during Active Remedial Action, Natural Attenuation Monitoring (NAM), or Post Active Remediation Monitoring (PARM). However, Paragraphs 62-780.680(1)(b), .680(2)(b), and .680(3)(b) F.A.C., require that unsaturated soil must also be sampled to demonstrate that it meets the applicable soil cleanup target levels.

MEMORANDUM

<Date>

Page five

If soil samples collected during the early stages of site rehabilitation indicated that soil in the unsaturated zone exceeded SCTLs at that time, and if confirmation samples have not been collected to indicate SCTLs have been achieved, then additional samples are required to confirm the soil meets applicable SCTLs before an SRCO can be issued.

In the case of NAM, Paragraph 62-780.690(1)(b), F.A.C., requires the Person Responsible for Site Rehabilitation (PRSR) to demonstrate that soil contamination is not present prior to beginning NAM, except that Leachability-based SCTLs may be exceeded if it is demonstrated that the soil does not constitute a continuing source of contamination to the groundwater at concentrations that pose a threat to human health, public safety and the environment. Also, if the PRSR intends to use either an engineering control or land-use restrictions in their final No Further Action Proposal to address soil contamination that exceeds the Direct Exposure SCTLs, then such soil contamination may remain during NAM.

Generally, confirmation soil samples should be collected prior to beginning PARM as well to demonstrate there is no soil remaining which exceeds SCTLs. However, such a decision should be made in accordance with the provisions for NAM above using best professional judgment.

FDEP Policy and Guidance Documents



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399

RICK SCOTT
GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: District Directors
Divisional Program Administrators
Contracted County Petroleum Programs
Site Owners
Interested Parties

FROM: Jorge R. Caspary, P.G. 
Director, Division of Waste Management

SUBJECT: Site Closure with Conditions

DATE: November 1, 2013

This is written to address concerns expressed with regards to the "Site Rehabilitation Completion Order with Condition pursuant to Chapter 62-780, F.A.C. (contamination remains & a restrictive covenant must be recorded) or LSSI NFA or SRCO" option in the Low Scored Site initiative Closure Selection form. I wish to emphasize that site closure with conditions is codified in Chapter 62-780, F.A.C., and is a form of site closure strictly based on voluntary acceptance by the site owner. The Department cannot and will not obligate or force a site owner to close a site with conditions. In addition, I also want to clarify the circumstances whereby an owner may be able to close a site without a restrictive covenant which come by deed or title to the property.

Institutional Controls (ICs) are defined in Section 376.301(22) and 376.79(10), Florida Statutes as "the restriction on use of, or access to, a site to eliminate or minimize exposure to petroleum products chemicals or concern, drycleaning solvents, or other contaminants. Such restrictions may include, but are not limited to, deed restrictions, restrictive covenants (RC) or conservation easements." ICs are an essential component in the Department's long-term strategy to close sites under managed risk because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site while allowing re-development and land transfer to proceed without a reduction in the levels of protection to human health and the environment.

Based on the applicable statute, and in order to achieve site closure with conditions, site owners have at their disposal several forms of ICs that are acceptable to prevent or reduce exposure to contamination. Examples of ICs are deed restrictions, restrictive covenants, and conservation easements. Likewise, examples of ICs that do not require a restrictive covenant are governmental controls that impose restrictions on land use or resource use. Typical examples of other forms of ICs for groundwater at a site include groundwater delineated areas under Chapter 62-524, F.A.C., county or municipal ordinances

Site Closure Concerns

Page 2

November 1, 2013

prohibiting the installation of potable water wells in urban areas or mandating that any new potable well be connected to the county or municipal water delivery system, groundwater classified as undrinkable, and prohibition on installation of wells in potable wellhead protection areas under Chapter 62-521, F.A.C. When using existing governmental controls to close a site, a site owner is not required to place a restrictive covenant by deed or title to the property if the governmental control achieves the necessary degree of restriction on access to contaminated media.

I encourage site owners and responsible parties considering closure of their sites with conditions to contact me at Jorge.casparv@dep.state.fl.us with any questions or inquiries regarding site closure with or without conditions. I also hope that the above clarification provides site owners and interested parties our reassurances that the Department intends to work collaboratively and expeditiously in all matters related to achieving site closure with or without conditions.



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399

RICK SCOTT
GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: District Directors
Local Program Contract Managers
Interested parties

FROM: Jorge R. Caspary, P.G. Director, Division of Waste Management
Jon Arthur, Ph.D., P.G., Director, Florida Geological Survey

SUBJECT: Review of Geological Documents and Dispute of Geological Professional Opinion

DATE: January 16, 2014

The assessment and evaluation of subsurface geological conditions is often an iterative process that requires the application of principles of geochemistry, sedimentology, karst geology, hydrogeology, geomorphology and groundwater flow, to name a few. Since geology is not an exact science, collaboration between geological professionals is of fundamental importance to arrive at reasonable conclusions based on available scientific evidence. Documents of a geological nature submitted to the Department to comply with various rules express professional opinions and must be signed and sealed by a Professional Geologist in Responsible Charge as defined in Chapter 61-G16-1.009, F.A.C., hereafter referred to as "Consultant PG".

In most circumstances, documents submitted to the Department contain geological cross sections, boring logs, interpretation of geological conditions and patterns and are the product of consultations between a Consultant PG and a PG employed by the Department ("Agency PG"). In these cases, and where the signed and sealed document is the product of a collaborative approach and is in compliance with applicable rules, the approval of the submitted document does not merit a second signed and sealed approval because the document is already signed and sealed by the Consultant PG.

However, in those rare circumstances where the professional opinion of an Agency PG (or one funded by one of our contracts including contracted counties) contradicts, alters, or modifies the signed and sealed opinion of a PG in Responsible Charge, then an interpretation is possible whereby the Agency PG is assuming a successor professional geologist role similar to that defined for professional engineers in Chapter 61-G15-27.001, F.A.C. The agency has witnessed challenges of this kind. While the Agency PG may not assume financial liability for the performance of the project as a government employee (due to sovereign immunity), the individual is responsible for his/her professional opinion as a licensed PG in Florida.

Particular cases exist where, in spite of interprofessional consultations, agreement on conclusions submitted in a signed and sealed document is not reached and an Agency PG orders, in writing, that additional data points must be obtained. In these circumstances, a submitting PG in Responsible Charge has the option to dispute an Agency's PG opinion.

As such, effective immediately, the following procedures will apply where a Consultant PG disputes of the professional geological opinion of an Agency's PG:

1. The Consultant PG must notify in writing or by electronic means to the Agency PG that he/she intends to dispute the Agency's PG opinion.
2. The disputing opinions, modifications, or alterations to a Consultant PG signed and sealed document or design must clearly reference the section of the applicable Rule that is in non-compliance. The Agency PG should only refer to the applicable rule that is not in compliance rather than proposing detailed modifications to the Consultant PG. This approach would preclude perception of a transfer of responsible charge.
3. The Agency PG must be prepared to present data to support their professional opinion in the form of well-kept and complete documentation as to having reached a different conclusion.
4. The Agency PG must notify the section administrator who will proceed to request an independent review of the submitted documentation by a qualified (i.e., proficient in the subdiscipline) PG from the Program Administrator.
5. The Program Administrator must appoint an independent PG. Program Administrators are encouraged to consult the State Geologist as needed for guidance regarding designation of an appropriate independent PG. The State Geologist is the Director of the Florida Geological Survey and an ex-officio member of the Florida Board of Professional Geologists.

Any questions on issues of professional practice in the field of geology should be referred to the Florida Board of Professional Geologists or to the State Geologist.

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") is by and between the State of Florida Department of Environmental Protection ("FDEP") and the State of Florida Department of Transportation ("FDOT"). The purpose of this MOU is to memorialize the partnership between FDEP and FDOT for addressing discharges of petroleum pollutants from off-site source properties to state transportation facilities.

FDEP acknowledges that FDOT invests in world class transportation projects which enable Florida to be a global hub for trade and commerce and provide employment and economic benefits for the State of Florida. To this effect, and depending on the availability of funds in the Inland Petroleum Trust Fund or other approved trust fund authorized by law, FDEP has offered to prioritize for assessment and, where warranted, remediation, petroleum pollutants (defined in the MOU) emanating from a discharge located in a discharger's ("discharger") trust fund-eligible source property ("source property") into, onto or under transportation facilities, in advance of regionally economically significant transportation projects such as major future corridor expansions, Statewide Corridors, or Designated Strategic Intermodal System (SIS) Highway Corridor or other significant projects of mutual agreement.

Additionally, FDEP has determined there may be circumstances when a discharger's petroleum pollutants satisfy FDEP requirements for a risk based corrective action no further action (NFA) or a Site Rehabilitation Completion Order (SRCO) and are not a risk to the human health, public safety, the users or occupants of the transportation facility, or the environment and such discharges will naturally attenuate. FDEP has requested FDOT's assistance in establishing a procedure for the discharger who cannot readily access or remediate its petroleum pollutants that have spilled upon or migrated from the discharger's source property to FDOT's transportation facility. Such procedure would require a discharger to petition FDEP to request a note on the FDOT right of way map ("map note") showing the location of the petroleum pollutants in the transportation facility. Pursuant to section 376.305(4), Fla. Stat., the FDOT and any third party voluntarily containing or removing the discharger's petroleum pollutants from the transportation facility is immune from liability in rendering such assistance. FDEP has determined a map note would provide an additional reference and assist any party working in the transportation facility in performing its due diligence prior to commencing work. FDEP has determined that the map note and recordation as described in Section 6 satisfies the multi-layered approach for an alternative institutional control.

RECITALS

A. Section 403.061(21), Fla. Stat. (2013), authorizes FDEP and section 334.044(7), Fla. Stat. (2013), authorizes FDOT to enter into this MOU; and

B. FDEP and FDOT recognize that petroleum pollutants present in soil and groundwater are potentially detrimental to the public health and the environment; and

C. For the purpose of this MOU the phrase "petroleum pollutants" includes oil of any kind and in any form, natural gas, liquid fuel commodity made from petroleum, including all forms of fuel known or sold as diesel fuel, kerosene, all forms of fuel known or sold as gasoline, and fuels containing a mixture of gasoline and other products and derivatives thereof, excluding liquefied petroleum gas; and

Fla. Stat.; and FDOT is exempted from any liability imposed by Chapter 376 or 403, Fla. Stat., for pre-existing soil or groundwater petroleum pollutants due solely to FDOT's ownership of the transportation facility, see section 337.27(4), Fla. Stat. (2013); and

N. Section 335.10(3), Fla. Stat. (2013), imposes civil liability on any person by reason of his or her wrongful act who causes actual damage to FDOT roads; and section 376.205, Fla. Stat. (2013), authorizes the FDOT to bring a cause of action against a responsible party for damages resulting from spills and discharges; and

O. FDEP has determined that a discharge of petroleum pollutants within the transportation facility that meets the requirements of a risk based closure no further action (NFA) may present a minimal risk to FDOT, third parties working in the transportation facility, the traveling public, and adjacent property owners; and FDEP has determined a map note showing the location of the discharger's petroleum pollutants will provide an additional resource for any party performing its due diligence prior to working in the transportation facility; and

P. For the purpose of this MOU, the term "map note" shall mean a notation placed upon a ROW map showing the horizontal and vertical location of the discharger's petroleum pollutants and its quantity in applicable regulatory units; and

Q. For the purpose of this MOU, the term "governmental law" includes all applicable federal, state, local, administrative, regulatory, safety, and environmental laws, codes, rules, regulations, policies, procedures, guidelines, standards, specifications, and permits, as the same may be constituted and amended from time to time, including, without limitation, those of the FDOT, applicable Water Management District, FDEP, Occupational Health and Safety Administration (OSHA), Environmental Protection Agency, Army Corps of Engineers, United States Coast Guard, and local governmental entities; and

R. This MOU shall not modify or change Florida Statutes, FDEP rules, or FDOT rules and is limited to the scope outlined in this MOU; and

S. FDEP and FDOT recognize the benefits that accrue to each agency as a result of this MOU.

NOW THEREFORE, with full knowledge and understanding of the laws governing the subject matter of this MOU, and in consideration of the foregoing recitals and the mutual covenants and conditions contained in this MOU, the parties, intending to be legally bound hereby, acknowledge and agree as follows:

1. RECITALS AND EXHIBITS

The recitals set forth above and attached Exhibits are incorporated in and made part of this MOU.

2. EFFECTIVE DATE

The effective date of the MOU shall be the date the last of the parties to be charged executes the MOU ("Effective Date").

3. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION FUNDS

A. FDEP acknowledges that FDOT transportation projects are important for Florida's employment and economic benefits. When a discharger discharges petroleum pollutants into, onto or under a transportation facility such discharges impact transportation facilities and future transportation projects. FDEP agrees such petroleum pollutant impacts to transportation facilities should be minimized; therefore, when the FDOT plans a project in the transportation facility where a

- (vi) A Specific Purpose Survey, Boundary Survey or Sketch and Description as defined under Chapter 5J-17, F.A.C. tied to the FDOT bearing base, and GPS coordinate information showing the map note; and
- (vii) The transportation facility ROW map ("ROW map"), prepared according to all FDOT laws, rules, regulations, and procedures, showing the map note; and
- (viii) Draft language for future property interest transfer agreement and draft deed of conveyance language referencing the map note on the ROW Map; and
- (ix) An agreement between the discharger and FDOT to indemnify and hold the FDOT harmless for any damage that may occur to the transportation facility; and
- (x) Any other document the FDOT may require.

D. The FDEP request will be sent to appropriate FDOT District Secretary, with a courtesy copy to the District Right of Way Administrator, the District Contamination Impact Coordinator, and the District Chief Counsel. The FDOT shall timely consider and may acknowledge FDEP request in writing by Acknowledgement Letter; see attached exhibit "B."

6. RECORDING

Upon receipt of FDOT's Acknowledgment Letter, the FDEP shall file this MOU, the FDEP Request Letter, the FDOT Acknowledgment Letter, and the ROW map with map note with the discharger's facility documents in the FDEP's OCULUS database. FDOT shall record this MOU, the FDEP Request Letter, the FDOT Acknowledgment Letter, and the transportation facility ROW map with the map note in the FDOT District Mapping office. FDEP shall require the discharger to record a reference to the ROW map note with the source property in the County Clerk's office.

7. MODIFICATION OF THE MAP NOTE

Modification of the map note is authorized if the discharger, a third party, FDEP, or FDOT demonstrate the transportation facility has achieved cleanup target levels established pursuant to governmental law and the map note is modified.

8. LIMITATIONS

A. This MOU creates a procedure for the FDEP's request for a map note to manage and to notify, of petroleum pollutants that are not feasible or technically impractical to remediate and which under current circumstances of exposure and/or land use, does not pose a potential or real threat to human health or the environment. The management of work, from assessment to closure, at a funding eligible discharge is performed by FDEP's Petroleum Restoration Program in accordance with section 376.305(1), Fla. Stat..(2013). Health and safety considerations for intrusive work in petroleum contaminated areas or discharges such as monitor well installations, contaminated soil excavation, etc., is regulated by the Occupational Health and Safety Administration (OSHA) and existing governmental law. This MOU, any FDEP Request Letter, any FDOT Acknowledgement letter, and any map note are only an additional reference showing the location of petroleum pollutants in the transportation facility for any party to rely on during its due diligence prior to working within the transportation facility;

B. This MOU, any FDEP Request Letter, any FDOT Acknowledgement letter, and any map note shall not operate to create or vest any property right in or to FDEP, the discharger, or to third parties. The FDEP, the discharger, and third parties shall not acquire any right, title, interest or estate in the transportation facility by virtue of the execution, operation, effect, performance or

11. DISPUTE RESOLUTION AND VENUE

A. If a dispute arises concerning the interpretation, validity, performance or alleged breach of this MOU which cannot be resolved at the staff level, such dispute shall be elevated to the attention of FDEP's Director for the Division of Waste Management (DWM) and FDOT's Manager of the State Environmental Management Office (SEMO). If the DWM Director and SEMO Manager are unable to resolve any such dispute, then the matter will be elevated to each agency's Secretary or their designee for resolution.

B. Venue for any and all actions arising out of or in any way related to the interpretation, validity, performance or breach of the MDU that are not resolved to the mutual satisfaction of the parties shall lie exclusively in a state court of appropriate jurisdiction in Leon County, Florida.

12. SPILLS AND DISCHARGES, AND ABANDONED LIQUID WASTE

A. The public's right to use the transportation facility can result in third party spills and discharges of petroleum pollutants and contamination and the abandonment of liquid waste in containers and drums (abandoned liquid waste). The third party responsible (responsible party) for the spills, discharges, and abandonment may be unknown or known. Such spills, discharges, and abandoned waste may be discovered by the FDOT, FDEP, or the traveling public.

B. Upon discovery of any spill or discharge of petroleum pollutants or contamination by an unknown third party to a transportation facility, the FDEP shall:

- (i) notify the FDOT in writing within forty-eight (48) hours of the spill or discharge; and
- (ii) determine whether the spill or discharge is a de-minimus discharge and provide a copy of such determination to FDOT; and
- (iii) if not a de-minimus discharge then task its Office of Emergency Response headquarters office in Tallahassee or any of the Office's emergency response specialists located in one of its six districts to investigate and, where warranted, ensure the spill or discharge does not pose a threat to human health or the environment by authorizing one of its approved discharge cleanup organizations to remove/remediate and dispose of the spill or discharge; and;
- (iv) require the local discharge clean-up organizations to acquire the appropriate FDOT permit and submit a copy of that permit to FDEP; and

C. Upon discovery of a spill or discharge of petroleum pollutants or contamination by a known third party into a transportation facility, the FDEP shall:

- (i) if a spill, require the Division of Emergency Management State Watch Office to notify FDDT in writing within forty eight (48) hours of the spill; and
- (ii) if a discharge, require the responsible party to notify FDOT in writing by certified mail; and
- (iii) determine whether the spill or discharge is a de-minimus discharge and provide a copy of such determination to FDOT; and
- (iv) if not a de-minimus discharge then require any and all parties, including without limitation local discharge clean-up organizations, who are remediating spills or discharges in the transportation facility, to acquire a FDOT permit and submit a copy of that permit to FDEP; and

D. Upon discovery and notice of unknown abandoned liquid waste in the transportation facility, the FDEP shall authorize a local discharge cleanup organization to, where warranted, contain, remove, and dispose of the abandoned waste.

Exhibit A
Sample FDEP Request Letter to FDOT
for Sites with Petroleum Pollutants

State of Florida Department of Transportation

RE: FDEP Facility ID # _____
State Road _____; _____ County

Dear District _____ Secretary:

This Florida Department of Environmental Protection ("FDEP") Request Letter (Request Letter) is in reference to certain real property, the transportation facility ("transportation facility"), whose owner is the State of Florida, Department of Transportation ("FDOT"), situated in the County of _____, more particularly described in Exhibit "A" attached hereto and made a part hereof.

Consistent with the Memorandum of Understanding ("MOU") entered into by the FDEP and FDOT on _____ [date], 2014, this letter requests the FDOT to add a map note (defined in the MOU and referenced below) to its Right of Way ("ROW") map showing the location of petroleum pollutants in the transportation facility. The petroleum pollutants arise from a third party discharger ("discharger") and have either: (1) migrated from the discharger's source property to FDOT's transportation facility, or (2) been discharged by the discharger directly onto the transportation facility. The discharger cannot readily access or remediate the petroleum pollutants in the transportation facility.

FDEP has determined the discharger's petroleum pollutants within the transportation facility are not a risk to human health, public safety, the users or occupants of the transportation facility, or the environment and the requested map note satisfies FDEP's alternative institutional control requirements; thus, the discharger is eligible for risk-based corrective action no further action ("NFA") or a Site Rehabilitation Completion Order ("SRCO") ("closure").

The FDOT and any third party voluntarily containing or removing the petroleum pollutants from the transportation facility are immune from any liability in rendering such assistance. FDEP has determined a map note would provide an additional reference and assist any party working in the transportation facility in performing its due diligence prior to commencing work.

This request for the ROW map note includes one paper and one electronic copy of the following documents:

- (i) A written statement by FDEP that the discharger's petroleum pollutants within the transportation facility is not a risk to human health, public safety, the users or occupants of the transportation facility, or the environment;
- (ii) FDEP's written determination the proposed ROW map note qualifies as an alternative institutional control and the source property qualifies for the closure;
- (iii) A summary of the soil data and groundwater data, in the applicable regulatory units, showing the location of soil and groundwater petroleum pollutants;
- (iv) A legal description of the extent of the map note; and
- (v) A Specific Purpose Survey, Boundary Survey or Sketch and Description as defined under Chapter 5J-17, F.A.C. tied to the FDOT bearing base, and GPS coordinate information showing the alternative institutional control;

D. Nothing in this Request Letter or any related Acknowledgement Letter shall prohibit, limit or interfere with FDOT's rights or impose any additional safety or environmental compliance requirements on FDOT for any acquisition, use, design, construction, operation, maintenance, utility work, or issuance of any permit to use or do work within the transportation facility including the petroleum pollutants.

E. Nothing in this Request Letter or any related Acknowledgement Letter imposes any additional safety or environmental compliance requirements on the FDOT or imposes any liability on FDOT arising from the petroleum pollutants discharge.

F. Nothing in this Request Letter or any related Acknowledgement Letter shall obligate the FDOT to remediate the discharger's petroleum pollutants in, on or under the transportation facility.

G. Nothing in this Request Letter or any related Acknowledgement Letter shall require the FDOT to remediate the source property.

H. Nothing in this Request Letter shall be interpreted as imposing liability on FDOT for any third party work in the transportation facility.

5. TRANSPORTATION FACILITY TRANSFERS

A. Lease of the transportation facility

Prior to the entry into a lessee/lessor relationship with respect to the transportation facility, FDOT agrees to send the lessee a copy of the ROW map with the map note.

B. Conveyance of the transportation facility

(i) FDOT will notify FDEP thirty (30) days prior to any conveyance or sale, granting or transferring the portion of transportation facility that includes a map note on the ROW map.

(ii) Transfer by Map.

FDOT's conveyance of transportation facility by map transfer shall include a reference to the map note on the map.

(iii) Transfer by Roadway Jurisdictional Transfer

FDOT's conveyance of transportation facility by roadway jurisdictional transfer pursuant to section 335.0415, Fla. Stat., shall include a reference to ROW Map and map note.

(iv) Transfer by deed

FDOT's conveyance by deed or other written transfer shall include "By acceptance of this transfer, the grantee hereby agrees it has received the ROW map with the map note showing the location of the petroleum pollutants."

7. REVOCATION OF REQUEST

If the closure is not issued to the discharger within thirty (30) days of FDEP's receipt of FDOT's Acknowledgement Letter, then FDEP shall revoke this Request Letter and send written notice of the revocation to FDOT.

8. MODIFICATION OF THE MAP NOTE

The MOU's modification of map note section shall apply to this Request Letter.

Exhibit B
Sample Florida Department of Transportation Acknowledgement Letter

Date: Date
From: Florida Department of Transportation ("FDOT")
To: Florida Department of Environmental Protection ("FDEP")
CC: Other involved entity
Re: FDEP Request Letter for ROW Map note
FDEP Facility ID# _____ State Road _____
County _____

Dear (FDEP Program Manager),

The FDOT acknowledges receipt of FDEP's request to add a map note to the FDOT Right of Way ("ROW") map showing the location of petroleum pollutants that have: (1) spilled upon or (2) migrated from an off-site source property to FDOT's transportation facility. FDOT has also received FDEP's written determination that: (1) the third party discharger's petroleum pollutants within the transportation facility are not a risk to human health, public safety, the users or occupants of the transportation facility, or the environment; (2) the map note qualifies as an alternative institutional control; and (3) the third party discharger's source property qualifies for a risk based corrective action no further action ("NFA") or Site Rehabilitation Completion Order ("SRCO") ("closure").

FDOT and any third party voluntarily containing or removing a discharger's petroleum pollutants from the transportation facility are immune from liability. FDEP has determined the map note is a reference to assist any party with its due diligence prior to working within the transportation facility.

Based upon its review of the FDEP Request Letter and related documents and pursuant to the Memorandum of Understanding ("MOU") entered into by the FDEP and FDOT on _____ [date], 2014, the FDOT:

- (1) Agrees to maintain the transportation facility ROW map and the map note, until such time as it may be modified; and
- (2) Agrees to incorporate a reference to the map note into any future property transfer, including transfer by map, transfer by Roadway Jurisdictional Transfer, or transfer by deed;
- (3) Agrees the Request Letter, this Acknowledgement letter, and the map note do not operate to create or vest any property right, title, interest or estate in the transportation facility in or to FDEP, the discharger, or to any other third parties;
- (4) Agrees the Request Letter, this Acknowledgement letter, and the map note are only an additional reference to show the location of petroleum pollutants in the transportation facility for any party to reference during its due diligence prior to working within the transportation facility; and further agrees that neither the Request Letter, this Acknowledgement letter, nor any map note shall impose any additional compliance requirements on any party working within the

Florida Ecological Risk Assessment Guidance Document

DRAFT
April 11, 2014

1. Introduction

1.1 Purpose and Applicability

The Florida Ecological Risk Assessment Guidance is intended as a technical guidance for the evaluation of ecological risk. The guidance does not suggest or support an evaluation of ecological risk at all sites; rather it provides technical instruction applicable when an ecological risk assessment is warranted. Although other ecological risk methodologies are available, this guidance has been developed specifically for the State of Florida.

This guidance follows the three-tiered approach outlined in the guide for risk-based corrective action for the protection of ecological resources (Eco-RBCA) (ASTM, 2009). This approach is intended to be consistent with the 8-step process outlined in the US EPA's Ecological Risk Assessment Guidance for Superfund (1997). Figure 1 shows the approximate relationship between the Eco-RBCA and US EPA processes. Although this guidance is organized into Tiers, the wide variety of needs and goals for ecological habitat in Florida necessitate a flexible approach. Use of this guidance does not necessitate implementation in a step-wise fashion or the inclusion of all steps.

Tier I – Screening Level Ecological Risk Assessment

- EPA ERAGS STEP 1 – Site visit and screening-level problem formulation
- EPA ERAGS STEP 2 – Exposure estimate and risk calculation



Tier II - Baseline Ecological Risk Assessment and site-specific exposure values

- EPA ERAGS STEP 3 – Baseline problem formulation, assessment endpoints, and conceptual site model
- EPA ERAGS STEP 4 – Study design and data quality objectives
- EPA ERAGS STEP 5 – Verification of field sampling design
- EPA ERAGS STEP 6 – Site investigation and data analysis
- EPA ERAGS STEP 7 – Risk characterization



Tier III – Highly specialized or long-term site-specific investigations

- EPA ERAGS STEPS 3-7 – re-characterize with updated measurement endpoints and values



- EPA ERAGS STEP 8 – Risk management

Figure 1 – Relationship between the Eco-RBCA and US EPA ERAGS processes

1.2 Scoping

The purpose of the scoping section is to determine if an ecological risk assessment is necessary at the site. Assessment of ecological risk is not critical at sites with little or no exposure for ecological receptors. Considerations include:

- a) Presence of viable habitat on the site
- b) Presence of viable surrounding habitat
- c) Current and potential future land use
- d) Presence of threatened or endangered species
- e) Presence of ecologically sensitive habitat (e.g., wetlands, state preserve, spawning grounds)

2. Tier I – Screening Level Ecological Risk Assessment

2.1 Problem Formulation

2.1.1 Conceptual Site Model

The purpose of this model is to describe the relationships between contaminated media and ecological receptors. A conceptual site model identifies source, transport, partitioning, contaminated media, and possible exposure routes. It hypothesizes how each of the receptors may be exposed to the chemical hazard. This model allows risk assessors and managers to understand how contaminants are moving among aquatic and terrestrial organisms and through trophic levels at a site. It is also useful for identifying incomplete pathways and eliminating chemicals or media that are not relevant for the site in question. A conceptual site model may be presented as a figure or a chart (Figure 2).

2.1.2 Stressors

Both chemical and non-chemical stressors should be considered. While ecological risk assessment has traditionally focused on chemical hazards, physical and biological stressors are important determinants for the overall health of the ecosystem. These stressors may occur naturally (e.g., parasites, soil high in metals) or be a result of anthropogenic influence (e.g., removal of habitat for construction). Physical stressors such as extremes in pH, dredging, low dissolved oxygen, changes in water level, or fragmented habitat may intensify adverse effects. Biological stressors (e.g., invasive species or changes in predator/prey relationships) can alter species composition and, as a result, change the ecosystem over time. The analysis of non-chemical stressors identifies both the indirect effects of a chemical release on an ecosystem as well as changes due to non-site related activities.

2.1.3 Management Goals

The management goal defines the ecological values that are to be protected at the site. It could be as simple as the protection of one species or as complex as the maintenance of an entire ecosystem. Consequently, it should be defined early in the assessment. Without a clear management goal, sampling and assessment at the site are not focused. If a management goal is chosen later in the risk assessment process,

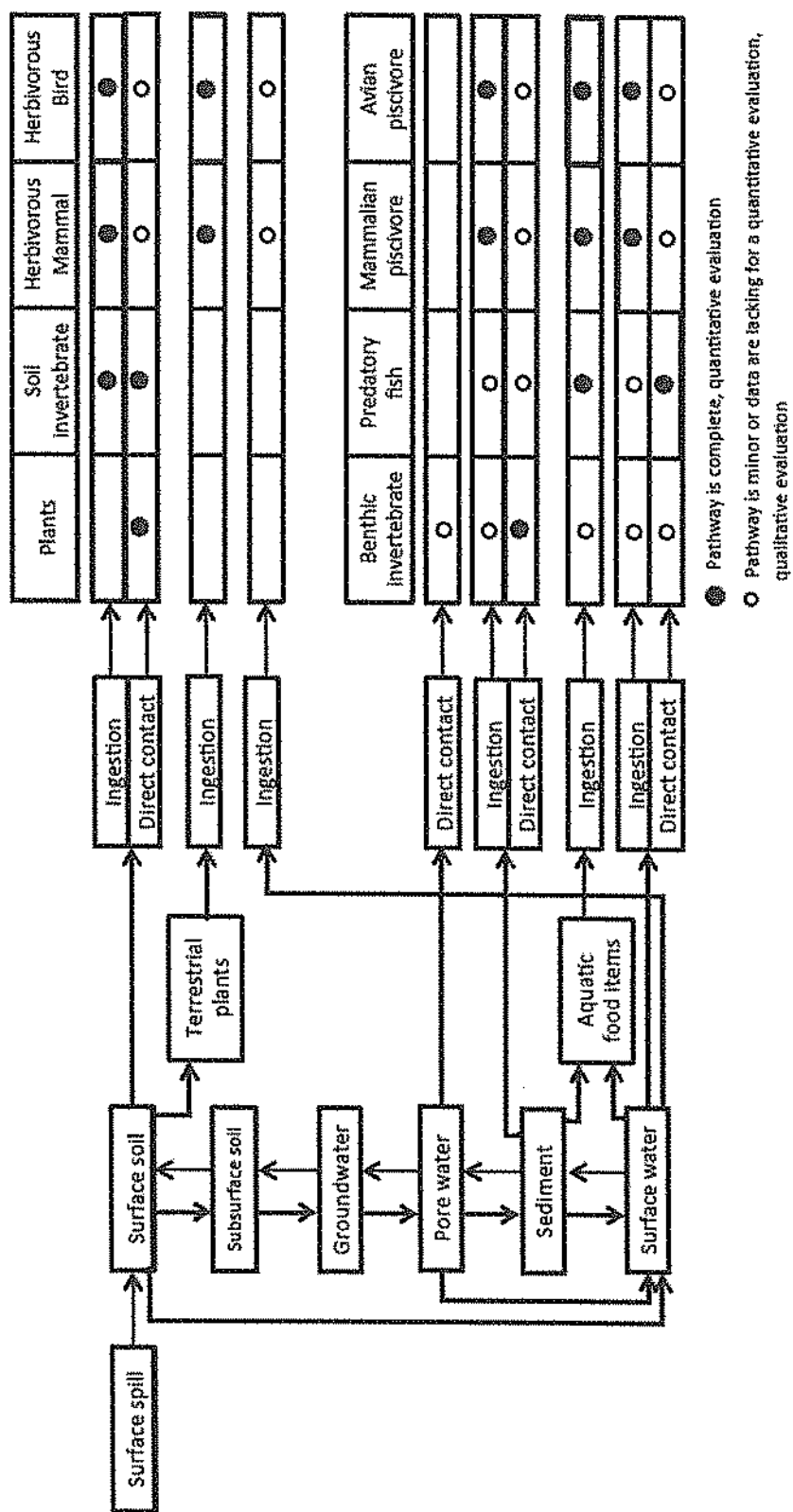


Figure 2 -- Example site conceptual model for ecological risk assessment

data gaps may exist (requiring further sampling) or it may be discovered that extraneous data were collected (increasing overall cost).

An assessment endpoint is "an explicit expression of the environmental value that is to be protected" (US EPA, 1997). Assessment endpoints express a value defined by the management goals and cannot usually be measured directly. For example, if a management goal for a wetland contaminated with PCB is "maintenance of the wetland ecosystem", relevant assessment endpoints may include "protection of piscivorous birds and mammals" or "protection of predatory fish". Assessment endpoints should be sensitive to the chemical as well as ecologically relevant to the management goal. Although assessment endpoints may not be chosen at this stage, consideration of possible assessment endpoints will help guide sampling.

2.2 Ecological Screening Levels

There are several sources of ecological screening levels. Screening levels derived for use in the State of Florida are given preference, followed by Federal and Region 4 screening levels. The following sections list ecological screening level sources for each media of concern, in order of preference.

2.2.1 Soil Screening Levels

- US EPA Ecological Soil Screening Levels (2003-2008)
- Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment (2001)
- US EPA Region 5, RCRA Ecological Screening Levels (2003)
- Others

2.2.2 Surface Water Screening Levels

- FDEP Surface Water Quality Standards, Chapter 62-302, F.A.C. (2010)
- FDEP Contaminant Cleanup Target Levels, Chapter 62-777, F.A.C. (2005)
- US EPA, National Recommended Water Quality Criteria (current)
- Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment (2001)
- US EPA Region 3, Freshwater Screening Benchmarks (2006)
- Others

2.2.3 Sediment Screening Levels

- Sediment Quality Assessment Guidelines for Florida Inland Waters (2003) – TECs

- Sediment Quality Assessment Guidelines for Florida Coastal Waters (1994) - TELs
- Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment (2001)
- EPA Region III BTAG, Freshwater Sediment Screening Benchmarks (2006)
- Others

2.3 Screening Level Refinement

Although assessment endpoints are not usually developed in Tier 1, a screening level assessment may be refined by focusing on species likely to be chosen as assessment endpoints. For example, if the management goal is to maintain the predatory fish population, the screening level assessment could focus on benthic invertebrates and finfish. These species are required as a prey base to maintain higher trophic level populations and have been chosen as assessment endpoints for similar management goals. To refine the assessment, toxicity reference values (TRVs) and conservative exposure factors are used to derive media concentrations protective of different foraging guilds. This is commonly used for the assessment of higher trophic level species where the default screening levels tend to be highly conservative. In the refinement, some exposure parameters may be changed to reflect more realistic parameters for the receptors of concern. These adjustments are usually obtained from the literature and are not site-specific (e.g., area use factor based on home range). Inclusion of site-specific data is addressed under the Tier II assessment. This does not imply that a screening level refinement must exclude site-specific data. It indicates, however, that the inclusion of site-specific data requires additional considerations, which are addressed in the following sections.

Unlike screening levels, there are no generally accepted compilations of TRVs. Individual TRVs must be obtained from ecological toxicity references and databases. Several common sources have been listed below for convenience.

- US EPA Ecological Soil Screening Levels (2003-2008)
- US EPA EcoTox Database Release 4.0 (last updated March 2014)
- US Army Wildlife Toxicity Reference Values (2001-2009)

3. Tier II – Baseline Ecological Risk Assessment and Site-specific Exposure Values

3.1 Site-specific Species of Concern

3.1.1 Florida-specific Species

Florida contains a wide variety of unique and endangered species, the most notable of which are reptiles and aquatic mammals. In contrast to other states that do

not usually quantify risk for these foraging guilds, Florida encourages their assessment. Representative Florida species include those receptors most likely to have a high dose of contaminant per kg of body weight, such as those with a low body weight and/or small home ranges. Because limited toxicity data exist for reptiles, assessment of these animals is usually qualitative. Examples of receptors of special interest in Florida include:

- Aquatic mammal – Otter
- Piscivorous birds – Little blue heron, Woodstork
- Higher trophic level piscivorous bird – Osprey
- Reptiles – Alligator

3.1.2 Threatened/Endangered Species

The Florida Fish and Wildlife Conservation Commission (FWC) maintains the list of animal species Federally designated as endangered or threatened and State-designated as endangered, threatened, or a species of special concern. The most recent version can be downloaded from http://myfwc.com/media/1515251/threatened_endangered_species.pdf. The list of threatened, endangered, or commercially exploited plants is maintained by the Florida Department of Agriculture and Consumer Services (DOACS). It can be obtained from <http://freshfromflorida.s3.amazonaws.com/fl-endangered-plants.pdf>. Ecological TRVs protect species at the population level. For threatened and endangered species, even the loss of one individual can have significant effects on the population. Therefore, each individual is protected. Endpoints used to derive the TRVs (mortality, reproduction, and growth) ensure maintenance of the population, but allow the loss of some individuals. Additionally, toxicity endpoints protective of the individual (e.g., behavior, physiology, pathology) are not considered. Therefore, refined or site-specific screening levels may not be protective of threatened or endangered (T&E) species. If a T&E species is identified on the site (or near the site) and the site has suitable habitat to support foraging, measures should be taken to protect individual animals. Several methods have been utilized to ensure the protection of T&E individuals, including: 1) use of the NOAEL as a not-to-exceed value, 2) application of an intraspecies adjustment factor (between 3 and 10) to account for sensitive individuals in the population, or 3) development of a TRV based on all adverse effects (not just mortality, reproduction, and growth).

3.2 Background Concentrations

Background concentrations are defined as "concentrations of chemicals that are not site-related or attributable to releases from the site" (US ACE, 2011). Background concentrations may be natural or anthropogenic, but do not include concentrations resulting from a secondary point sources. Florida-specific guidances for comparison of site concentrations to background are available for soil and groundwater.

- Guidance for Comparing Background and Site Chemical Concentrations in Soil (2012)
- Guidance for Comparing Background and Site Chemical Concentrations in Groundwater (2013)

3.3 Area Use Factor

The area use factor is defined as the ratio of the contaminated area to the receptor's home range. It is the probability that a receptor will be exposed to contamination throughout its home range. Reduction of the area use factor below 1 requires careful consideration. There may not be a direct relationship between the size of the site and the receptor's home range due to limited foraging habitat both on and off-site. It is also important to consider adjacent impacted properties in the calculation since foraging in contaminated areas will not stop at site boundaries.

Home range varies by season and for nesting. Use of the smaller home ranges (e.g., nesting and fledgling) is necessary to protect the population. Loss of even one age cohort is likely to have long-term population level effects. Therefore, the smallest home range is applicable for population-level protection.

3.4 Bioavailability

Bioavailability is the ratio of the amount of chemical absorbed by a receptor to the concentration in the environmental media of concern. Relative bioavailability is the ratio of the amount of chemical absorbed by a test animal from the administered dose to the absorption from the environmental media of concern. Adjustments in bioavailability are not simple and require site-specific testing. Several commonly used methodologies for adjusting bioavailability are discussed below. Bioavailability can also be modified using toxicity testing (see Section 4.3).

3.4.1 AVS/SEM

In anoxic sediment, sulfides are the primary binding material for cationic metals (Cd, Ni, Cu, Pb, Zn) (US EPA, 2007). These sulfide-metal complexes are insoluble and no longer bioavailable to biological organisms. To determine the sulfide binding potential, sediments can be extracted with hydrochloric acid and analyzed for the acid volatile sulfides (AVS) and simultaneously extracted cationic metals (SEM). When the molar concentration of AVS exceeds the sum of the SEM, the metal is bound and not considered to be bioavailable. If the sum of the SEM exceeds the AVS, the metals are present in concentrations greater than the binding capacity of the sulfide and are considered bioavailable.

3.4.2 pH

Bioavailability of metals is a function of whether they exist in the bound or free state. The pH of contaminated media influences the binding of metals in the environment and, therefore, alters bioavailability. The solubility of cationic metals is greatest under acidic conditions and decreases with increasing pH. Conversely, metalloids that exist as anionic species (e.g., arsenic) increase solubility with increasing pH (US EPA, 2007). The Biotic Ligand Model software accounts for changes in metal binding with changes in pH. It uses several water chemistry values to calculate changes in bioavailability due to site-specific conditions (HydroQual, 2007).

3.4.3 Total Organic Carbon

Organic carbon binds to non-polar organic chemicals and some metals (weakly). As organic carbon content increases, bioavailability of these chemicals decreases. Therefore, the total organic carbon (TOC) content of sediment and soil can be utilized to adjust TOC-normalized screening values. Adjusting TOC-normalized screening values to account for site-specific organic carbon content is valid only if the TOC is greater than 0.2%. At TOC concentrations less than 0.2%, organic carbon is no longer the predominant factor in determining partitioning between soil/sediment and water (ITRC, 2011). It is important to note that this adjustment can only be made to TOC-normalized screening values. If the screening value is not normalized, it does not represent any specific carbon content and cannot be adjusted based on site-specific values.

3.5 Modeling

Modeling is often used to predict current or future environmental contaminant levels when actual measurements are not available. Many different types of models are available and it is important to utilize a model that provides outputs relevant to the assessment. Additionally, the chosen model should have some level of validation and peer review.

3.5.1 Fate and Transport Modeling

Fate and transport modeling characterizes the effects of chemical, physical, and biological processes on the movement and alteration of chemicals in the environment. Several fate and transport models are available with differing levels of peer review and validation. The US EPA's TRIM.FaTE model is an example of a fate and transport model with an extensive level of peer review. It estimates environmental fate, transport, and exposure to generate estimated chemical concentrations in media as well as biota.

3.5.2 Bioaccumulation/Food Web Modeling

Food web and bioaccumulation models quantify the transfer of contaminants between media from direct contact and food ingestion. The model estimates exposure by multiplying chemical concentrations in food items and abiotic media by species-specific intake rates. Equations for the estimation of chemical concentrations in media and biota are given below.

Equation 1: Calculation for the contaminant of potential ecological concern (COPEC) concentration in benthic invertebrates (US EPA, 1999):

$$C_I = C_{IW} \times BCF_{WI}$$

where:

C_I = COPEC concentration in benthic invertebrate (mg/kg)

C_{IW} = COPEC concentration in interstitial water (mg/L)

BCF_{WI} = Water-to-invertebrate bioconcentration factor (L/kg)

Equation 2: Calculation of a COPEC concentration in interstitial water from soil or sediment (US EPA, 1999):

$$C_{IW} = \frac{C_S}{f_{oc} \times K_{oc}}$$

where:

- C_{IW} = COPEC concentration in interstitial water (mg/L)
- C_S = COPEC concentration in soil or sediment (mg/kg)
- f_{oc} = Fraction of organic carbon in soil or sediment (unitless)
- K_{oc} = Organic carbon partitioning coefficient (L/kg)

Equation 3: Terrestrial plant concentration due to root uptake (OEPA, 2008; US EPA, 1999):

$$C_{TP} = C_S \times BCF_{TP} \times CF \quad \text{for organics: } C_{TP} = C_S \times \left(\frac{10^{1.588}}{K_{ow}^{0.578}} \right) \times CF$$

where:

- C_{TP} = COPEC concentration in terrestrial plants (mg/kg)
- C_S = COPEC concentration in soil (mg/kg)
- BCF_{TP} = Soil to plant bioconcentration factor (unitless)
- CF = Dry weight to wet weight conversion factor (0.12)
- K_{ow} = Octanol water partitioning coefficient (unitless)

Equation 4: COPEC concentration in fish (US EPA, 1999):

$$C_F = BCF_F \times FCM \times C_W$$

where:

- C_F = COPEC concentration in fish (mg/kg)
- BCF_F = Water-to-fish bioconcentration factor (L/kg)
- FCM = Food chain multiplier (unitless) (US EPA, 1999, Table 5-2). The food chain multiplier for inorganics and the secondary trophic level (prey fish) is equal to 1
- C_W = Dissolved COPEC concentration in water (mg/L)

Equation 5: Modeling COPEC dose for herbivorous birds and mammals (adapted from US EPA, 1999):

$$ADD_H = [(C_P \times IR_F \times F_P) + (C_S \times IR_F \times F_S) + (C_{SW} \times IR_{SW})] \times AUF/BW$$

where:

ADD_H = Average daily dose for herbivores (mg/kg-d)
 C_P = COPEC concentration in plant matter (mg/kg)
 IR_F = Food ingestion rate (kg/d)
 F_P = Fraction of diet comprised of plant matter (unitless)
 C_S = COPEC concentration in sediment/soil (mg/kg)
 F_S = Fraction of diet comprised of sediment/soil (unitless)
 C_{SW} = COPEC concentration in plant matter (mg/kg)
 IR_{SW} = Food ingestion rate (kg/d)
 AUF = Area use factor (unitless)
 BW = Body weight (kg)

Equation 6: Modeling COPEC dose for omnivorous birds and mammals (adapted from US EPA, 1999):

$$ADD_O = [(C_P \times IR_F \times F_P) + (C_A \times IR_F \times F_A) + (C_S \times IR_F \times F_S) + (C_{SW} \times IR_{SW})] \times AUF/BW$$

where:

ADD_O = Average daily dose for omnivores (mg/kg-d)
 C_P = COPEC concentration in plant matter (mg/kg)
 IR_F = Food ingestion rate (kg/d)
 F_P = Fraction of diet comprised of plant matter (unitless)
 C_A = COPEC concentration in sediment/soil (mg/kg)
 F_A = Fraction of diet comprised of prey animal (unitless)
 C_A = COPEC concentration in prey animal (mg/kg)
 F_S = Fraction of diet comprised of sediment/soil (unitless)
 C_{SW} = COPEC concentration in plant matter (mg/kg)
 IR_{SW} = Food ingestion rate (kg/d)
 AUF = Area use factor (unitless)
 BW = Body weight (kg)

Equation 7: Modeling COPEC dose for carnivorous birds and mammals (adapted from US EPA, 1999):

$$ADD_C = [(C_A \times IR_F \times F_A) + (C_S \times IR_F \times F_S) + (C_{SW} \times IR_{SW})] \times AUF/BW$$

where:

ADD_C = Average daily dose for carnivores (mg/kg-d)
 IR_F = Food ingestion rate (kg/d)
 C_A = COPEC concentration in sediment/soil (mg/kg)
 F_A = Fraction of diet comprised of prey animal (unitless)
 C_S = COPEC concentration in prey animal (mg/kg)
 F_S = Fraction of diet comprised of sediment/soil (unitless)
 C_{SW} = COPEC concentration in plant matter (mg/kg)
 IR_{SW} = Food ingestion rate (kg/d)
 AUF = Area use factor (unitless)
 BW = Body weight (kg)

3.6 Bioconcentration and Bioaccumulation

Bioconcentration describes an increase in chemical concentration in an organism from direct exposure to an environmental media. The bioconcentration factor (BCF) is the ratio of chemical concentration in an organism to the concentration in its environment. Bioaccumulation is the increase in chemical concentration in an organism from both direct exposure and consumption of prey or food items containing the chemical. The bioaccumulation factor (BAF) is identical to the BCF, except that it recognizes the accumulation is from ingestion as well as direct contact.

Field and laboratory bioaccumulation studies are the most common methods for deriving site-specific BAFs. Laboratory studies are usually performed on smaller prey species such as invertebrates or minnows. Tissue samples from bioaccumulation studies provide a direct measure of chemical uptake at the site. These BAFs can also be used in modeling tissue concentrations for higher trophic levels or protected species.

Bioaccumulation studies in Florida follow the methodology outlined in *A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems, Volume III* (MacDonald and Ingersoll, 2002). Recommended bioaccumulation test methods are published in a memorandum available from the Florida Department of Environmental Protection (http://www.dep.state.fl.us/waste/quick_topics/publications/documents/ToxicityTestMethodsJune242004.pdf). These studies are approximately 28 days in length.

4. Tier III – Highly Specialized or Long-Term Site-Specific Investigations

4.1 Developing Toxicity Reference Values

The US Army Center for Health Promotion and Preventative Medicine (CHPPM) published a standard practice for the development of wildlife toxicity reference values (TRVs) in 2000. This guidance describes an accepted methodology for performing a literature search, identification of relevant studies, and preparation of a toxicity profile. We recommend using this guidance as a reference for the initial phase of TRV

development. When all of the relevant toxicity data are compiled, a TRV can be derived. Approaches to the derivation of a TRV are discussed below.

4.1.1 Point of Departure Approach

When dose-response data are available for one or more species, a point of departure (POD) can be used to develop the TRV. Ideally, the POD would be derived using a benchmark dose (BMD) approach. If the dose-response data are not available to derive a BMD or if the data do not adequately fit the models, then the no observable adverse effect level (NOAEL) and lowest observable adverse effect level (LOAEL) can be used to derive TRVs.

In the BMD approach, the dose-response curve is utilized to derive a BMD. The BMD is defined as the dose that represents a 10% response in the population (ED_{10}). The lower 95% confidence limit on the BMD (BMDL) is selected as the TRV. The BMD approach can be used on a single toxicity study (Figure 3) or combined toxicity data from several species (Figure 4). Combining toxicity data should be used when single species data are limited or when a more general TRV is desired (e.g., use of several fish species to represent finfish sensitivity). It is important to note that the more varied the toxicity data are among species, the less likely a combined dose-response curve will estimate a valid BMD since the variability decreases the fit of the model and confidence in the BMD.

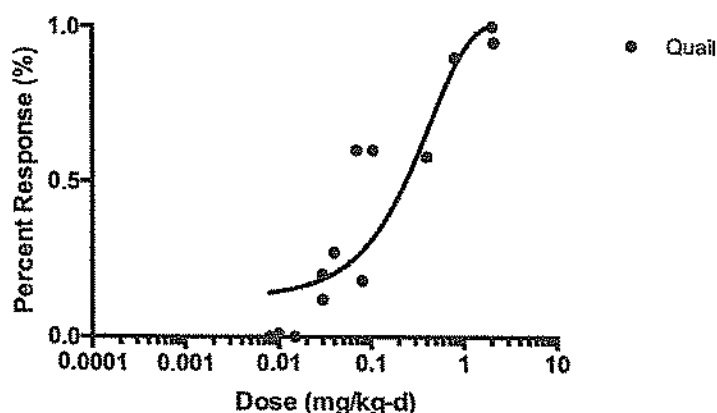


Figure 3 – Single species dose-response curve

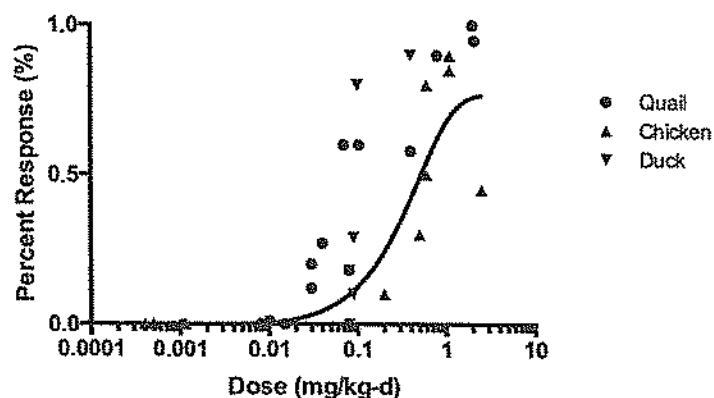


Figure 4 – Multi species dose-response curve

The NOAEL/LOAEL approach is the less preferred approach because it does not utilize the entire dose-response curve and is dependent on the doses chosen for the toxicity study. This approach produces two TRVs – the TRV_{NOAEL} and the TRV_{LOAEL} . The TRV_{LOAEL} is the lowest bounded LOAEL associated with effects on growth, reproduction, and mortality endpoints. The TRV_{NOAEL} is defined as the highest bounded NOAEL lower than the TRV_{LOAEL} for the same population endpoints (CHPPM, 2000). The US EPA utilized the NOAEL/LOAEL approach to derive NOAEL-based TRVs for the ecological soil screening levels.

4.1.2 Species Sensitivity Distributions

Species sensitivity distributions are utilized to derive a TRV protective of communities rather than individual species. The distribution is created by plotting the concentration for a specific endpoint (e.g., EC_{10} , IC_{25} , LC_{50}) for multiple species on a cumulative distribution plot (Figure 5). The distribution helps determine the range of sensitivities for representative species in the ecosystem and results in a TRV protective of the entire community. The 5th percentile concentration on the distribution is selected as the TRV and is considered protective of 95% of the species at the site. Species not represented in the distribution may or may not be protected at this TRV.

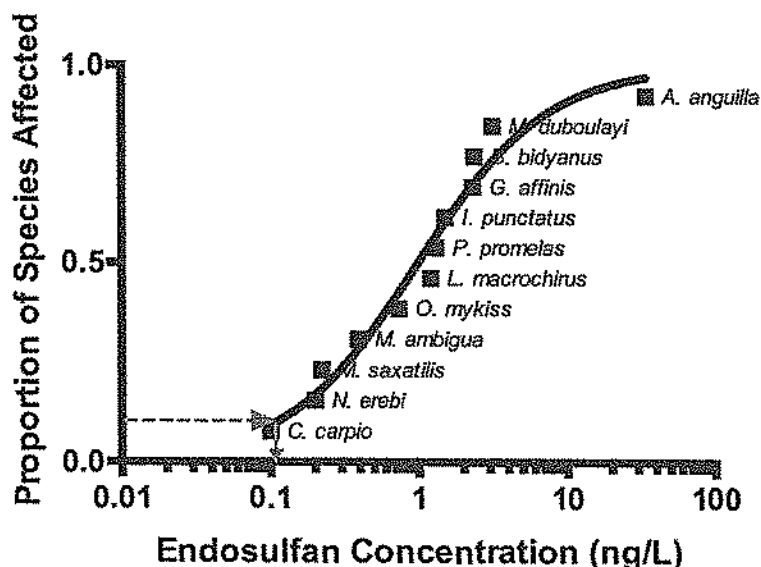


Figure 5 – Freshwater fish species sensitivity distribution for acute exposure to endosulfan (96-hour LD_{50} values). The 5th percentile of this distribution (the concentration where 5% of the species are affected) is approximately equal to 0.1 ng/L. data source: CCME, 2010

4.1.3 Extrapolation of the TRV to Florida-Specific Receptors

Because test species do not usually match the species present at a site, TRVs may need to be extrapolated to protect Florida species. Allometric scaling or the application of uncertainty factors may be used to adjust the TRV. TRVs should not be extrapolated across taxonomic class (e.g., mammals to birds) with the exception of the extrapolation of an avian TRV to reptiles when an endangered species is exposed and reptile toxicity information is nonexistent.

4.1.3.1 Allometric Scaling

Allometric scaling accounts for different body weights between the test species and the species of concern. For birds, the scaling factor is not significantly different from 1 and no adjustment is needed. For mammals, it can be calculated based on the following equation:

$$NOAEL_F = NOAEL_T \times \left(\frac{BW_T}{BW_F} \right)^{\frac{1}{4}}$$

where:

$NOAEL_F$ = NOAEL for a Florida species

$NOAEL_T$ = NOAEL for a test species

BW_F = body weight of a Florida species

BW_T = body weight of a test species

4.1.3.2 Uncertainty Factors

Uncertainty factors (UFs) can be utilized to account for uncertainty in extrapolation between endpoints and exposure duration. Uncertainty factors relevant to the derivation of ecological TRVs include (CHPPM, 2000; US EPA, 1999):

1. A UF of 10 is applied to extrapolate a LOAEL to a NOAEL.
2. A UF of 10 is applied to extrapolate from a subchronic to chronic exposure duration.
3. A UF of 100 is applied to extrapolate an acute lethal value (e.g., LC_{50}) to a NOAEL.

4.2 Biological Surveys

Biological surveys compare communities and populations from a contaminated area to those in a reference area. In order for the variation between the site and reference metrics to be representative of the effects of exposure, the reference properties must be stable and consistent across similar uncontaminated areas (Suter, 2007). Biological surveys help determine if a community or population is impaired from exposure to one or more contaminants. Because they include stressors and exposures that may not be apparent, the cause for a change in community metric is not always clear. If biological survey data show a statistically significant decrease of 20% or more in abundance, production, or diversity, the decrease is considered ecologically significant and will likely result in adverse effects at the population level. If statistically significant effects are noted with less than a 20% decrease in community metrics, the effects are not likely to cause a decline in the population over time. Methodologies for biological community sampling in Florida are described in standard operating procedure FS 7000 (FDEP, 2008)

4.3 Toxicity Testing

Site-specific toxicity testing includes both field and laboratory studies and can be performed for any media that represents an exposure concern. In the State of Florida, toxicity testing is primarily used to estimate the toxicity of sediments at sites where bioavailability or the presence of multiple contaminants is of concern. Whole-sediment and pore-water toxicity testing in Florida follows the methodology outlined in *A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems, Volume III* (MacDonald and Ingersoll, 2002). Recommended toxicity test methods are published in a memorandum available at http://www.dep.state.fl.us/waste/quick_topics/publications/documents/ToxicityTestMethodsJune242004.pdf from the Florida Department of Environmental Protection. Toxicity testing for 10-14 days is considered an acute exposure while 28-60 days is considered chronic exposure. Acute exposure principally measures survival. Although growth is sometimes reported, it is not a sensitive endpoint due to the short exposure period. Chronic exposure periods are sensitive indicators of toxicity for growth, emergence, and reproduction endpoints (MacDonald and Ingersoll, 2002).

Florida-specific recommendations on toxicity testing are not available for soil. However, methodologies for soil toxicity testing are summarized in *Soil Toxicity and Bioassessment Test Methods for Ecological Risk Assessment* (CalEPA, 2009). Similar to biological surveys, a statistically significant decrease of 20% or more in survival, growth, or reproduction is considered ecologically significant and will likely result in adverse effects at the population level. If statistically significant effects are noted with less than a 20% decrease in toxicity metrics, the effects are not likely to cause a decline in the population over time.

4.4. Probabilistic Ecological Risk Assessment

If ecological risk estimates are significantly below or above the level of concern, the improvement in risk characterization created by a probabilistic risk assessment (PRA) are not likely to aid risk managers in decision making. The PRA is most useful when risks are at or near the level of concern. The methodology for performing a PRA in ecological risk assessment is similar to the methodology utilized in human health PRAs and is summarized in RAGS 3A (US EPA, 2001). A probability distribution function (PDF) can be defined for any exposure variable in the equation as long as sufficient data exist to support the distribution. The result of the analysis is a distribution of risk (represented by the hazard quotient) that would be expected in the population of concern.

Another use of ecological PRA is to compare the cumulative distribution of exposure concentrations to the species sensitivity distribution (Figure 6). This provides a quantitative estimate of the percentage of species at the site expected to exceed their TRV at a specified percentile on the exposure distribution (US EPA, 2001). For example, in Figure 6, the 90th percentile concentration at the site is equivalent to the 19th percentile on the species sensitivity distribution. This suggests that, for 90% of the affected area, 19% of the species (or less) will be adversely impacted by the exposure.

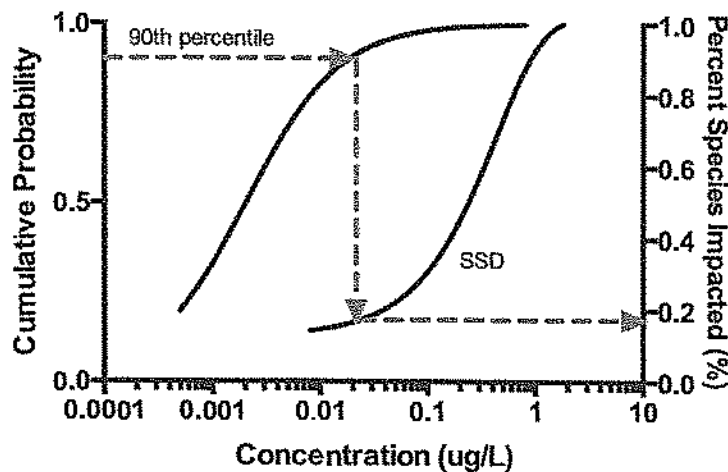


Figure 6 – Use of probabilistic risk assessment to determine the percent of species at risk. In this example, the site-specific 90th percentile chemical concentration in surface water is equivalent to the 19th percentile on the species sensitivity distribution (SSD).

5. Risk Characterization

Risk characterization utilizes dose and exposure estimates to evaluate the likelihood and severity of adverse effects from exposure to contaminants. It includes a quantitative and qualitative evaluation of the risk results. To be useful for informing risk management decisions, the risk characterization should directly relate to the assessment endpoint. Common methodologies utilized for the characterization of risk are described below.

5.1 Hazard quotient & Hazard Index

The hazard quotient is the ratio of the predicted exposure to an effect level. It is calculated as:

$$HQ_{NOAEL} = \text{Dose} / TRV_{NOAEL}$$

$$HQ_{LOAEL} = \text{Dose} / TRV_{LOAEL}$$

where:

TRV_{NOAEL} = toxicity reference value for the NOAEL (mg/kg-d)

TRV_{LOAEL} = toxicity reference value for the LOAEL (mg/kg-d)

HQ_{NOAEL} = hazard quotient for the NOAEL

HQ_{LOAEL} = hazard quotient for the LOAEL

Dose = estimated dose in mg/kg-d

If the hazard quotient exceeds 1, then the TRV is exceeded and adverse effects may occur. If the hazard quotient is less than 1, the estimated dose is less than the TRV and adverse effects are not expected.

5.2 Additivity

When chemical mixtures are present, additivity is used to estimate the total risk of exposure. There are two types of additivity: dose additivity and response additivity. Dose additivity is used in the calculation of toxic equivalents (TEQs) for chemicals with the same mode of action. Calculation of a hazard index is an example of response additivity. A hazard index is the sum of hazard quotients across all chemicals affecting the same organ system.

5.2.1 Response Additivity

The hazard index is calculated as:

$$HI_i = \sum HQ_x$$

where:

HI_i = hazard index for an organ system i

HQ_x = hazard quotient for exposure to a chemical that affects organ system i

If the hazard index exceeds 1, then the TRV is exceeded and adverse effects may occur. If the hazard index is less than 1, the total estimated dose is less than the TRV and adverse effects are not expected.

5.2.2 Dose Additivity

Dose additivity is most commonly utilized when toxic equivalencies are available for congeners of a parent chemical. In ecological risk assessment, dose additivity is utilized to calculate dioxin TEQs. The World Health Organization has adopted toxic equivalency factors (TEFs) for dioxin and dioxin-like PCBs in mammals, birds, and fish (Table 1). The TEFs are multiplied by the concentration of each detected congener to estimate an equivalent concentration of 2,3,7,8-TCDD. The 2,3,7,8-TCDD equivalent concentrations are added, resulting in a total equivalent 2,3,7,8-TCDD concentration (or dose).

5.3 Weight of Evidence

The weight of evidence approach relates multiple measurement endpoints to an assessment endpoint to determine if ecological risk is of concern (Simini et al., 2000). Measurement endpoints are considered multiple lines of evidence used to determine the likelihood and ecological significance of the exposure on the assessment endpoint. For the weight of evidence approach, a weight is assigned to each measurement endpoint depending on the severity and relevance of the endpoint. Professional judgment is often used to assign relative weights to each endpoint. Due to the subjectivity inherent in this method, it is preferable to establish criteria for interpreting the results before sampling takes place. This methodology incorporates uncertainty in a qualitative manner by comparing slight versus significant responses and lack of effect in assessment endpoints.

Table 1 – Toxic equivalency factors for dioxin and dioxin-like PCBs

Congener	Toxic Equivalency Factors		
	Mammals	Birds	Fish
Dioxins			
2,3,7,8-TCDD	1	1	1
1,2,3,7,8-PeCDD	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.05	0.5
1,2,3,6,7,8-HxCDD	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01
1,2,3,4,6,7,8-HpCDD	0.01	<0.001	0.001
OCDD	0.003	0.0001	<0.0001
Furans			
2,3,7,8-TCDF	0.1	1	0.05
1,2,3,7,8-PeCDF	0.03	0.1	0.05
2,3,4,7,8-PeCDF	0.3	1	0.5
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01
OCDF	0.0003	0.0001	<0.0001
Non-ortho PCBs			
3,3',4,4'-TCB (77)	0.0001	0.05	0.0001
3,4,4',5-TCB (81)	0.0003	0.1	0.0005
3,3',4,4',5-PeCB (126)	0.1	0.1	0.005
3,3',4,4',5,5'-HxCB (169)	0.03	0.001	0.005
Mono-ortho PCBs			
2,3,3',4,4'-PeCB (105)	0.0003	0.0001	<0.000005
2,3,4,4',5-PeCB (114)	0.0003	0.0001	<0.000005
2,3',4,4',5-PeCB (118)	0.0003	0.00001	<0.000005
2',3,4,4',5-PeCB (123)	0.0003	0.00001	<0.000005
2,3,3',4,4',5-HxCB (156)	0.0003	0.0001	<0.000005
2,3,3',4,4',5'-HxCB (157)	0.0003	0.0001	<0.000005
2,3',4,4',5,5'-HxCB (167)	0.0003	0.00001	<0.000005
2,3,3',4,4',5,5'-HeCB (189)	0.0003	0.00001	<0.000005

source: (Van den Berg et al., 2006; Van den Berg et al., 1998)

Florida utilizes a weight of evidence approach for interpreting sediment quality (MacDonald and Ingersoll, 2002). The sediment quality triad evaluates sediment chemistry, toxicity testing, and benthic assessment results to determine whether impacts to the benthic community are likely. The contingency table for this weight of evidence approach is shown in Table 2. Determining outcomes before sampling ensures that data interpretation is objective and independent of the results.

Table 2 – Contingency table for assessing impacts to aquatic life based on the sediment quality triad

Sediment Chemistry	Toxicity Test	Benthic Community	Possible Conclusions
+	+	+	Impact highly likely
-	-	-	Impact highly unlikely
+	-	-	Impact unlikely
-	+	-	Impacts possible
-	-	+	Impacts unlikely
+	+	-	Impact likely
-	+	+	Impact likely
+	-	+	Impact likely

source: (MacDonald and Ingersoll, 2002)

6. Uncertainty Analysis

Uncertainty should be addressed and analyzed for all phases of the ecological risk assessment. The uncertainty analysis summarizes the assumptions utilized for the assessment and evaluates the validity of those assumptions. When possible, the uncertainty in the risk estimate should be quantitatively evaluated using alternate risk calculations. Major sources of uncertainty include:

- Conceptual site model – exposure pathways, chemicals of concern, exposed ecological receptors
- Incomplete or missing data – causes parameter uncertainty when estimating chemical concentrations or exposure factors
- Modeling/extrapolation – modeling and extrapolation may not represent site-specific conditions.
- Sampling and laboratory error

7. References

- ASTM (2009) *Standard Guide for Risk-Based Corrective Action for Protection of Ecological Resources*. West Conshohocken, PA, E2205/E2205M-02 (Reapproved 2009).
- California Environmental Protection Agency (CalEPA) (2009) *Soil Toxicity and Bioassessment Test Methods for Ecological Risk Assessment*. Integrated Risk Assessment Branch, Office of Environmental Health Hazard Assessment.
- Canadian Council of Ministers of the Environment (CCME) (2010) *Canadian Water Quality Guidelines for the Protection of Aquatic Life: Endosulfan*.
- CHPPM (2000) *Standard Practice for Wildlife Toxicity Reference Values*. Environmental Health Risk Assessment Program, Health Effects Research Program, Technical Guide No. 254, Aberdeen Proving Ground, MD.
- HydroQual, Inc. (2007) *Biotic Ligand Model, User's Guide and Reference Manual*. Mahwah, NJ.

- ITRC (2011) *Incorporating Bioavailability Considerations into the Evaluation of Contaminated Sediment Sites*. Interstate Technology & Regulatory Council, Contaminated Sediments Team, Washington, DC.
- MacDonald, D.D. and Ingersoll, C.G. (2002) *A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems, Volume III – Interpretation of the Results of Sediment Quality Investigations*. US Environmental Protection Agency, Great Lakes National Program Office, Chicago, IL, EPA-905-B02-001-C.
- Ohio Environmental Protection Agency (OEPA) (2008) *Ecological Risk Assessment Guidance Document*. Division of Environmental Response and Revitalization, Columbus, OH.
- Simini, M., Checkai, R.T., and Maly, M.E. (2000) *Tri-Service Remedial Project Manager's Handbook for Ecological Risk Assessment*.
- Suter II, G.W., ed. (2007) *Ecological Risk Assessment*. Second edition, CRC Press, Boca Raton, FL, pg. 347-356.
- US ACE (2011) *Tri-Service Position Paper on Background Levels in Risk Assessment*. Environmental and Munitions Center of Expertise, Omaha, NE.
- US EPA (1997) *Ecological Risk Assessment Guidance for Superfund*. Solid Waste and Emergency Response, Washington, DC, EPA 540-R-97-006.
- US EPA (1999) *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Volume One*. Office of Solid Waste, Washington, DC, EPA 530-D-99-001A.
- US EPA (2001) *Risk Assessment Guidance for Superfund: Volume III – Part A, Process for Conducting Probabilistic Risk Assessment*. Office of Emergency and Remedial Response, Washington, DC, EPA 540-R-02-002.
- US EPA (2007) *Framework for Metals Risk Assessment*. Office of the Science Advisor, Risk Assessment Forum, Washington, DC, EPA 120/R-07/001.
- Van den Berg, M, Birnbaum, L, Bosveld, ATC, et al. (1998) Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. *Environmental Health Perspectives* **106**(12), 775-792.
- Van den Berg, M, Birnbaum, LS, Denison, M, et al. (2006) The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds. *Toxicological Sciences* **93**(2), 223-241.

**Guidance for
Comparing Background and Site Chemical Concentrations
in Groundwater**

**Florida Department of Environmental Protection
Division of Waste Management
Office of District & Business Support
Tallahassee, FL**

July 2013

Overview

The purpose of this guidance is to describe procedures acceptable to the Florida Department of Environmental Protection (FDEP) for the comparison of site contaminant levels to background concentrations in groundwater. An evaluation of local background concentrations is appropriate at a cleanup site whenever it is suspected that certain contaminants detected above applicable cleanup criteria may be equal to, or less than, natural background concentrations. Some chemicals, such as inorganics and radionuclides, are present naturally in groundwater or may be introduced as contaminants. If they are present from a chemical release and exceed risk-based criteria, cleanup or other risk management measures are typically required. If the chemical is present due to natural conditions, cleanup is not needed under current rules, even if the concentrations exceed risk-based criteria. Consequently, it is important in the management of a number of sites to determine whether or not the presence of a chemical represents natural background conditions.

Some chemicals, both man-made and natural, can be enriched in area groundwater due to human activities not associated with a specific release of contaminants. An example of this would be pesticides and nitrate associated with agricultural activity. Low levels that exist in the environment due to an area wide application of these chemicals are termed anthropogenic background. Current statutes and rules in Florida do not recognize comparisons with anthropogenic background concentrations as a basis to eliminate a chemical as being of concern for a site. However, when delineating the boundaries of contamination attributable to a release, anthropogenic background concentrations become important. They are used to help establish the area where liability for cleanup exists. The procedures described in this guidance are also useful in this context (i.e., for comparing site with anthropogenic background), despite the somewhat different objective from comparisons with natural background.

Note that this guidance presents some alternatives for demonstrating background conditions when it is believed that some of the chemicals found on-site are not site related but rather are due to either natural or anthropogenic background. If background is only being obtained to satisfy the rule requirements for site assessment (e.g., rule 62-780.600(3)(d) Florida Administrative Code (F.A.C.) then it generally will not be necessary to present the level of information described in this guidance. A much reduced data set, potentially a single sample from a single well, can be used to satisfy this rule requirement. This single background well and sample could also be adequate to establish whether or not site groundwater qualifies as Poor Quality as defined by 62-780.200(35), F.A.C.

Decision to Perform Background Sampling

Background analysis should be conducted in the early stage of the site investigation process. Typically, an environmental site investigation is conducted in response to a known or suspected release of contaminants. The media sampled, and the analytical tests performed, are based on the history of site utilization or knowledge of specific contaminants released. This initial screening for contaminants may identify one or more naturally occurring constituents in site groundwater that show concentrations above applicable cleanup target levels. In shallow groundwater in Florida, metals such as aluminum, iron and manganese are frequently present in dissolved form

at concentrations above groundwater cleanup criteria. If such naturally occurring constituents are detected above screening criteria, but suspected to be representative of local background concentrations, then an analysis can be performed to support that claim and avoid further site assessment or cleanup.

Location and Number of Samples

Typically, background sampling well locations should be as geographically close to the corrective action site as possible, but not in the area(s) suspected to have been impacted by the site or other non-site related activities. Wells installed for use in determining background water quality should be located outside impacted aquifer zones of known or suspected contaminant source areas. Background samples may be collected from unimpacted areas of the study site, or from areas adjacent to the site, if appropriate. When collecting background samples from on-site locations, plume concentration gradients may be useful in determining appropriate sampling locations. Samples collected during the contamination assessment phase may be used in the background study if it is confirmed by plume concentration gradients, and additional background sampling results, that the samples were collected from unimpacted areas and are, therefore, indicative of natural background concentrations. Background data from similar and nearby sites may also be used if those data were collected using standard sampling protocols comparable to that of the site characterization sampling.

Wells used to establish background conditions should be located up-gradient or side-gradient to the investigation site. The well screen interval(s) need to be comparable with those that establish onsite groundwater quality. In Florida this usually assures that groundwater samples are being taken from the same aquifer zones. The actual number of groundwater samples needed to establish site specific background can vary considerably depending on the selected basis upon which background concentrations are derived. A minimum of three groundwater wells sampled quarterly for one year per impacted aquifer zone is a good rule-of-thumb for background sampling. This accounts for both spatial and seasonal variation, and provides at least 12 values for data analysis. The Department may require additional samples above this suggested minimum number on a case-by-case basis.

Concentrations from background studies published in the literature cannot be used as the basis of comparison with site concentrations. However, published background studies may be of value in determining whether or not a site-specific background data set lies within the range of observations by others. If it does not, the validity of the site-specific background data set may need to be evaluated. Also, in measuring chemical concentrations in background samples, the same analytical methods used for the investigation source area samples should be employed.

Simple Approach for Comparing Site and Background Data

For most sites, a determination of whether site concentrations represent background conditions can be made without using statistical tests. The basic approach is to define the upper end of the range of background concentrations as the lower of:

- 1) the maximum background concentration, or
- 2) twice the mean background concentration.

The maximum concentration in the site impacted groundwater zone is compared with this upper limit on background. If the maximum concentration is less than or equal to this upper background limit, the chemical can be considered to be background and removed from further consideration in any risk assessment or site remediation decisions. If site concentrations are above background, and background concentrations are above risk-based criteria, cleanup to background levels only may be warranted. In this situation, the site-specific upper limit on background (i.e., the lower of the maximum or twice the mean background concentration) can be used as a not-to-exceed cleanup criterion. That is, removal or management of all concentrations above this value will be considered to have restored the site to background conditions with respect to a given contaminant.

Statistical Approach for Comparing Site and Background Data

As an alternative, and if sufficient data are available, statistical methods offer a stronger, more robust method of comparing site and background data. Unless a compelling case can be made for a parametric test, non-parametric approaches should be used. The WRS test is recommended for use in site-to-background comparisons when the site and background data sets contain no more than 40% non-detect values in the sampling results (EPA, 2002). The WRS test compares two data sets of size n and m ($n > m$), and tests the null hypothesis that the samples were drawn from populations with distributions having the same medians, and is not performed on data sets having less than four detected concentrations. The USEPA guidance (EPA, 2002) listed below provides instruction on how to compare sampling data sets using the background "Test Form 2" which begins with a null hypothesis (H_0) that states "The site distribution exceeds the background distribution by more than a substantial difference". The following points must be considered in applying this guidance:

- FDEP requires at a minimum the use of Test Form 2 of the statistical test described in USEPA guidance cited above. This form tests the null hypothesis that the mean chemical concentration of site samples exceeds background by more than a specified concentration level. Test Form 1 of the null hypothesis may also be included as additional information. Test Form 1 employs the null hypothesis that the mean chemical concentration of site samples does not exceed background.
- In general, a *minimum* of 15 samples from separate wells for both the background and contaminated site data sets is required. Greater numbers of samples may be needed, depending in part upon the confidence and power desired in the analysis. Default confidence and power specifications can be found in the USEPA guidance cited above.
- Form 2 of the test requires specification of a "substantial difference" (S). The substantial difference is the value above which a sample is no longer considered a result of variation in background concentrations and is deemed contaminated. There are several ways to derive S, as summarized in Appendix A of the USEPA guidance. At present, S derived using any of the methods described in Appendix A will be accepted.

- Tests should be conducted as “one-tailed”. Critical values for a one-tailed WRS test (Test Form 2) are calculated using the following equation:

$$W_{crit} = \frac{n_B(N+1)}{2} + z_\alpha \left[\frac{n_S n_B (N+1)}{12} \right]^{1/2}$$

where W_{crit} is the critical value for the WRS test, n_S is the number of measurements in the site sample, n_B is the number of measurements in the background sample, $N = n_S + n_B$, and z_α is the $100(1 - \alpha)^{\text{th}}$ percentile of the standard normal distribution. A table of common z_α values is included below:

Confidence Level (α)	z_α value
0.20	0.842
0.15	1.039
0.10	1.282
0.05	1.645
0.01	2.326

- For “non-detect” background samples, one-half the detection limit should be used as a surrogate value.¹
- As with non-statistical approaches, comparisons should be made between site and background groundwater from the same aquifer zone.
- The background data set should be examined carefully for the presence of outliers, i.e., data that may not in fact represent background conditions. Formal outlier tests as well as professional judgment can be used in evaluating the background data set.

Under extraordinary circumstances, there are alternative approaches that may be of value. Before using any alternative approaches in comparing site and background data sets, it is advisable to consult the Department and gain approval in advance.

References:

Department of the Navy (DON), 2004, *Guidance for Environmental Background Analysis, Volume III: Groundwater*. NFESC User's Guide UG-2059-ENV. Naval Facilities Engineering Command. April.

¹ The US EPA recommends using zero as a surrogate for “non-detect” values. This guidance suggests the use of one-half the detection limit to be consistent with FDEP convention. Substitution of non-detects with surrogate values instead of interpolating the values may raise some statistical issues. However, substitution is suggested here for simplicity.

- U.S. Environmental Protection Agency (EPA), 2000, *Guidance for Data Quality Assessment: Practical Methods for Data Analysis*, EPA QA/G-9, QA00 Update, Office of Environmental Information, EPA/600/R-96/-84, July.
- U.S. Environmental Protection Agency (EPA), 2002, *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*, Office of Emergency and Remedial Response, EPA 540-R-01-003, September.

Selected Solid Waste Facilities
to be Permitted in Tallahassee Beginning in 2013

Starting on January 1, 2013, new permit applications for several solid waste facility types in the state will be processed by staff in Tallahassee instead of the Department's District offices. Existing applications that were submitted previously will continue to be processed by District office staff members who are already familiar with those pending applications.

The purpose of this change is to provide a single office in Tallahassee which will increase consistency in the way applications are processed for the centralized facilities, regardless of where they are located in the state. New permit applications for centralized facilities, include all their construction, operation and closure permits and all their major, intermediate and minor modifications that are submitted after January 1, 2013. The solid waste facilities that are currently included in this centralization are shown on this [spreadsheet](#).

In general, the criteria for solid waste facilities that are to be processed in Tallahassee are as follows.

- All Class I landfills, having or requiring permits, and any other solid waste facilities co-located at those Class I landfills.
- All coal ash disposal facilities requiring a solid waste permit or covered under the Power Plant Siting Act (PPSA). In the case of facilities certified under the PPSA, the Tallahassee office will provide comments on changes to the appropriate Certifications to the Department's Siting Office in Tallahassee.
- All waste to energy (WTE) disposal facilities requiring a solid waste permit or covered under the Power Plant Siting Act (PPSA). In the case of facilities certified under the PPSA, the Tallahassee office will provide comments on changes to the appropriate Certifications to the Department's Siting Office in Tallahassee.

Solid waste facilities for which permit applications will continue to be processed by the District offices are as follows.

- Any facilities with solid waste permits but not meeting the criteria to be included as described above, e.g., Class III landfills, construction and demolition debris disposal facilities and transfer stations not co-located at permitted Class I landfills.
- Any solid waste facilities managed by Local Programs under a delegation agreement with the Department.
- Any solid waste activities regulated by an Industrial Waste permit rather than a Solid Waste permit.
- Closed solid waste facilities that no longer have solid waste permits and have completed long-term care.

- Closed solid waste facilities that do not have solid waste permits but have ground water monitoring or cleanup addressed by another Department program such as the Waste Cleanup Section under an Order or requirements of Chapter 62-780, F.A.C.
- Other solid waste facilities selected on a case-by-case basis to stay in the District offices for permitting such as closed landfills that do have solid waste permits but are very near the end of their permitted long-term care period.

After January 1, 2013, applications for new permits, renewals, or permit modifications at centralized facilities should be submitted to:

Richard B. Tedder, P.E.
Solid Waste Section, Department of Environmental Protection
2600 Blair Stone Road, MS # 4565
Tallahassee, Florida 32399

In accordance with Rule 62-701.320(5), F.A.C., permittees should send four copies of the application to the Department. Historically this has been interpreted as four paper copies of the permit application. However, the Department is transitioning to a paperless process for processing permit applications and intends to modify Chapter 62-701, F.A.C. to update the application submittal requirements. Until then, the Department is requesting that applicants submit one hard copy of the application, drawings and supporting documentation and one electronic copy, in Adobe Acrobat PDF file format, of the application, drawings and supporting documentation to the Tallahassee office. Since the electronic copy is easily duplicated, it will be considered to satisfy the rule requirement for the additional two copies.

If there are any questions on the upcoming changes and where your solid waste permit applications will be processed, please feel free to contact your local Department District office, or Richard Tedder at richard.tedder@dep.state.fl.us, or Lee Martin at lee.martin@dep.state.fl.us or Mike Dunaway at michael.dunaway@dep.state.fl.us.

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	CLASS TYPE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
16256	BREVARD CENTRAL LANDFILL	BREVARD	CD 100	CLASS I LANDFILL	ACTIVE	2230 ADAMSON ROAD	COCOA	ACTIVE
16451	CAPE CANAVERAL AFS	BREVARD	CD 100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	CONTROL RD	CAPE CANAVERAL	ACTIVE
16451	CAPE CANAVERAL AFS	BREVARD	CD 540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	CONTROL RD	CAPE CANAVERAL	ACTIVE
16451	CAPE CANAVERAL AFS	BREVARD	CD 410	ASBESTOS DISPOSAL FACILITY	ACTIVE	CONTROL RD	CAPE CANAVERAL	ACTIVE
16607	PALM BAY LANDFILL (CLOSED)	BREVARD	CD 100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	CONTROL RD	CAPE CANAVERAL	CLOSED, WITH GW MONITORING
19134	INDIAN RIVER COUNTY LANDFILL	INDIAN RIVER	CD 100	CLASS I LANDFILL	ACTIVE	BABCOCK RD	PALM BAY	ACTIVE
19134	INDIAN RIVER COUNTY LANDFILL	INDIAN RIVER	CD 540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	SOUTH OF OSLO ROAD BETWEEN 138&14TH AVE	VERO BEACH	ACTIVE
19956	CITY OF LEESBURG LANDFILL (CLOSED)	LAKE	CD 520	OLD DUMP	ACTIVE	SOUTH OF OSLO ROAD BETWEEN 138&14TH AVE	VERO BEACH	ACTIVE
19956	CITY OF LEESBURG LANDFILL (CLOSED)	LAKE	CD 100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	NEELY DR, W OF LUCAS	LEESBURG	CLOSED, IN LTC, WITH GW MONITORING
19915	LADY LAKE LANDFILL (CLOSED)	LAKE	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	NEELY DR, W OF LUCAS	LEESBURG	CLOSED, IN LTC, WITH GW MONITORING
19923	LAKE COUNTY CENTRAL LANDFILL	LAKE	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1200 JACKSON STREET	LADY LAKE	CLOSED, IN LTC, WITH GW MONITORING
19923	LAKE COUNTY CENTRAL LANDFILL	LAKE	CD 540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	13130 ASTATULA LANDFILL RD CR 561 4 MI S OF TAVARES	TAVARES	ACTIVE
19949	LAKE COUNTY RESOURCE RECOVERY (COVANTA INC.)	LAKE	CD 820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	13130 ASTATULA LANDFILL RD CR 561 4 MI S OF TAVARES	TAVARES	ACTIVE
19921	LOG HOUSE LANDFILL (CLOSED)	LAKE	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	3930 ROGERS INDUSTRIAL PARK ROAD	OKAHUNPKA	ACTIVE
19921	LOG HOUSE LANDFILL (CLOSED)	LAKE	CD 520	OLD DUMP	CLOSED, IN LTC, WITH GW MONITORING	EAST OF CR 581 ON LOG HOUSE ROAD	CLERMONT	CLOSED, IN LTC, WITH GW MONITORING
19814	UMATILLA LANDFILL (CLOSED)	LAKE	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	EAST OF CR 581 ON LOG HOUSE ROAD	CLERMONT	CLOSED, IN LTC, WITH GW MONITORING
20906	BASELINE LANDFILL CLASS I	MARION	CD 100	CLASS I LANDFILL	ACTIVE	5TH AVE, 1/4 MILE EAST OF SR 450	UMATILLA	CLOSED, IN LTC, WITH GW MONITORING
20906	BASELINE LANDFILL CLASS I	MARION	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	5601 SE 60TH STREET	OCALA	ACTIVE
20906	BASELINE LANDFILL CLASS I	MARION	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	5601 SE 60TH STREET	OCALA	CLOSED, IN LTC, WITH GW MONITORING
20906	BASELINE LANDFILL CLASS I	MARION	CD 760	TRANSFER STATION	INACTIVE	5601 SE 60TH STREET	OCALA	INACTIVE
21847	ORANGE COUNTY LF	ORANGE	CD 100	CLASS I LANDFILL	ACTIVE	12100 YOUNG PINE RD	ORLANDO	ACTIVE
21847	ORANGE COUNTY LF	ORANGE	CD 300	CLASS III LANDFILL	ACTIVE	12100 YOUNG PINE RD	ORLANDO	ACTIVE
21847	ORANGE COUNTY LF	ORANGE	CD 300	CLASS III LANDFILL	CLOSED	12101 YOUNG PINE RD	ORLANDO	CLOSED
21847	ORANGE COUNTY LF	ORANGE	CD 100	CLASS I LANDFILL	CLOSED	12102 YOUNG PINE RD	ORLANDO	CLOSED
21847	ORANGE COUNTY LF	ORANGE	CD 520	OLD DUMP	CLOSED, WITH GW MONITORING	12100 YOUNG PINE RD	ORLANDO	ACTIVE
25470	BASS ROAD LANDFILL	OSCEOLA	CD 100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	750 BASS ROAD SOUTH	KISSIMMEE	ACTIVE
25470	BASS ROAD LANDFILL	OSCEOLA	CD 731	WASTE TIRE COLLECTION CENTER	ACTIVE	761 BASS ROAD SOUTH	KISSIMMEE	ACTIVE
25470	BASS ROAD LANDFILL	OSCEOLA	CD 540	CONSTRUCTION/DEMOLITION DEBRIS	CLOSED, IN LTC, WITH GW MONITORING	750 BASS ROAD SOUTH	KISSIMMEE	ACTIVE
89544	J.E.D LANDFILL (FIKA OAK HAMMOCK DISPOSAL)	OSCEOLA	CD 100	CLASS I LANDFILL	ACTIVE	1501 OMNI WAY	SAINT CLOUD	ACTIVE
89544	J.E.D LANDFILL (FIKA OAK HAMMOCK DISPOSAL)	OSCEOLA	CD 810	MATERIAL RECOVERY FACILITY CLASS I & II	ACTIVE	1502 OMNI WAY	SAINT CLOUD	ACTIVE
89544	J.E.D LANDFILL (FIKA OAK HAMMOCK DISPOSAL)	OSCEOLA	CD 710	WASTE TIRE PROCESSING FACILITY	ACTIVE	1501 OMNI WAY	SAINT CLOUD	ACTIVE

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS, DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
25473	SOUTHPORT RD SLF, PHASE I & II	OSCEOLA	CD	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	3448 E JCT SR531&SOUTHPORT RD	(RURAL)	CLOSED IN LTC, WITH GW MONITORING
25469	ST. CLOUD LANDFILL, CLASS I	OSCEOLA	CD	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	2705 PEGHORN WAY	SAINT CLOUD	ACTIVE
25469	ST. CLOUD LANDFILL, CLASS I	OSCEOLA	CD	750	TRANSFER STATION	ACTIVE	2705 PEGHORN WAY	SAINT CLOUD	ACTIVE
26122	OSCEOLA RD LF (SEMINOLE COUNTY)	SEMINOLE	CD	545	MATERIAL RECOVERY FACILITY C & D	ACTIVE	1930 E OSCEOLA RD	GENEVA	ACTIVE
26122	OSCEOLA RD LF (SEMINOLE COUNTY)	SEMINOLE	CD	100	CLASS I LANDFILL	ACTIVE	1930 E OSCEOLA RD	GENEVA	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
27540	TOMOKA FARMS ROAD LANDFILL	VOLUSIA	CD	300	CLASS I LANDFILL	ACTIVE	1990 TOMOKA FARMS ROAD	PORT ORANGE	ACTIVE
27540	TOMOKA FARMS ROAD LANDFILL	VOLUSIA	CD	100	CLASS I LANDFILL	ACTIVE	1990 TOMOKA FARMS ROAD	PORT ORANGE	ACTIVE
97603	OVC STANTON ENERGY CENTER	ORANGE	CD	421	COAL ASH MONOFILL	ACTIVE (A)	5100 S. ALAFAYA TRAIL	ORLANDO	ACTIVE (A)
29655	ALACHUA CNTY NE	ALACHUA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	2 MILES NE GAINESVILLE AIRPORT	GAINESVILLE	CLOSED, IN LTC, WITH GW MONITORING
29653	ALACHUA CNTY NW	ALACHUA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 235A 3/4 MILES S US 441	ALACHUA	CLOSED, IN LTC, WITH GW MONITORING
29654	ALACHUA CNTY SE	ALACHUA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 29 2.5 MILES W HAWTHORNE	HAWTHORNE	CLOSED, IN LTC, WITH GW MONITORING
29652	ALACHUA COUNTY SOUTHWEST CLOSED CLASS I LF	ALACHUA	NED	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 24 2 MILES W ARCHER	ARCHER	ACTIVE
29652	ALACHUA COUNTY SOUTHWEST CLOSED CLASS I LF	ALACHUA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 24 2 MILES W ARCHER	ARCHER	ACTIVE
29651	ALACHUA NE AUXILIARY	ALACHUA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	NE 69TH AVE 2.5 MILES NE OF AIRPORT	GAINESVILLE	CLOSED, IN LTC, WITH GW MONITORING
30246	BAKER COUNTY CENTRAL LANDFILL LFC1	BAKER	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	588 N MACCLENNEY, IME SR121	MACCLENNEY	CLOSED, IN LTC, WITH GW MONITORING
30314	BRADFORD COUNTY CENTRAL LANDFILL LFC1	BRADFORD	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 100 2.5 MILES S THERESSA	THERESSA	CLOSED, IN LTC, WITH GW MONITORING
30489	CAMP BLANDING CLOSED CLASS I LANDFILL	CLAY	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1 MILE E JUNCTION STATE RD 16 & STATE RD 215	KINGSLEY	CLOSED, IN LTC, WITH GW MONITORING
30490	DOCTOR'S INLET CLOSED CLASS I LANDFILL	CLAY	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1.5 MILES SE JUNCTION STATE RD 220 & STATE RD 224	DOCTORS INLET	CLOSED, IN LTC, WITH GW MONITORING
30491	LONG BAY CLOSED CLASS I LANDFILL	CLAY	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	2.5 MILES NNE JUNCTION STATE RD 215 & STATE RD 218	MIDDLEBURG	CLOSED, IN LTC, WITH GW MONITORING
30521	ROSEMARY HILL SOLID WASTE MGT. FAC. (CLOSED LF'S)	CLAY	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	3545 ROSEMARY HILL ROAD SPRINGS	GREEN COVE SPRINGS	ACTIVE
30521	ROSEMARY HILL SOLID WASTE MGT. FAC. (CLOSED LF'S)	CLAY	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	3545 ROSEMARY HILL ROAD SPRINGS	GREEN COVE SPRINGS	ACTIVE
30521	ROSEMARY HILL SOLID WASTE MGT. FAC. (CLOSED LF'S)	CLAY	NED	200	CLASS II LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	3545 ROSEMARY HILL ROAD SPRINGS	GREEN COVE SPRINGS	ACTIVE
30521	ROSEMARY HILL SOLID WASTE MGT. FAC. (CLOSED LF'S)	CLAY	NED	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	3545 ROSEMARY HILL ROAD SPRINGS	GREEN COVE SPRINGS	ACTIVE
31503	SOLID WASTE MGT. FAC. (CLOSED LF'S)	COLUMBIA	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1347 NW OOSTERHOUDT LN (1/10 1 MILES W WINFIELD)	LAKE CITY	CLOSED, IN LTC, WITH GW MONITORING
31495	WINFIELD WASTE MANAGEMENT FACILITY	COLUMBIA	NED	300	CLASS III LANDFILL	ACTIVE	1347 NW OOSTERHOUDT LANE	LAKE CITY	ACTIVE
31495	WINFIELD WASTE MANAGEMENT FACILITY	COLUMBIA	NED	100	CLASS I LANDFILL	ACTIVE	1347 NW OOSTERHOUDT LANE	LAKE CITY	ACTIVE
31495	WINFIELD WASTE MANAGEMENT FACILITY	COLUMBIA	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	1347 NW OOSTERHOUDT LANE	LAKE CITY	ACTIVE
32131	EAST DUVAL LF CLOSED (AK/A GERVIN RD LF)	DUVAL	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	515 GERVIN RD	JACKSONVILLE	CLOSED, IN LTC, WITH GW MONITORING
35155	JACKSON BROWN INC (FKA - SUNBEAM HILL LF)	DUVAL	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	JUNCTION SUNBEAM RD & CRAVEN RD	JACKSONVILLE	CLOSED, IN LTC, WITH GW MONITORING
32128	NORTH LANDFILL LFC1	DUVAL	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1140S ISI AND DR	JACKSONVILLE	CLOSED, IN LTC, WITH GW MONITORING

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
35916	SOUTHEAST LANDFILL	DUVAL	NED	100	CLASS I LANDFILL	PROPOSED		JACKSONVILLE	PROPOSED
33628	TRAIL RIDGE LANDFILL, INC.	DUVAL	NED	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	5110 US HWY 301	BALDWIN	ACTIVE
33628	TRAIL RIDGE LANDFILL, INC.	DUVAL	NED	100	CLASS I LANDFILL	ACTIVE	5110 US HWY 301	BALDWIN	ACTIVE
36450	BUNNELL, CITY OF (BUNNELL DUAP) LFC1	FLAGLER	NED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	STATE RD 100 2 MILES E BUNNELL	BUNNELL	CLOSED, WITH GW MONITORING
36449	FLAGLER COUNTY CENTRAL LANDFILL LFC1 (OLD KING RD)	FLAGLER	NED	600	OTHER DISPOSAL FACILITY	CLOSED, WITH GW MONITORING	OLD KINGS RD 1 MILE S STATE RD 100	BUNNELL	CLOSED, IN LTC, WITH GW MONITORING
36449	FLAGLER COUNTY CENTRAL LANDFILL LFC1 (OLD KING RD)	FLAGLER	NED	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	OLD KINGS RD 1 MILE S STATE RD 100	BUNNELL	CLOSED, IN LTC, WITH GW MONITORING
36440	FLAGLER COUNTY CENTRAL LANDFILL LFC1 (OLD KING RD)	FLAGLER	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	OLD KINGS RD 1 MILE S STATE RD 100	BUNNELL	CLOSED, IN LTC, WITH GW MONITORING
36719	GILCHRIST COUNTY CENTRAL WASTE MANAGEMENT FACILITY	GILCHRIST	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	1659 NORTHWEST 10TH STREET	BELL	ACTIVE
36719	GILCHRIST COUNTY CENTRAL WASTE MANAGEMENT FACILITY	GILCHRIST	NED	750	TRANSFER STATION	ACTIVE	1659 NORTHWEST 10TH STREET	BELL	ACTIVE
36721	GILCHRIST COUNTY CENTRAL WASTE MANAGEMENT FACILITY	GILCHRIST	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1659 NORTHWEST 10TH STREET	BELL	ACTIVE
36719	GILCHRIST COUNTY CENTRAL WASTE MANAGEMENT FACILITY	GILCHRIST	NED	810	MATERIAL RECOVERY FACILITY - CLASS I & III	ACTIVE	1659 NORTHWEST 10TH STREET	BELL	ACTIVE
36754	HAMILTON CO WASTE MANAGEMENT FACILITY	HAMILTON	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	BAIDSEN ROAD	JASPER	ACTIVE
36754	HAMILTON CO WASTE MANAGEMENT FACILITY	HAMILTON	NED	300	CLASS III LANDFILL	ACTIVE	BAIDSEN ROAD	JASPER	ACTIVE
36860	LAFAYETTE COUNTY CLOSED LANDFILL	LAFAYETTE	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	2MI NW MAYO OFF US27 ON CRS3	MAYO	ACTIVE
36860	LAFAYETTE COUNTY CLOSED LANDFILL	LAFAYETTE	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	2MI NW MAYO OFF US27 ON CRS3	MAYO	ACTIVE
36860	LEVY COUNTY SOLID WASTE MANAGEMENT FACILITY	LEVY	NED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	12051 NE 69TH LANE	WILLISTON	ACTIVE
36895	LEVY COUNTY SOLID WASTE MANAGEMENT FACILITY	LEVY	NED	810	MATERIAL RECOVERY FACILITY - CLASS I & III	ACTIVE	12051 NE 69TH LANE	WILLISTON	ACTIVE
36895	LEVY COUNTY SOLID WASTE MANAGEMENT FACILITY	LEVY	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	12051 NE 69TH LANE	WILLISTON	ACTIVE
36885	LEVY COUNTY SOLID WASTE MANAGEMENT FACILITY	LEVY	NED	750	TRANSFER STATION	ACTIVE	12051 NE 69TH LANE	WILLISTON	ACTIVE
36895	LEVY COUNTY SOLID WASTE MANAGEMENT FACILITY	LEVY	NED	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	12051 NE 69TH LANE	WILLISTON	ACTIVE
37059	AUCILLA AREA SW FACILITY CL I & III	MADISON	NED	751	WASTE TIRE COLLECTION CENTER	ACTIVE	E SIDE OF US 221	GREENVILLE	ACTIVE
37059	AUCILLA AREA SW FACILITY CL I & III	MADISON	NED	300	CLASS III LANDFILL	ACTIVE	E SIDE OF US 221	GREENVILLE	ACTIVE
37059	AUCILLA AREA SW FACILITY CL I & III	MADISON	NED	100	CLASS I LANDFILL	ACTIVE	E SIDE OF US 221	GREENVILLE	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	CLASS TYPE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
37064	MADISON COUNTY LANDFILL LFC1	MADISON	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	CNTY RD 591 2 MILES NE OF MADISON	MADISON	CLOSED, IN LTC, WITH GW MONITORING
37130	BRYCEVILLE CLOSED CLASS I LANDFILL	MASSAU	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 121 8 MILES NW BRYCEVILLE	BRYCEVILLE	CLOSED, IN LTC, WITH GW MONITORING
37138	LOFTON CREEK CLOSED CLASS I LANDFILL	NASSAU	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	S STATE RD A1A 2.9 MILES E YULEE	FERNANDINA BEACH	CLOSED, IN LTC, WITH GW MONITORING
86315	WEST NAUSSAU LF	NASSAU	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	440 SOUTH KINGS ROAD	CALLAHAN	ACTIVE
86315	WEST NAUSSAU LF	NASSAU	751	WASTE TIRE COLLECTION CENTER	ACTIVE	440 SOUTH KINGS ROAD	CALLAHAN	ACTIVE
37570	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	751	WASTE TIRE COLLECTION CENTER	ACTIVE	4 MILES N OF PALATKA	PALATKA	ACTIVE
37570	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	750	TRANSFER STATION	ACTIVE	4 MILES N OF PALATKA	PALATKA	ACTIVE
37670	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	4 MILES N OF PALATKA	PALATKA	ACTIVE
37570	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	100	CLASS I LANDFILL	ACTIVE	4 MILES N OF PALATKA	PALATKA	ACTIVE
37585	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 308 W CRESCENT CITY	CRESCENT CITY	CLOSED, IN LTC, WITH GW MONITORING
37586	PUTNAM COUNTY CENTRAL LANDFILL	PUTNAM	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE RD 20 AT S 204 E	INTERLACHEN	CLOSED, IN LTC, WITH GW MONITORING
94816	COSA RIBERA ST DUMP	ST. JOHNS	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	RIBERA STREET	ST. AUGUSTINE	CLOSED, WITH GW MONITORING
85975	TILLMAN RIDGE WASTE MANAGEMENT FACILITY	ST. JOHNS	750	TRANSFER STATION	ACTIVE	3005 ALLEN NEASE ROAD	ELKTON	ACTIVE
85975	TILLMAN RIDGE WASTE MANAGEMENT FACILITY	ST. JOHNS	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	3005 ALLEN NEASE ROAD	ELKTON	ACTIVE
85975	TILLMAN RIDGE WASTE MANAGEMENT FACILITY	ST. JOHNS	751	WASTE TIRE COLLECTION CENTER	ACTIVE	3005 ALLEN NEASE ROAD	ELKTON	ACTIVE
39536	SUWANNEE CNTY CENTRAL LANDFILL WASTE DISPOSAL FACILITY	SUWANNEE	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	.75 MILES OFF US 129 6 MILES S LIVE OAK	LIVE OAK	ACTIVE
39538	SUWANNEE CNTY CENTRAL LANDFILL WASTE DISPOSAL FACILITY	SUWANNEE	751	WASTE TIRE COLLECTION CENTER	ACTIVE	.75 MILES OFF US 129 6 MILES S LIVE OAK	LIVE OAK	ACTIVE
39536	SUWANNEE CNTY CENTRAL LANDFILL WASTE DISPOSAL FACILITY	SUWANNEE	750	TRANSFER STATION	ACTIVE	.75 MILES OFF US 129 6 MILES S LIVE OAK	LIVE OAK	ACTIVE
39662	TAYLOR COUNTY CENTRAL LFC1	TAYLOR	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	SR 58 & LANDFILL RD	PERRY	INACTIVE
39815	REGIONAL LANDFILL NEW RIVER	UNION	100	CLASS I LANDFILL	ACTIVE	2.5 MILES N OF RAIFORD	RAIFORD	ACTIVE
39815	REGIONAL LANDFILL NEW RIVER	UNION	300	CLASS III LANDFILL	ACTIVE	2.5 MILES N OF RAIFORD	RAIFORD	ACTIVE
39815	REGIONAL LANDFILL NEW RIVER	UNION	751	WASTE TIRE COLLECTION CENTER	ACTIVE	2.5 MILES N OF RAIFORD	RAIFORD	ACTIVE
39853	CORRECTIONAL CLOSED LANDFILL UNION	UNION	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	.75 MILES NE STATE RD 16	RAIFORD	CLOSED, IN LTC, WITH GW MONITORING
39820	UNION COUNTY CENTRAL CLOSED LANDFILL	UNION	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	.5 MILES W STATE RD 231	LAKE BUTLER	CLOSED, IN LTC, WITH GW MONITORING

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS_DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
07662	GAINESVILLE REGIONAL UTILITY DEERHAVEN	ALACHUA	NED	421	COAL ASH MONOFILL	PROPOSED	10001 NORTHWEST 13 STREET	GAINESVILLE	PROPOSED
84365	JEA NGS BPS LFT	DUVAL	NED	421	COAL ASH MONOFILL	ACTIVE (A)	4377 HECKSHER DR	JACKSONVILLE	ACTIVE (A)
07681	ST. JOHNS RIVER POWER PARK	DUVAL	NED	421	COAL ASH MONOFILL	ACTIVE (A)	11201 NEW BERLIN ROAD	JACKSONVILLE	ACTIVE (A)
06790	SEMINOLE ELECTRIC COOPERATIVE INC. COAL ASH LANDFILL	PUTNAM	NED	421	COAL ASH MONOFILL	ACTIVE (A)		PALATKA	ACTIVE (A)
1448	BAY COUNTY WASTE TO ENERGY FACILITY	BAY	NWD	820	WASTE TO ENERGY ENERGY RECOVERY	ACTIVE	5510 BAY LINE DRIVE	PANAMA CITY	ACTIVE
16	STEELFIELD ROAD LANDFILL	BAY	NWD	300	CLASS III LANDFILL	ACTIVE	11411 LANDFILL ROAD	PANAMA CITY BEACH	ACTIVE
16	STEELFIELD ROAD LANDFILL	BAY	NWD	100	CLASS I LANDFILL	ACTIVE	11411 LANDFILL ROAD	PANAMA CITY BEACH	ACTIVE
1888	PERDIDO LANDFILL	ESCAMBIA	NWD	100	CLASS I LANDFILL	ACTIVE	13009 BEULAH ROAD	CANTONMENT	ACTIVE
1888	PERDIDO LANDFILL	ESCAMBIA	NWD	300	CLASS III LANDFILL	INACTIVE	13009 BEULAH ROAD	CANTONMENT	INACTIVE
1688	PERDIDO LANDFILL	ESCAMBIA	NWD	761	WASTE TIRE COLLECTION CENTER	ACTIVE	13008 BEULAH ROAD	CANTONMENT	ACTIVE
5373	FRANKLIN CENTRAL LF	FRANKLIN	NWD	100	CLASS I LANDFILL	CLOSED, IN LTC. WITH GW MONITORING	SR 65, 1.2 MI N OF US 98	EASTPOINT	ACTIVE
5373	FRANKLIN CENTRAL LF	FRANKLIN	NWD	300	CLASS III LANDFILL	ACTIVE	SR 65, 1.2 MI N OF US 98	EASTPOINT	ACTIVE
5373	FRANKLIN CENTRAL LF	FRANKLIN	NWD	740	COMPOSTING PLANT	ACTIVE	SR 65, 1.2 MI N OF US 98	EASTPOINT	ACTIVE
5720	QUINCY BYRD LANDFILL/LAND CLEARING DEBRIS DISPOSAL FACILITY	GADSDEN	NWD	310	LAND CLEARING DEBRIS	ACTIVE	1650 SELMAN ROAD	QUINCY	ACTIVE
5729	QUINCY BYRD LANDFILL/LAND CLEARING DEBRIS DISPOSAL FACILITY	GADSDEN	NWD	100	CLASS I LANDFILL	CLOSED, IN LTC. WITH GW MONITORING	1650 SELMAN ROAD	QUINCY	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS_DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
6319	SPRINGHILL REGIONAL LANDFILL	JACKSON	NWD	751	WASTE TIRE COLLECTION CENTER	ACTIVE	4945 HIGHWAY 273	CAMPBELLTON	ACTIVE
6319	SPRINGHILL REGIONAL LANDFILL	JACKSON	NWD	630	OTHER TREATMENT	ACTIVE	4945 HIGHWAY 273	CAMPBELLTON	ACTIVE
6319	SPRINGHILL REGIONAL LANDFILL	JACKSON	NWD	320	YARD TRASH COMPOSTING W/ DISPOSAL (17,701)	ACTIVE	4945 HIGHWAY 273	CAMPBELLTON	ACTIVE
6319	SPRINGHILL REGIONAL LANDFILL	JACKSON	NWD	100	CLASS I LANDFILL	ACTIVE	4945 HIGHWAY 273	CAMPBELLTON	ACTIVE
6660	LEON COUNTY SOLID WASTE MANAGEMENT FACILITY	LEON	NWD	100	CLASS I LANDFILL	ACTIVE	7550 APALACHEE PARKWAY	TALLAHASSEE	ACTIVE
6660	LEON COUNTY SOLID WASTE MANAGEMENT FACILITY	LEON	NWD	300	CLASS III LANDFILL	INACTIVE	7550 APALACHEE PARKWAY	TALLAHASSEE	INACTIVE
9061	BAKER LANDFILL	OKALOOSA	NWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	1415 CHARLIE DAY ROAD	BAKER	ACTIVE
9061	BAKER LANDFILL	OKALOOSA	NWD	750	TRANSFER STATION	ACTIVE	1415 CHARLIE DAY ROAD	BAKER	ACTIVE
9064	WRIGHT LANDFILL	OKALOOSA	NWD	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	BEAL EXTENSION	WRIGHT	ACTIVE
9064	WRIGHT LANDFILL	OKALOOSA	NWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	BEAL EXTENSION	WRIGHT	ACTIVE
12300	CENTRAL LANDFILL CLASS I, CLASS III, AIR CURTAIN INCINERATOR	SANTA ROSA	NWD	100	CLASS I LANDFILL	ACTIVE	6337 DA LISA ROAD	MILTON	ACTIVE
12300	CENTRAL LANDFILL CLASS I, CLASS III, AIR CURTAIN INCINERATOR	SANTA ROSA	NWD	300	CLASS III LANDFILL	ACTIVE	6337 DA LISA ROAD	MILTON	ACTIVE
14494	WAKULLA COUNTY LOWER BRIDGE LANDFILL - TRANSFER STATION	WAKULLA	NWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	COUNTY ROAD 388, 2MI E OF CRAWFORDVILLE	CRAWFORDVILLE	ACTIVE
14494	WAKULLA COUNTY LOWER BRIDGE LANDFILL - TRANSFER STATION	WAKULLA	NWD	750	TRANSFER STATION	ACTIVE	COUNTY ROAD 388, 2MI E OF CRAWFORDVILLE	CRAWFORDVILLE	ACTIVE
14755	WALTON COUNTY CENTRAL LANDFILL	WALTON	NWD	100	CLASS I LANDFILL	ACTIVE	1118 WWIII VETERANS ROAD	DEFUNIAK SPRINGS	ACTIVE
14755	WALTON COUNTY CENTRAL LANDFILL	WALTON	NWD	300	CLASS III LANDFILL	ACTIVE	1118 WWIII VETERANS ROAD	DEFUNIAK SPRINGS	ACTIVE
14755	WALTON COUNTY CENTRAL LANDFILL	WALTON	NWD	810	MATERIAL RECOVERY FACILITY - CLASS I & III	ACTIVE	1118 WWIII VETERANS ROAD	DEFUNIAK SPRINGS	ACTIVE
71714	CHARLOTTE COUNTY SLF (ZEMEL RD LF)	CHARLOTTE	SD	100	CLASS I LANDFILL	ACTIVE	28751 ZEMEL ROAD	PUNTA GORDA	ACTIVE
73045	IMMOKALEE LF (EUSTIS AVE.)	COLLIER	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	EUSTIS AVE EXTENSION	IMMOKALEE	CLOSED, IN LTC, WITH GW MONITORING
73114	IMMOKALEE SLF AND TRANSFER STATION (STOCKADE)	COLLIER	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	700 STOCKADE RD @ CR846	IMMOKALEE	ACTIVE
73114	IMMOKALEE SLF AND TRANSFER STATION (STOCKADE)	COLLIER	SD	750	TRANSFER STATION	ACTIVE	700 STOCKADE RD @ CR846	IMMOKALEE	ACTIVE
73046	NAPLES SANITARY LANDFILL	COLLIER	SD	810	MATERIAL RECOVERY FACILITY - CLASS III	ACTIVE	700 STOCKADE RD @ CR846	IMMOKALEE	ACTIVE
73046	NAPLES SANITARY LANDFILL	COLLIER	SD	100	CLASS I LANDFILL	ACTIVE	3750 WHITE LAKE BLVD.	NAPLES	ACTIVE
74646	GLADES COUNTY SLF #2 AND TRANSFER STATION	GLADES	SD	200	CLASS II LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	8020 W STATE ROAD 78	ORTONA	ACTIVE
74646	GLADES COUNTY SLF #2 AND TRANSFER STATION	GLADES	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	8020 W STATE ROAD 78	ORTONA	ACTIVE
74648	GLADES COUNTY SLF #2 AND TRANSFER STATION	GLADES	SD	751	WASTE TIRE COLLECTION CENTER	ACTIVE	8020 W STATE ROAD 78	ORTONA	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Dist	CLASS TYPE CODE	CLASS_DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
74648	GLADES COUNTY SLF #2 AND TRANSFER STATION	GLADES	SD	750	TRANSFER STATION	ACTIVE	8020 W STATE ROAD 78	ORTONA	ACTIVE
74773	HENDRY COUNTY SLF	HENDRY	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	S 9980 PIONEER PLANTATION	LABELLE	CLOSED, IN LTC, WITH GW MONITORING
74766	LEE/HENDRY CO REGIONAL SW DISP FAC	HENDRY	SD	100	CLASS I LANDFILL	ACTIVE	SOUTH CHURCH RD, HENDRY COUNTY	FELDA	ACTIVE
74766	LEE/HENDRY CO REGIONAL SW DISP FAC	HENDRY	SD	300	CLASS III LANDFILL	ACTIVE	SOUTH CHURCH RD, HENDRY COUNTY	FELDA	ACTIVE
74859	DESOTO CITY SLF	HIGHLANDS	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	6000 SKIPPER RD	SEBRING	CLOSED, IN LTC, WITH GW MONITORING
74956	HIGHLANDS COUNTY SW MGMT CENTER	HIGHLANDS	SD	320	YARD TRASH COMPOSTING W/ DISPOSAL (17,701)	ACTIVE	12700 ARBUCKLE CREEK ROAD	SEBRING	ACTIVE
74956	HIGHLANDS COUNTY SW MGMT CENTER	HIGHLANDS	SD	100	CLASS I LANDFILL	ACTIVE	12700 ARBUCKLE CREEK ROAD	SEBRING	ACTIVE
74956	HIGHLANDS COUNTY SW MGMT CENTER	HIGHLANDS	SD	540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	12700 ARBUCKLE CREEK ROAD	SEBRING	ACTIVE
76728	GULF COAST LF	LEE	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	11990 SR 42, E OF FT MYERS	FT MYERS	INACTIVE
76728	GULF COAST LF	LEE	SD	750	TRANSFER STATION	PROPOSED	11990 SR 42, E OF FT MYERS	FT MYERS	INACTIVE
93715	LEE COUNTY RESOURCE RECOVERY FACILITY	LEE	SD	545	MATERIAL RECOVERY FACILITY, C & D	ACTIVE	10500 BUCKINGHAM ROAD	FORT MYERS	ACTIVE
93715	LEE COUNTY RESOURCE RECOVERY FACILITY	LEE	SD	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	10500 BUCKINGHAM ROAD	FORT MYERS	ACTIVE
70485	CUDJOE KEY LF	MONROE	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	CUDJOE KEY RD, WEST OF MM 21.5	SUMMERLAND KEY	ACTIVE
76460	CUDJOE KEY LF	MONROE	SD	750	TRANSFER STATION	ACTIVE	CUDJOE KEY RD, WEST OF MM 21.5	SUMMERLAND KEY	ACTIVE
79544	KEY LARGO LANDFILL	MONROE	SD	760	TRANSFER STATION	ACTIVE	STATE ROAD 905	KEY LARGO	ACTIVE
79544	KEY LARGO LANDFILL	MONROE	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	STATE ROAD 905	KEY LARGO	ACTIVE
79484	LONG KEY LANDFILL	MONROE	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	US 1 LONG KEY, BETWEEN MM 67 & 68	LONG KEY	CLOSED, IN LTC, WITH GW MONITORING
81347	LONG KEY TRANSFER STATION	MONROE	SD	750	TRANSFER STATION	ACTIVE	WEST OF US 1 AT MILE MARKER 66.5	LONG KEY	ACTIVE
79536	STOCK ISLAND LF (SOUTHERNMOST WTE & KEY WEST LF)	MONROE	SD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	JUNIOR COLLEGE RD	KEY WEST	CLOSED, IN LTC, WITH GW MONITORING
53328	BROWARD CNTY SOUTHWEST REGIONAL LANDFILL (BIG)	BROWARD	SED	100	CLASS I LANDFILL	ACTIVE	U.S. 27 & SHERIDAN STREET	PEMBROKE PINES	ACTIVE
53209	BROWARD CO SOUTH RESOURCE RECOVERY	BROWARD	SED	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	4400 S. STATE ROAD 7	FT. LAUDERDALE	ACTIVE
53209	BROWARD CO SOUTH RESOURCE RECOVERY	BROWARD	SED	420	WTE ASH MONOFILL	ACTIVE	4400 S. STATE ROAD 7	FT. LAUDERDALE	ACTIVE
53304	DAVIE LF (BROWARD COUNTY LF #1)	BROWARD	SED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	4001 SW 142ND AVE	DAVIE	CLOSED, IN LTC, WITH GW MONITORING
53304	DAVIE LF (BROWARD COUNTY LF #1)	BROWARD	SED	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	4001 SW 142ND AVE	DAVIE	CLOSED, IN LTC, WITH GW MONITORING
53229	NORTH BROWARD R. FACILITY	BROWARD	SED	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	HILTON ROAD & POWERLINE RD	POMPAHO BEACH	ACTIVE
68860	CITY OF STUART	MARTIN	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	MONTEREY ROAD	STUART	CLOSED, WITH GW MONITORING

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Disl	CLASS TYPE CODE	CLASS, DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
68802	MARTIN COUNTY (PALM CITY II) SLF	MARTIN	SED	100	CLASS I LANDFILL	CLOSED WITH GW MONITORING	3741 W TURNPK OVERPASS SR714	PALM CITY	CLOSED WITH GW MONITORING
68803	MARTIN COUNTY (PALM CITY II) SLF	MARTIN	SED	750	TRANSFER STATION	ACTIVE	9101 SW BUSCH STREET	PALM CITY	ACTIVE
68803	MARTIN COUNTY (PALM CITY II) SLF	MARTIN	SED	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	9101 SW BUSCH STREET	PALM CITY	ACTIVE
68803	MARTIN COUNTY (PALM CITY II) SLF	MARTIN	SED	300	CLASS III LANDFILL	CLOSED IN LTC, WITH GW MONITORING	9101 SW BUSCH STREET	PALM CITY	ACTIVE
68803	MARTIN COUNTY (PALM CITY II) SLF	MARTIN	SED	545	MATERIAL RECOVERY FACILITY - C & D	ACTIVE	9101 SW BUSCH STREET	PALM CITY	ACTIVE
56819	58TH ST LF (MAIN COUNTY LF)	MIAMI/DADE	SED	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	8831 NW 68TH ST	MIAMI	CLOSED IN LTC, WITH GW MONITORING
56825	DADE COUNTY RESOURCE RECOVERY	MIAMI/DADE	SED	420	WTE ASH MONOFILL	ACTIVE	6990 NW 87TH AVE @NW 88TH ST	MIAMI	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WAC'S #	NAME	COUNTY NAME	Dist.	CLASS TYPE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
56825	DADE COUNTY RESOURCE RECOVERY	MIAMI-DADE	SED	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	6990 NW 97TH AVE @NW 98TH ST	MIAMI	ACTIVE
60080	MEDLEY LANDFILL AND RECYCLING CENTER	MIAMI-DADE	SED	100	CLASS I LANDFILL	ACTIVE	9330 NW 99 AVENUE	MIAMI	ACTIVE
60080	MEDLEY LANDFILL AND RECYCLING CENTER	MIAMI-DADE	SED	545	MATERIAL RECOVERY FACILITY - C & D	ACTIVE	9330 NW 99 AVENUE	MIAMI	ACTIVE
56827	MIAMI INTERNATIONAL AIRPORT ASH LF	MIAMI-DADE	SED	420	WTE ASH MONOFILL	CLOSED, WITH GW MONITORING	PERIMETER RD & NW 72 AVE	MIAMI	CLOSED, WITH GW MONITORING
57135	MUNISPORT LF	MIAMI-DADE	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	14391 BISCAYNE BLVD.	NORTH MIAMI	CLOSED, WITH GW MONITORING
56820	SOUTH DADE DUMP	MIAMI-DADE	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	SW 97TH AVE & SW 248TH ST	GOULDS	CLOSED, WITH GW MONITORING
56824	SOUTH DADE LF	MIAMI-DADE	SED	100	CLASS I LANDFILL	ACTIVE	SW 248TH ST & 97TH AVE	HOMESTEAD	ACTIVE
92394	CLAY FARM LANDFILL	OKEECHOBEE	SED	100	CLASS I LANDFILL	PROPOSED	10800 NE 128TH AVE	OKEECHOBEE	INACTIVE
70424	OKEECHOBEE COUNTY AIRPORT LANDFILL	OKEECHOBEE	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	NORTH STATE ROAD 70 ON US 98	OKEECHOBEE	CLOSED, WITH GW MONITORING
70426	OKEECHOBEE LANDFILL, INC. AKA BERMAN ROAD LF	OKEECHOBEE	SED	100	CLASS I LANDFILL	ACTIVE	10800 NE 128TH AVENUE	OKEECHOBEE	ACTIVE
65853	BOCA RATON DUMP	PALM BEACH	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	SW 18TH STREET AND DIXIE HWY	BOCA RATON	CLOSED WITH GROUND WATER MONITORING
65681	PALM BEACH COUNTY LF #3 (DYER RD)	PALM BEACH	SED	610	INCINERATION	CLOSED, WITH GW MONITORING	DYER BLVD & HAVERHILL ROAD	W PALM BEACH	CLOSED, IN LTC, WITH GW MONITORING
65681	PALM BEACH COUNTY LF #3 (DYER RD)	PALM BEACH	SED	200	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	DYER BLVD & HAVERHILL ROAD	W PALM BEACH	CLOSED, IN LTC, WITH GW MONITORING
65681	PALM BEACH COUNTY LF #3 (DYER RD)	PALM BEACH	SED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	DYER BLVD & HAVERHILL ROAD	W PALM BEACH	CLOSED, IN LTC, WITH GW MONITORING
65581	PRCSWA RRF SITE #7	PALM BEACH	SED	620	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	45 STREET & FLA. TURNPIKE	WEST PALM BEACH	ACTIVE
65551	PRCSWA RRF SITE #7	PALM BEACH	SED	300	CLASS III LANDFILL	ACTIVE	45 STREET & FLA. TURNPIKE	WEST PALM BEACH	ACTIVE
65551	PRCSWA RRF SITE #7	PALM BEACH	SED	700	VOLUME REDUCTION/SHREDDER	ACTIVE	45 STREET & FLA. TURNPIKE	WEST PALM BEACH	ACTIVE
65551	PRCSWA RRF SITE #7	PALM BEACH	SED	100	CLASS I LANDFILL	ACTIVE	45 STREET & FLA. TURNPIKE	WEST PALM BEACH	ACTIVE
70697	CITY OF FT PIERCE LF	ST. LUCIE	SED	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	HAMMOND RD OFF ST LUCIE BLVD	FT PIERCE	CLOSED, WITH GW MONITORING
70654	NORTHEAST AIRPORT LANDFILL AKA FAIR WINDS GOLF	ST. LUCIE	SED	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	N OF ST LUCIE CO AIRPORT	FT PIERCE	CLOSED, IN LTC, WITH GW MONITORING
70652	ST LUCIE CO BAILING AND RECYCLING FACILITY LANDFILL	ST. LUCIE	SED	100	CLASS I LANDFILL	ACTIVE	LANDELL RD & GLADES CUTOFF RD	FORT PIERCE	ACTIVE
70652	ST LUCIE CO BAILING AND RECYCLING FACILITY LANDFILL	ST. LUCIE	SED	900	RECOVERED MATERIALS PROCESSING FACILITY (RMPP)	ACTIVE	LANDELL RD & GLADES CUTOFF RD	FORT PIERCE	ACTIVE
70652	ST LUCIE CO BAILING AND RECYCLING FACILITY LANDFILL	ST. LUCIE	SED	540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	LANDELL RD & GLADES CUTOFF RD	FORT PIERCE	ACTIVE
39859	CITRUS CENTRAL SLF	CITRUS	SWD	100	CLASS I LANDFILL	ACTIVE	3MI E LECANTO, SR44	LECANTO	ACTIVE
39859	CITRUS CENTRAL SLF	CITRUS	SWD	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	3MI E LECANTO, SR44	LECANTO	ACTIVE
97667	PROGRESS ENERGY CRYSTAL RIVER	CITRUS	SWD	421	COAL ASH MONOFILL	ACTIVE (A)	POWERLINE ROAD	CRYSTAL RIVER	ACTIVE
40501	SECTION 16 LF	DESO TO	SWD	100	CLASS I LANDFILL	ACTIVE	3268 DISHONG AVENUE	NOCATEE	ACTIVE
40501	SECTION 16 LF	DESO TO	SWD	751	WASTE TIRE COLLECTION CENTER	ACTIVE	3268 DISHONG AVENUE	NOCATEE	ACTIVE
40612	HARDEE COUNTY REGIONAL LANDFILL	HARDEE	SWD	400	CLASS I LANDFILL	ACTIVE	AIRPORT RD, N SR636	WAUCHULA	ACTIVE
40612	HARDEE COUNTY REGIONAL LANDFILL	HARDEE	SWD	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	AIRPORT RD, N SR636	WAUCHULA	ACTIVE

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS_DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
40723	CROOM SLF (HIGH CORNER RD LF)	HERNANDO	SWD	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	HIGH CORNER RD OFF SR50	BROOKSVILLE	CLOSED IN LTC, WITH GW MONITORING
40722	HERNANDO COUNTY NORTHWEST LF	HERNANDO	SWD	540	CONSTRUCTION/DEMOLITION DEBRIS	ACTIVE	US60 & TATUM RD, 8MI NW OF	BROOKSVILLE	ACTIVE
40722	HERNANDO COUNTY NORTHWEST LF	HERNANDO	SWD	100	CLASS I LANDFILL	ACTIVE	US90 & TATUM RD, 8MI NW OF	BROOKSVILLE	ACTIVE
40722	HERNANDO COUNTY NORTHWEST LF	HERNANDO	SWD	751	WASTE TIRE COLLECTION CENTER	ACTIVE	US90 & TATUM RD, 8MI NW OF	BROOKSVILLE	ACTIVE

**SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013**

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE	CLASS_DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
41184	HILLS COUNTY WASTE-TO-ENERGY PLANT	HILLSBOROUGH	SWD	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	210 FAULKENBURG RD	TAMPA	ACTIVE
41191	HILLSBOROUGH HEIGHTS LF	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	SR579 & SLIGH AVE	SEFFNER	CLOSED, IN LTC, WITH GW MONITORING
43364	KINGSWAY RD LF (DAVID J JOSEPH)	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	KINGSWAY RD, 0.8MI N OF 14	TAMPA	CLOSED, IN LTC, WITH GW MONITORING
41416	MCKAY BAY REFUSE-TO-ENERGY PROJECT	HILLSBOROUGH	SWD	750	TRANSFER STATION	ACTIVE	34TH ST & CLARK ST	TAMPA	ACTIVE
41416	MCKAY BAY REFUSE-TO-ENERGY PROJECT	HILLSBOROUGH	SWD	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	34TH ST & CLARK ST	TAMPA	ACTIVE
41082	NEW NORTH EAST HILLSBORO SLF (TAYLOR)	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	TAYLOR RD & SLIGH AVE	SEFFNER	CLOSED, WITH GW MONITORING
41084	NORTHWEST HILLSBOROUGH SLF	HILLSBOROUGH	SWD	300	CLASS III LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	8001 LINEBAUGH AVE	TAMPA	ACTIVE
41084	NORTHWEST HILLSBOROUGH SLF	HILLSBOROUGH	SWD	750	TRANSFER STATION	ACTIVE	8001 LINEBAUGH AVE	TAMPA	ACTIVE
41084	NORTHWEST HILLSBOROUGH SLF	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	8001 LINEBAUGH AVE	TAMPA	ACTIVE
41366	OLD MANHATTAN AVE CLASS I LF	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	S MANHATTAN AVE & RICHARDSON	TAMPA	CLOSED, IN LTC, WITH GW MONITORING
41193	SOUTHEAST COUNTY SLF (PICNIC LF)	HILLSBOROUGH	SWD	100	CLASS I LANDFILL	ACTIVE	C.2MI W OF CR39,N OF CR 672	LUTHIA	ACTIVE
41193	SOUTHEAST COUNTY SLF (PICNIC LF)	HILLSBOROUGH	SWD	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	C.2MI W OF CR39,N OF CR 672	LUTHIA	ACTIVE
95245	TECO BIG BEND POWER STATION	HILLSBOROUGH	SWD	421	COAL ASH MONOFILL	ACTIVE (A)	13031 WYANDOTTE ROAD	APOLLO BEACH	ACTIVE
44795	LENA RD COUNTY LF	MANATEE	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	SR64 & LENA RD	BRADENTON	ACTIVE
44809	PALMETTO-ERIE RD LF	MANATEE	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	5700 ERIE RD	PALMETTO	CLOSED, IN LTC, WITH GW MONITORING
44793	STATE ROAD 70 LF ? BRADEN RIVER PARK	MANATEE	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	SR70, 3MI E ONECO	ONECO	CLOSED, IN LTC, WITH GW MONITORING
94743	ANGELO'S RECYCLED MATERIALS CLASS I LANDFILL	PASCO	SWD	100	CLASS I LANDFILL	PROPOSED	NESSICK ROAD AND JANUAR ROAD	DADE CITY	PROPOSED
45797	EAST PASCO LF	PASCO	SWD	100	CLASS I LANDFILL	CLOSED, WITH GW MONITORING	AUTON ROAD & RIVER ROAD	DADE CITY	CLOSED, WITH GW MONITORING
45937	ENVR. WASTE CONTROL (MARQUIS SLF)	PASCO	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	14MI S SR587A (RIDGE RD)	NEW PORT RICHEY	CLOSED, IN LTC, WITH GW MONITORING
45799	PASCO COUNTY RESOURCE RECOVERY	PASCO	SWD	100	CLASS I LANDFILL	ACTIVE	14230 HAYS ROAD	SPRING HILL	ACTIVE
45898	PASCO COUNTY RESOURCE RECOVERY	PASCO	SWD	300	CLASS III LANDFILL	ACTIVE	14230 HAYS ROAD	SPRING HILL	ACTIVE
45899	PASCO COUNTY RESOURCE RECOVERY	PASCO	SWD	420	WTE ASH MONOFILL	ACTIVE	14230 HAYS ROAD	SPRING HILL	ACTIVE
45898	PASCO COUNTY RESOURCE RECOVERY	PASCO	SWD	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	14230 HAYS ROAD	SPRING HILL	ACTIVE
45899	PASCO COUNTY RESOURCE RECOVERY	PASCO	SWD	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	14230 HAYS ROAD	SPRING HILL	ACTIVE
45798	RIDGE RD LF (NEW PORT RICHEY LF)	PASCO	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	4MI N RIDGE RD ON LANDFILL RD	NEW PORT RICHEY	CLOSED, IN LTC, WITH GW MONITORING

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
46742	BRIDGEWAY ACRES LF (PINELLAS CO RRF)	PINELLAS	SWD	820	WASTE TO ENERGY RECOVERY	ACTIVE	SW OF 1275 & ROOSEVELT BLVD	SAINT PETERSBURG	ACTIVE
46742	BRIDGEWAY ACRES LF (PINELLAS CO RRF)	PINELLAS	SWD	100	CLASS I LANDFILL	ACTIVE	SW OF 1275 & ROOSEVELT BLVD	SAINT PETERSBURG	ACTIVE
46742	BRIDGEWAY ACRES LF (PINELLAS CO RRF)	PINELLAS	SWD	830	OTHER TREATMENT	ACTIVE	SW OF 1275 & ROOSEVELT BLVD	SAINT PETERSBURG	ACTIVE
47036	TOYTOWN SLF	PINELLAS	SWD	100	CLASS I LANDFILL	CLOSED IN LTC, WITH GW MONITORING	ROOSEVELT BLVD & 16TH ST N	ST PETERSBURG	CLOSED IN LTC, WITH GW MONITORING
51484	CEDAR TRAIL LF	POLK	SWD	100	CLASS I LANDFILL	ACTIVE	1881 E F GRIFFIN RD	BARTOW	ACTIVE
51484	CEDAR TRAIL LF	POLK	SWD	300	CLASS III LANDFILL	ACTIVE	1881 E F GRIFFIN RD	BARTOW	ACTIVE

SELECTED SOLID WASTE FACILITIES
TO BE PERMITTED IN TALLAHASSEE BEGINNING IN 2013

WACS #	NAME	COUNTY NAME	Dist.	CLASS TYPE CODE	CLASS DESC	CLASS STATUS DESC	ADDRESS	CITY	FACILITY STATUS DESC
49722	NORTH POLK CENTRAL LF (SITE 201)	POLK	SWD	100	CLASS I LANDFILL	ACTIVE	SR540, S 4th E US98	WINTER HAVEN	ACTIVE
49722	NORTH POLK CENTRAL LF (SITE 201)	POLK	SWD	300	CLASS III LANDFILL	ACTIVE	SR540, S 4th E US98	WINTER HAVEN	ACTIVE
49777	NORTHEAST POLK LF (SITE 204)	POLK	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	BANNON ISLAND RD	LAKE HAMILTON	CLOSED, IN LTC, WITH GW MONITORING
49777	NORTHEAST POLK LF (SITE 204)	POLK	SWD	540	CONSTRUCTION/DEMOLITION DEBRIS	CLOSED, IN LTC, WITH GW MONITORING	BANNON ISLAND RD	LAKE HAMILTON	CLOSED, IN LTC, WITH GW MONITORING
50648	RIDGE GENERATING STATION	POLK	SWD	710	WASTE TIRE PROCESSING FACILITY	ACTIVE	SR-540 & US-98	EATON PARK	ACTIVE
50649	RIDGE GENERATING STATION	POLK	SWD	820	WASTE TO ENERGY/ENERGY RECOVERY	ACTIVE	SR-540 & US-98	EATON PARK	ACTIVE
49723	SOUTHEAST POLK LF (SITE 203)	POLK	SWD	540	CONSTRUCTION/DEMOLITION DEBRIS	CLOSED, IN LTC, WITH GW MONITORING	GOLFVIEW CUT-OFF RD	LAKE WALES	CLOSED, IN LTC, WITH GW MONITORING
49723	SOUTHEAST POLK LF (SITE 203)	POLK	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	GOLFVIEW CUT-OFF RD	LAKE WALES	CLOSED, IN LTC, WITH GW MONITORING
95348	TECO POLK POWER STATION	POLK	SWD	421	COAL ASH MONOFILL	ACTIVE (A)	9995 STATE ROAD 37	MULBERRY	ACTIVE
51611	BEE RIDGE LF	SARASOTA	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	8350 BEE RIDGE ROAD	SARASOTA	CLOSED, IN LTC, WITH GW MONITORING
51614	SARASOTA CENTRAL LANDFILL COMPLEX	SARASOTA	SWD	100	CLASS I LANDFILL	ACTIVE	4000 KNIGHTS TRAIL ROAD	NOKOMIS	ACTIVE
51614	SARASOTA CENTRAL LANDFILL COMPLEX	SARASOTA	SWD	810	MATERIAL RECOVERY FACILITY - CLASS I & III	ACTIVE	4000 KNIGHTS TRAIL ROAD	NOKOMIS	ACTIVE
51610	VENICE LF	SARASOTA	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	E VENICE AVE & S JACKSON RD	VENICE	CLOSED, IN LTC, WITH GW MONITORING
95754	ACMS, INC.	SUMTER	SWD	100	CLASS I LANDFILL	PROPOSED	835 CR 529	SUMTERVILLE	PROPOSED
53008	SUMTER COUNTY TS / LANDFILL LTC	SUMTER	SWD	100	CLASS I LANDFILL	CLOSED, IN LTC, WITH GW MONITORING	835 CR 529	SUMTERVILLE	ACTIVE
53008	SUMTER COUNTY TS / LANDFILL LTC	SUMTER	SWD	750	TRANSFER STATION	ACTIVE	835 CR 529	SUMTERVILLE	ACTIVE
53008	SUMTER COUNTY TS / LANDFILL LTC	SUMTER	SWD	751	WASTE TIRE COLLECTION CENTER	ACTIVE	835 CR 529	SUMTERVILLE	ACTIVE
95347	LAKELAND ELECTRIC MCINTOSH POWER PLANT	POLK	SWD	421	COAL ASH MONOFILL	ACTIVE (A)	3000 EAST LAKE PARKER DRIVE	LAKELAND	ACTIVE

152

264

FGS initiates study of sinkhole vulnerability

By BLANCHE HARDY, PG

The Florida Geological Survey, a division of the Florida Department of Environmental Protection, has initiated a statewide assessment of sinkhole vulnerability in Florida.

The three-year project is funded by a \$1.8 million Federal Emergency Management Agency grant issued in conjunction with the Florida Division of Emergency Management.

Clint Kromhout, PG, a professional geologist with FGS, said the project's goal is to "create a statewide map showing a relative vulnerability to sinkhole formation throughout the state."

Sinkholes are common in Florida and along with related Karst landforms such as springs, caves and disappearing streams, are the result of chemical weathering and dissolution erosion of Florida's ubiquitous soluble limestone and dolomite dominated strata.

"There are several givens when coming to Florida: beaches, sun, hurricanes and sinkholes," said Kromhout. "Sinkholes are nothing new to the state. They have been around for millions and millions of years."

Florida is underlain by thousands of feet of porous limestone, the nature of which, while susceptible to sinkhole subsidence incidence, also accommodates the billions of gallons of fresh water that sustains habitats critical to the viability of Florida's diverse flora and fauna, and is consumed by residents, agriculture and industry.

The Division of Emergency Management was prompted to seek the vulnerability assessment as a result of increased sinkhole subsidence incidents last year.

"In June 2012, Tropical Storm Debbie dumped a tremendous amount of rain. At the same time Florida was experiencing a drought," said Kromhout. "Because of this, the lowered aquifer levels created what was possibly air space within unknown voids across the state."

"The tremendous amount of rain Debbie dropped added a lot of weight to overburden sediments, those being the sands clays and soils above these voids, and in doing so caused a lot of sinkholes to form."

Two 2012 sinkhole subsidence incidents garnered national attention, the first resulting in the fatality of a sleeping resident in February when a sinkhole opened beneath a home in Tampa and a second in August that sent hundreds of tourists scurrying for safety as the central section of a three-story, 24-unit resort villa near the Central Florida attractions corridor collapsed into a sinkhole in Lake County.

The Florida Division of Emergency Management approached FGS asking if they could provide them a tool for their mitigation section that specifically provides strategies to prevent, or hopefully reduce, the loss of property and life within the state," said Kromhout.

The vulnerability study will take place over three years and includes three phases.

"The one-year pilot study over the first phase will be done in Hamilton, Suwannee and Columbia counties," said DEP Spokesperson Patrick Gillespie. "The second and third phases—over two more years—will extend what was learned in the pilot study to the remainder of the state."

The results of the pilot study will be used to produce a model that will generate a map illustrating the relative vulnerability of the pilot study counties to potential sinkhole formation. FGS scientists will then use the model to produce a statewide sinkhole vulnerability map.

The information will be used to improve Florida's Enhanced Hazard Mitigation Plan risk assessment section on sinkholes and will include enhancement of corresponding mitigation strategies.

Kromhout noted that the resulting statewide sinkhole vulnerability map "will be used by local emergency managers at the county and city level to create their own (local) mitigation strategies," and that "the public can also use the map and see the relative vulnerability to sink hole formation within an area they are interested in."

Florida Specifier

October 2013

FOR IMMEDIATE RELEASE: Aug. 8, 2013

CONTACT: DEP Press Office, 850.245.2112, DEPNews@dep.state.fl.us

\$1.1 MILLION PROJECT WILL ALLOW FLORIDA GEOLOGICAL SURVEY TO ADDRESS SINKHOLE VULNERABILITY

**~Federal Emergency Management Agency grant will help form a statewide
assessment of sinkhole vulnerability~**

TALLAHASSEE – A \$1.08 million federal grant will allow the Florida Geological Survey, in conjunction with the Florida Division of Emergency Management, to conduct a statewide assessment of sinkhole vulnerability in Florida starting this fall.

The grant was funded by the Federal Emergency Management Agency in conjunction with the Florida Division of Emergency Management. The three-year project will start with geologists conducting a one-year pilot study in Hamilton, Columbia and Suwannee counties. The results of the pilot study will culminate in the production of a model that will generate a map showing the relative vulnerability of these counties to potential sinkhole formation. The resulting model will then be used to produce a statewide map during the following two years.

"Florida's geology is complex and this grant will allow the Florida Geological Survey to produce a predictive tool that will refine our understanding of sinkhole occurrence throughout the state," said Dr. Jon Arthur, Director of the Florida Geological Survey. "Ultimately, this assessment will aid planners, builders and environmental regulators for the betterment of human health and safety as well as the economy."

Sinkholes are a common, natural feature of Florida's landscape because Florida sits on several thousand feet of porous limestone. Porous limestone aquifers can produce billions of gallons of fresh water. Naturally acidic groundwater and rainwater dissolves limestone, leaving behind void spaces. The resulting void spaces can lead to the formation of sinkholes, caves, and springs, all of which are called karst features.

The information gathered will help improve the State of Florida Enhanced Hazard Mitigation Plan risk assessment section on sinkholes as well as its corresponding mitigation strategies. An appendix to the State Hazard Mitigation Plan will be added to the project's full findings.

"The Florida Division of Emergency Management is pleased to be a part of this project," said FDEM Director Bryan W. Koon. "Sinkholes present a potential hazard to many Floridians throughout the state. By better understanding sinkhole vulnerability in Florida, we will be better able to prevent loss of life and property and keep Florida's families safe."

The request was sparked by Tropical Storm Debby, which brought heavy rainfall to Florida in June 2012, triggering the formation of sinkholes. In the months leading up to Tropical Storm Debby's record rainfall event, most of Florida had been experiencing extreme drought conditions, resulting in lowered water levels in our aquifers. The result was an outbreak of sinkholes when rainwater caused dry underground voids -- previously filled with water -- to collapse.

Benefits of the project include more effective mitigation planning to reduce loss of life and property by lessening the impact of sinkholes on Florida's population and infrastructure; better understanding of sinkhole susceptibility; an increased understanding of Florida's karst terrain and hydrogeology, and how that affects the state. The assessment will help environmental regulators, growth management planners, the construction industry and local governments in developing protective designs as additional information about Florida's

geology will facilitate planning for possible sinkhole occurrences.

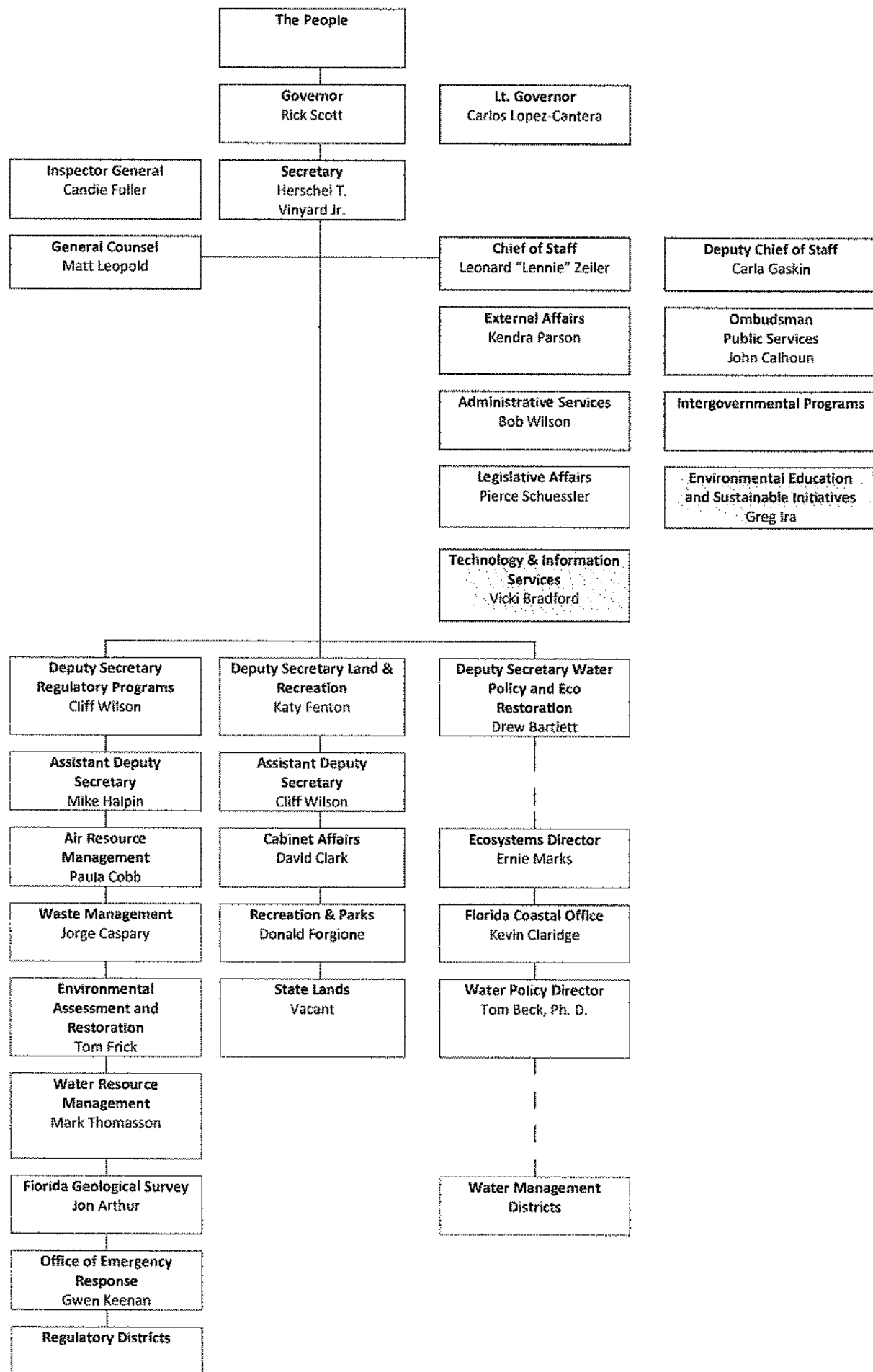
For more information about sinkholes, visit [DEP's Online Newsroom](#) or the Florida Geological Survey [website](#).

About the Florida Geological Survey

The Florida Geological Survey specializes in geosciences research and assessments to provide objective quality data and interpretations of Florida's unique geology. Through applied field and laboratory investigations, the data collected by the FGS is used by the public, other state agencies, consultants and industries. The information is essential for responsible and sustainable use of the state's mineral, energy and water resources including development of safe and environmentally sound infrastructure. For more information, please visit <http://www.dep.state.fl.us/geology/>

Contact person/info: [Clint Kromhout](#)

FDEP Organizational Chart



**Update on FDEP
Petroleum Restoration Program**



[DEP Home](#) /
 [About DEP](#) /
 [Programs](#) /
 [Contact](#) /
 [Site Map](#) /
 [Search](#)



Programs

[Waste Home](#)
[Permitting](#)
[and](#)
[Compliance](#)
[Assistance](#)
[Petroleum](#)
[Restoration](#)
[Waste](#)
[Cleanup](#)

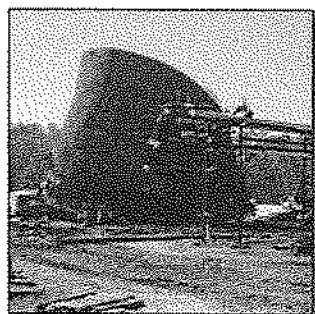
Information

[Division](#)
[& Program](#)
[Contacts](#)
[Data Reports](#)
[DEP Public](#)
[Notices](#)
[Forms](#)
[News](#)
[Publications](#)
[and Reports](#)
[Rules](#)

Navigation

[Agency Site](#)
[Map](#)
[Division Site](#)
[Map](#)

Petroleum Restoration Program



The Petroleum Restoration Program encompasses the technical oversight, management, and administrative activities necessary to prioritize, assess, and cleanup sites contaminated by discharges of petroleum and petroleum products from stationary petroleum storage systems.

These sites include those determined eligible for state funded cleanup using qualified contractors selected through competitive procurement or selected by the property owner or responsible party and state lead contractors under direct contract with the Department, as well as non-program or voluntary cleanup sites that are funded by responsible parties.

[Click here for the latest](#)
[Announcements, Events & News](#)



Notice of Auction (Updated 06/23/14)

The Petroleum Restoration Program will be conducting an online auction for some remediation equipment located in the following counties: Escambia, Santa Rosa, Okaloosa, and Walton. Please see PDF for all equipment to be auctioned, and the grouping for lots. Because of the nature of the auction, and that all items are located on private property, inspections will not be possible. The Auction will be on Govdeals.com and requires registering prior to bidding and a \$1000 refundable deposit will be required if more than 3 items wish to be bid on. The auction runs from Monday June 30th through Thursday July 10th 2014. Please visit Govdeals.com/FLDEP for these auctions, or just go to Govdeals.com and check the Remediation Equipment category.

[Auction Flyer](#)

O&M, PARM, NAM Site Documents Due by 6/9/2014 (Updated 06/19/14)

In accordance with the current Petroleum Restoration Program work assignment process using the Relative Capacity Index formula (effective 5/13/14), please note that only active O&M and PARM will be directly issued to Agency Term Contractors (ATCs) after 6/30/14.

Highlights

PETROLEUM STORAGE
 TANK REGISTRATION
 PAY ON-LINE BY
 CREDIT CARD



OCULUS

ADaPT

CLM
Contamination Locator Map

[Guidance for](#)
[Contamination](#)
[Notification](#)

Documents Updated:
May 16, 2014

[Petroleum Restoration](#)
[Program Main Page](#)
[Contacts](#)
[Petroleum Restoration](#)
[Program Page](#)
[Storage Tank Compliance](#)
[Main Page](#)
[Ability to Pay Information](#)
[Announcements, Events &](#)
[News](#)
[Brochures & Presentations](#)
[Case Studies - Petroleum](#)
[Cleanup Program](#)
[Competitive Procurement](#)
[System](#)
[Equipment Information](#)
[General Information](#)
[Innovative Technologies](#)
[Institutional Controls](#)
[Registry \(ICR\)](#)
[Institutional Controls](#)
[Procedures Guidance](#)
[\(November 2013\)](#)
[Word PDF](#)
[ITN Work Assignment and](#)
[Contractor Selection](#)
[LSSI/SCS Information](#)

O&M, PARM, and NAM Work Orders with periods of service expiring through 6/30/14 will be converted to Purchase Orders for current ATCs.

After 6/30/14 only O&M and PARM work will be directly assigned to the current ATC's. NAMs will be assigned using RCI.

When submitting a Scope of Work, Monitoring Summary Table, and/or Schedule of Pay Items (rate sheet) use the links below:

Email O&M scopes to the PRP Site Manager
[O&M Schedule of Pay Items](#)
[Operation and Maintenance Scope of Work](#)

Email NAM/PARM documents to the PRP Site Manager
[Monitoring Summary Table](#)
[PARM Schedule of Pay Items](#)

Change Orders for Continuation of O&M, PARM, and Groundwater Monitoring (Posted 02/24/14)

The following has been prepared in response to numerous requests for clarification regarding extending *open work orders* via change order for the following services: Operation and Maintenance (O&M) of remedial systems, Post Active Remedial Monitoring (PARM), and Natural Attenuation Monitoring (NAM). In almost all cases, these change orders expire between March 1st and June 30, 2014.

The Petroleum Restoration Program (PRP) and/or its contracted counties will evaluate every request to extend O&M of remedial systems where there is *verified and concrete progress towards site remediation*. That means a verifiable reduction in contaminant concentrations or mass observed in previously selected remedial performance monitoring points. If this condition is met, the following procedures will apply immediately:

1. For the limited number of remedial system O&M open work order expiring between February 24, 2014 and April 30, 2014, the PRP will issue a Change Order to extend the work to May 31, 2014. Starting March 1, 2014, **all** open work orders for O&M will need to be converted to direct Task Assignments using MyFloridaMarketPlace (MFMP) using the Agency Term Contractor's (ATCs) new rates and the process described in bullets 3 and 4. The intent of extending a limited amount of work orders until May 31, 2014 and at the same time begin to procure using MFMP is to ensure that there are no stoppages for active remedial systems.
2. Starting on March 1, 2014, Agency Term Contractors (ATCs) with open work orders for groundwater monitoring under NAM and PARM will be directly assigned renewal of NAM or PARM following MFMP procedures described in bullets 3 and 4 and using the ATC's new rates. NAM will be renewed for two semiannual sampling events or, where technically justified, for a single annual sampling event. Any

[Local Program and Team Site Updates & Information](#)
[Local Program Counties](#)
[Mobile Laboratory List](#)
[Performance Based Cleanup \(PBC\)](#)
[Preapproval Program SOP Manual](#)
[Pre-approved Advanced Cleanup Program \(PAC\)](#)
[Priority Score Funding Threshold History](#)
[Procedures & Guidance Documents](#)
[Programs](#)
[Qualified Contractor Information](#)
[Related Links](#)
[Remedial Action Initiative Information](#)
[Rules & Related Laws](#)
[Site Characterization Screening/LSSI Information](#)
[STCM/PCT Database](#)
[Reports & Electronic Site Files](#)
[Templates](#)
[95% UCL Tool](#)
[Utility Payment Information](#)
[Weekly Sign-Off Sheet for Priority 1, 2, & 3 FCO](#)
[Encumbrances](#)

If you are having problems downloading documents from this website, adjust the security settings in your browser. For example, in Internet Explorer, go to Tools > Internet Options > Security - and set the Internet zone to Medium level.

scope of service for PARM extending beyond one year (4 quarters) will be converted to groundwater monitoring and will be renewed for two semiannual sampling events or, where technically justified, for a single sampling annual event.

ATCs performing groundwater monitoring or PARM are not authorized to perform any monitoring services until they have received a Purchase Order.

3. As the PRP transitions to MFMP, ATCs will receive the following information:

A templated generic scope of work (SOW) for O&M and Monitoring,

A schedule of pay items showing the PRP's estimate of professional services to perform the scope of work, and

A schedule of deliverables.

4. The ATC must complete the templated scope of work and fill in the highlighted cells in the schedule of pay items. If the ATC agrees with the PRP's estimate of professional services, the ATC will submit all items to the PRP. The PRP will then issue a Purchase Order to the ATC to continue performing work.

Should there be questions regarding the PRP's estimate of professional services to complete the SOW or the SOW, the ATC is encouraged to contact the site manager at their earliest convenience.

5. ATCs are strongly encouraged to begin obtaining appropriate affidavits found on the [Petroleum Restoration Program Announcements](#) page.

Note: if a change order is being requested by a non-ATC, then the PRP is precluded from renewing the open work order and the task will be assigned to an ATC using the Relative Capacity Index process.

For any questions, please contact Robert Cowdery at 850-245-8899 or at robert.cowdery@dep.state.fl.us

Urgent Notice from the Director (Posted 02/14/14)

It has come to my attention that some contractors are proceeding to execute change orders without prior approval of site managers in contracted counties. **I want to be perfectly clear on this issue:** a contractor that unilaterally decides to perform services outside of the scope of an approved work order without getting **PRIOR** approval from its client: the Petroleum Restoration Program (PRP), **does it at its own financial risk**. Every change order **must** have prior approval from the PRP. We are tracking every **approved** change order since that element has a substantial bearing on the contractor's encumbrance balance in the Relative Capacity Index algorithm.

In addition, it has also come to my attention that some contractors have let their worker compensation insurance policies lapse therefore continue to perform rehabilitation work at their own financial risk. Until worker's comp

policy renewal proof is submitted, these are **unqualified contractors** and will not be assigned any work by the Department until proof of their insurance policy renewal is submitted to the PRP. I strongly encourage the contractor community to make sure this issue is fully addressed before our transition to Agency Term Contractors finishes on or about March 1, 2014.

Sincerely,
Jorge R. Caspary, P.G.
Director
Division of Waste Management

Notice from the Director (Posted 01/29/14)

As we prepare to enter into negotiations with recommended Agency Term Contractors, the Petroleum Restoration Program (PRP) must be ready to directly assign work if the estimated cost of the rehabilitation task is <\$195,000 or request three quotes if the estimated cost of the task is >\$195,000. This means that the PRP must have dozens and dozens of scopes of work ready in the next three weeks so procurement for site rehabilitation services can be performed at a more rapid pace. In order to meet this challenge, the PRP will immediately cease preparing scopes of work for ITBs where owners have agreed to competitively procure rehabilitation work and the Procurement Section will cease issuing Invitations to Bid (ITBs) for those sites. At this time, I believe it is counterproductive to issue any more ITBs since the earliest we would be issuing a Purchase Order to an ITB awardee would be no less than six weeks from now. Our human capital resources and time can be much better spent developing and refining scopes of work for all sites so they can be assigned and converted to Purchase Orders with a minimum of administrative delay.

Sincerely,
Jorge R. Caspary, P.G.
Director
Division of Waste Management

Next Steps In Procurement of Agency Term Contractors for the Petroleum Restoration Program (Posted 02/17/14)

The FDEP will contact vendors recommended for contract award ("Selected Vendors") via email, directing Selected Vendors to provide the FDEP Procurement Section with their professionals' fee schedule. The format for the fee schedule will be provided by FDEP.

FDEP will provide a copy of the revised contract, including a Relative Capacity Index (RCI) algorithm and work assignment process, to the Selected Vendors concurrent with the above email.

FDEP will contact Selected Vendors to schedule negotiations. Negotiations may be conducted in person or electronically (by phone and/or email).

Individual Agency Term Contract(s) (ATCs) successfully negotiated with Selected Vendors will be executed as approved. Direct assignments to contracted vendors will begin immediately following execution of a contract.

If FDEP is unable to negotiate a satisfactory contract with a Selected Vendor, negotiations will be terminated and no contract issued.

FDEP intends to finalize contract negotiations by 3/01/2014.

Tasks with costs estimated not to exceed \$195,000 will be directly assigned by the PRP to an ATC vendor applying an RCI algorithm as described in the resulting contract.

Tasks with costs estimated to exceed \$195,000 will be directly assigned after a request for quote process (eQuote process) has been completed. Invitations to participate in the eQuote process **will be sent to the top 3 or more ATC vendors** pursuant to an RCI algorithm as described in the resulting contracts.

UPDATE (02/17/14): Some contractors are proceeding to execute change orders without prior approval of site managers in contracted counties. A contractor that unilaterally decides to perform services outside of the scope of an approved work order without getting PRIOR approval from its client: the Petroleum Restoration Program (PRP), **does it at its own financial risk**. Every change order **must** have prior approval from the PRP. The PRP is tracking every **approved** change order since that element has a substantial bearing on the contractor's encumbrance balance in the Relative Capacity Index algorithm.

UPDATE (02/17/14): Contractors that have let their worker compensation insurance policies lapse and perform rehabilitation work do so at their own financial risk. Until worker's comp policy renewal proof is submitted, these are **unqualified contractors** and will not be assigned any work by the Department until proof of their insurance policy renewal is submitted to the PRP.

Competitive Statistics Weekly Update (Updated 02/07/14)

Click the following link to view the [2013 Year End Procurement Update](#).

eQuote Recommended Awards Weekly (Updated 01/03/14)

Click the following link to open the [eQuote Weekly Update](#).

PRP Assessment Webinar

Attached is the presentation from the PRP Assessment Webinar held on December 19, 2013. Download it [here](#).

Memo Regarding Site Closure with Conditions

Site Closure Concerns from Jorge Caspary (Dated 11/01/13)

UPDATE on Rulemaking for PRP (Updated 12/13/13)

A rulemaking hearing for 62-771 and 62-772 was held on October 28th, 2013 at 10:00 a.m. in Room 170 of the Carr Building, 3800 Commonwealth Blvd., Tallahassee, Florida. Amendments are being evaluated and will be posted when available.

62-771 - Petroleum Contamination Site Priority Ranking Rule

62-772 - Procurement Procedures for the Petroleum Restoration Program

Notice of Change/Withdrawal for 62-772.400 - Procedures for the Competitive Procurement of a Qualified Pool of Contractors

Site Assessment Procurement Initiative (Updated 10/29/13)

The Department is currently tasking low scored sites for site assessment work. Using MFMP, Invitations to Bid (ITBs) and eQuotes will be posted in the next few weeks. Please continue to check MFMP.

Currently, 124 site owners have agreed to competitive bidding for site assessment work on their low scored site.

MyFloridaMarketPlace (MFMP) Requirements

The Department of Environment Protection has a requirement that all vendors doing business with the Petroleum cleanup Program be registered through MyFloridaMarketPlace. If you have not taken this step, please proceed to the following web site:

Department of Management Services
MyFloridaMarketPlace page

Petroleum Restoration Program Announcement

The Department of Environmental Protection (Department), through directives from the 2013 Legislature, has determined that the Petroleum Restoration Program must provide for fiscal accountability for its expenditures, lower the cost of site cleanup, and prioritize those sites that pose the greatest risk to human health and the environment. With these goals in mind, the Program is developing new rules and policies that change the way site cleanup work is procured, performed, and prioritized.

Procurement of Site Cleanup Services:

Based on the Legislative directive, all future work in the Program must be competitively procured. There are different methods the Program plans to obtain cleanup services:

1. Develop a pool of competitively procured, qualified contractors (Agency Term Contractors) divided into three regions across the state, through a procurement process consistent with s. 287.057, F.S. The Notice of Solicitation was published in the Florida Administrative Register (FAR) on September 4, 2013. The solicitation will be published in the Vendor Bid System on or after September 16.
2. Develop formal competitive solicitations outside of the term contracts, where vendors meeting the minimum qualification requirements would be eligible to compete for the projects. At this time, 74 sites are in various stages of the procurement process:
 - a. 24 sites are currently in the process of approving Scopes of Work or the procurement process has begun.
 - b. 50 sites are being evaluated for the suitability of work and the Scopes of Work will be drafted as appropriate
 - c. In addition, seven sites have been assigned to a forensics contractor to determine the age of releases or to refine a site assessment.

Rules Update:

In order to effectively implement the changes necessary to meet the established goals, the Department is currently working on two Rules, Chapter 62-771, Florida Administrative Code (Ch 62-771), and Ch 62-772. Ch 62-780 is no longer being considered for modification.

Ch 62-771, the "Scoring Rule", is being revised to prioritize funding and rehabilitation work to sites that pose the greatest risk to human health and the environment, and to re-evaluate the site's priority funding order once the threat has been evaluated and satisfactorily addressed.

Ch 62-772, the "Procurement Rule" was drafted to allow for the proper solicitation of site work to transition the Program from the existing "preapproval contractor" approach to a competitive procurement system.

The Department published a Notice of Rule Development in the FAR on May 30, 2013 and held a rule workshop on June 19, 2013. The Department is currently revising the Rules based on the comments received and anticipates the Notice of Proposed Rule will be in the FAR on September 16, 2013.

Important Notice Regarding Low-Scored Site Initiative (LSSI)

UPDATE (02/28/14): The Petroleum Restoration Program (PRP) has updated the [LSSI Contractor Selection Sheet](#) (LSSI CSS) to simplify the process for the applicant to submit the information required for funding Low-Scored Site Initiative work. The PRP will still accept the previous LSSI CSS forms until the end of the year.

As most of you know, we are in the process of changing the Petroleum Restoration Program (PRP), formerly known as the Bureau of Petroleum Storage Systems

(BPSS), to improve its effectiveness and efficiency. As a result of this review, we have determined that we must prioritize the cleanup of those sites that pose the greatest risk to human health and the environment and provide more fiscal accountability. With this in mind, PRP is entering into a new era of funding for the Low-Scored Site Initiative (LSSI).

The LSSI has proven to be a highly effective pathway that has already allowed over a hundred properties across the state to qualify for site closures, which otherwise would not have been possible. The vast majority of the closures received from the LSSI funding have been for "clean closures" or those which have received a Site Rehabilitation Completion Order (SRCO) because no contaminated groundwater or soil was reported. Without applying for the LSSI, these "low priority" sites would not have been eligible for State funds to address the contamination for many years, possibly decades, in the future.

Starting August 30, 2013 the Department will accept new requests for funding of LSSI work. As a result of recent actions by the Florida Legislature, and in order to be considered for state funding in the LSSI program this year, the applicant must complete and submit the new LSSI Contractor Selection Sheet, which contains new options available for selecting a contractor to perform the work. The Department will now procure contractual services for the LSSI program through the procurement procedures in Ch. 287, F.S. Site owners or responsible parties now have three choices on how the work can be procured:

1. Select a qualified contractor (provided that pricing levels and conditions of the proposal can be negotiated on the best terms to the DEP), or
2. Agree to an informal quote process, or
3. Select an agency term contractor (when available)

Please see the revised LSSI Procedural and Technical Guidance document for updated procedures and procurement options.

If you have questions, please contact Sally McGregor at sally.mcgregor@dep.state.fl.us, Graham Witt at Gwitt@wrscompass.com, Michelle Allard at Mallard@wrscompass.com, or Wes Leon at Wleon@wrscompass.com.

Closure Statistics [PDF Format]

Eligible (State Funded Cleanups) Closures

Reimbursement Program - 2,621
Closures

Preapproval Program - 4,609 Closures

Total: 7,230 Closures



Closure Report Charts [Posted 01/13/2014]

Commonly Requested Reports [Excel]
Updated June 17, 2014



[Regulated Underground Storage Tank by County](#)
[8 MB]

[All Open Discharges](#) [4.2 MB]

[All Eligible Discharges](#) [7.3 MB]

[All Ineligible Discharges](#) [4.5 MB]

Invoice Submission Information
[PDF]



For the Month of February 2014

[Chart 1 - FY 13-14](#)

[Chart 2 - FY 12-13](#)

[Chart 3 - FY 11-12](#)

[Chart 4 - FY 10-11](#)

[Chart 5 - FY 09-10](#)

[Chart 6 - 5-yr Trend Analysis](#)

[Chart 6A - 5-yr Trend Analysis \(alternate view\)](#)

[Table 1 - FY 13-14 - Contractor Summary](#)

[Table 2 - FY 12-13 - Contractor Summary](#)

[Table 3 - FY 11-12 - Contractor Summary](#)

[Table 4 - FY 10-11 - Contractor Summary](#)

[Table 5 - FY 09-10 - Contractor Summary](#)

[Table 6 - Work Order & Invoice Counts by FY](#)

Financial Information



[Weekly Sign-Off Sheet for Priority 1, 2, & 3 FCO](#)

[Encumbrances \(New Sheet Updated Weekly\)](#)

[Petroleum Cleanup Preapproval Program Spending](#)

[Procedures for Fiscal Year 2012-2013 \[Final\] \(Posted 06-26-12\)](#)

[Petroleum Cleanup Preapproval Program Spending](#)

[Procedures for Fiscal Year 2011-2012 \[Final\] \(Posted 07-06-11\)](#)

[Contractor Preapproval Information Detail Status Report](#)

This report provides a comprehensive overview of information, sorted by Cleanup Contractor, related to Preapproval Cleanup Work Orders & Task Assignments. This does not match the encumbrance balance for the RCI calculations. Please refer to the [Work Assignment Process and RCI](#) for the associated business rules.

[RCI Encumbrance Balance Report](#)

This report provides a detail or summary of the Encumbrance Balance utilizing the [RCI Calculation Business Rules](#) that apply to Agency Term Contractors.

**Operational & Productivity Reports
[PDF]**



**Monthly Summary Reports
Fiscal Years 05-06 through 13-14
(Hover over the fiscal year to
view links to the reports.)**

- » **Fiscal Year 2013-14**
- » **Fiscal Year 2012-13**
- » **Fiscal Year 2011-12**
- » **Fiscal Year 2010-11**
- » **Fiscal Year 2009-10**
- » **Fiscal Year 2008-09**
- » **Fiscal Year 2007-08**
- » **Fiscal Year 2006-07**
- » **Fiscal Year 2005-06** (Beginning December 2005)

Additional Areas of Interest

[Agreed-Upon Procedures - Level of Effort Summation, December 2005](#)

[7.5 mb - large file - right click and download to your computer before opening]

[Programs](#)

Performance Based Cleanup (PBC)

Pre-approved Advanced Cleanup Program (PAC)

Eligibility Programs

York Risk Services Group, Inc. - Florida is the Administrative Services Contractor for the Petroleum Restoration Program tasked to assist in various cleanup related administrative functions including but not limited to: Site Priority Scoring, Contractor Selection Sheet Processing, Deductible and LCAR Solicitation, Preapproval Contractor Qualifications, Cleanup System Utility Invoice Processing, and File/Database QA.

York Risk Services Group, Inc. - Florida can be reached at 850/224-2599 or by mail c/o FDEP at 2600 Blair Stone Road, Mail Station 4595, Tallahassee, Florida 32399-2400. The FDEP Contract Manager is Jeff Priddle 850/245-8860.

Last updated: July 08, 2014

Petroleum Restoration Program #850-245-8839 MS #4575

Division of Waste Management #850-245-8705 MS #4500
2600 Blair Stone Road, Tallahassee, Florida 32399-2400

[Questions & Comments Form](#)

[DEP Home](#) | [About DEP](#) | [Contact Us](#) | [Search](#) | [Site Map](#)