



# Florida Department of Environmental Protection

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April 7, 2010

Jonathan Brewer  
EarthWorks Environmental, Inc.  
2328 Destiny Way  
Odessa, Florida 33556

Re: **Matrix Enhanced Treatment System (METS)**

Dear Mr. Brewer:

The Bureau of Petroleum Storage Systems hereby reaffirms and updates its acceptance of the Matrix Enhanced Treatment System (METS) process equipment for ex situ remediation of contaminated soil. This acceptance reflects the new address of EarthWorks Environmental Incorporated and supersedes all previous acceptance letters issued for this system. Aside from an updating of the address for EarthWorks Environmental Incorporated, no other changes have been made since the previous issue of this acceptance on January 11, 2008.

As indicated by EarthWorks, the METS is a self-propelled, trailer-mounted unit approximately the size of a large sports utility vehicle, and is powered by a diesel engine. Excavated soil is fed by a front-end loader into a hopper, after which it is screened and mixed with treatment chemicals of the user's choice as it enters a mill. The mill also uniformly blends in air and moisture. The treated soil then exits the treatment system and is deposited on the ground or may be carried away by conveyor. Several models are available, with throughput rates ranging from 30 to 220 cubic yards of soil per hour. The standard system has wheels but tracks can be substituted as an option.

A copy of this letter should be provided in the appendix of site-specific Remedial Action Plans proposing the use of the METS so that technical reviewers throughout the state will be informed that the Bureau has evaluated the product from a regulatory standpoint. Enclosure 1 cites some regulatory considerations that may need to be taken into account.

While the Bureau does not endorse specific or brand name remediation products or processes, it does recognize the need to determine their acceptability from an environmental standpoint with respect to applicable rules and regulations, safety and public health. Vendors must then market the products and processes on their own merits regarding performance, cost and safety in comparison to competing alternatives in the marketplace. In no way, however, shall this regulatory acceptance be construed as certification of product performance. Additionally, the

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Department emphasizes a distinction between its regulatory acceptance and approval. Products and processes are accepted but they are not approved.

Also, it is not a requirement that a particular remediation product or process have an official acceptance letter in order for it to be proposed in a site-specific Remedial Action Plan. The plan, however, must contain sufficient information about the product or process to show that it meets all applicable and appropriate rules and regulations, especially those of the Florida Administrative Code.

The Bureau reserves the right to revoke its acceptance of a product or process if it has been falsely represented. Additionally, Bureau acceptance of any product or process does not imply it has been deemed applicable for all cleanup situations, or that it is preferred over other treatment or cleanup techniques in any particular case. A site-specific evaluation of applicability and cost-effectiveness must be considered for any product or process, whether conventional or innovative, and adequate site-specific design details must be provided in Remedial Action Plans proposing the product or process. You may contact me at 850-877-1133, extension 3722 if there are any questions.

Sincerely,



Rick Ruscito, P.E.

Ecology and Environment, Inc.

Bureau of Petroleum Storage Systems

Petroleum Cleanup Section 6



Rebecca S. Lockenbach

FDEP Section Leader

Bureau of Petroleum Storage Systems

Petroleum Cleanup Section 6

enc: (1) Regulatory Considerations

c: T. Conrardy - FDEP/Tallahassee

History: INN\_084, 6/502  
INN\_084a, 1/11/08  
INN\_084b, 4/7/10

ENCLOSURE 1

REGULATORY CONSIDERATIONS

1. Treatment chemicals and additives: The METS itself is a piece of soil remediation process equipment with which no specific treatment chemicals or additives are associated, so the user is free to select those that are best-suited for each contaminated site. Since it is impossible for the Bureau of Petroleum Storage Systems to cover in this letter the specifics of every conceivable chemical or additive, the onus is on the user to make sure that applicable and appropriate rules and regulations are followed for each chemical and/or additive that is used.

This applies to all brands and types of chemicals and additives that may be mixed into the soil as it enters the METS, regardless of whether or not they are officially accepted by the Bureau. Such chemicals and additives, for example, may be oxidation chemicals, surfactants, microorganisms and their associated nutrients. Those who prepare Remedial Action Plans proposing the METS should consider the toxicology and fate in the environment of the chemicals and/or the microorganisms themselves, and the intermediate and ultimate degradation products that are a result of interactions between those chemicals and the contaminants in the soil being treated. In some cases, if a particular chemical or additive to be used in the METS already holds an official product acceptance letter from the Bureau, then the letter should be cited in the Remedial Action Plan and conditions or requirements set forth in the acceptance letter observed.

Additionally, as in any remediation project, the user is expected to pay attention to safety in both the design and operation of a METS remediation system. This includes, but is not necessarily limited to, safety considerations in the following categories: fire, electrical, mechanical, personnel, the handling and compatibility of chemicals, air emissions, and passersby.

2. Applicable regulations: For METS soil remediation, the chapters of the Florida Administrative Code (F.A.C.) that may be applicable include but are not necessarily limited to Chapter 62-777, for soil cleanup target levels, and 62-770, for petroleum cleanup. The following chapters may also be applicable to the extent that chemicals, additives, intermediate degradation products and contaminant residuals in soil processed by the METS may affect the underlying groundwater, either directly through contact with the groundwater, or by leaching, after treated soil is returned to the excavated area at a remediation site: Chapter 62-520 for minimum groundwater criteria in general; Chapter 62-777 for groundwater criteria of specific chemicals; and Chapter 62-550 for groundwater criteria of drinking water contaminants.
3. Source Removal phase: Treatment of excavated soil by the METS during the Source Removal phase is not allowed by Section 62-770.300, F.A.C. During this phase, only proper treatment and disposal at or by a commercial permitted soil treatment facility is allowed.

The only way to obtain permission to use a non-permitted METS during Source Removal phase work is to make a special request for an Alternate Procedure, pursuant to Section 62-770.890, F.A.C. Such a request is not a routine matter and should be made only for good reason. As a matter of safety and environmental prudence, a proposal for an Alternate Procedure of this type should address some of the same requirements imposed on land farming by Section 62-770.300, F.A.C., during the Source Removal phase. They include:

- (a) a limit on the amount of time that soil can be stored or stockpiled at the site;
- (b) prevention of human exposure to the contaminated soil;
- (c) protection of the soil from precipitation that may cause runoff;
- (d) prevention of public access to the excavated area;
- (e) use of an impermeable liner, if necessary, beneath stockpiles of contaminated soil;
- (f) acknowledgement that the applicable soil cleanup target levels are the lower of direct residential exposure and leachability based on groundwater cleanup target levels in Chapter 62-777, F.A.C.;
- (g) control of air emissions and/or odors; and
- (h) observance of any requirements associated with the user's choice of chemicals and/or biologicals added to the METS for the purpose of treating the contaminated soil.

4. Active Remediation phase: For onsite remediation of excavated soil by the METS during the Active Remediation phase, Section 62-770.700, F.A.C., applies. An approved site-specific Remedial Action Plan is required, and the soil cleanup goals of Chapter 62-777, F.A.C., as referenced by Chapter 62-770, F.A.C., apply. Most often, the cleanup target levels for the treated soil will be the lower of the direct exposure residential cleanup target levels and the leachability-based on groundwater criteria cleanup target levels specified in Chapter 62-777, F.A.C., Table II. Treated soil that meets these cleanup target levels can be disposed either onsite or offsite but responsible parties are advised that other federal or local requirements may apply. Although there is an option for either onsite or offsite disposal of treated soil meeting these cleanup levels, the prudent course of action in most cases may be to return the treated soil to the same excavation pit from where it originated at the site.
5. METS as a commercial stationary treatment facility: For the use of METS as a commercial stationary soil treatment facility, to which contaminated soil is transported for treatment, a permit to operate as such must first be obtained. Chapter 62-713, F.A.C., for soil treatment facilities applies.
6. METS as a commercial mobile treatment facility: For the use of METS as a commercial mobile soil treatment facility, a permit to operate as such must first be obtained. The mobile soil treatment facility permit would enable the METS to overcome what is otherwise a prohibition of it, as discussed in paragraph 3a above, during Source Removal pursuant to Section 62-770.300, F.A.C. With a mobile soil treatment facility permit in hand, it would not be necessary to request an Alternate Procedure each time the METS will be used for Source Removal phase work at a contaminated site. The mobile permit, however, is not needed in situations where the proposed use of the METS is covered by an approved site-specific Remedial Action Plan pursuant to Section 62-770.700, F.A.C.