

Norwalk Tank Farm Update

*Presented to the Norwalk Tank Farm
Restoration Advisory Board*

April 22, 2004

Presentation Overview

Topics to be Covered

- HRA Update
- Remediation Operations Update
- Phytoremediation Update

HRA Update

- In a letter dated October 31, 2003, the RWQCB requested that Kinder Morgan “conduct an additional human health risk assessment (HRA), including indoor air analysis, primarily for the southern portion of the facility.”
- A work plan outline was submitted to members of the OCCS on April 2, 2004 (see outline).

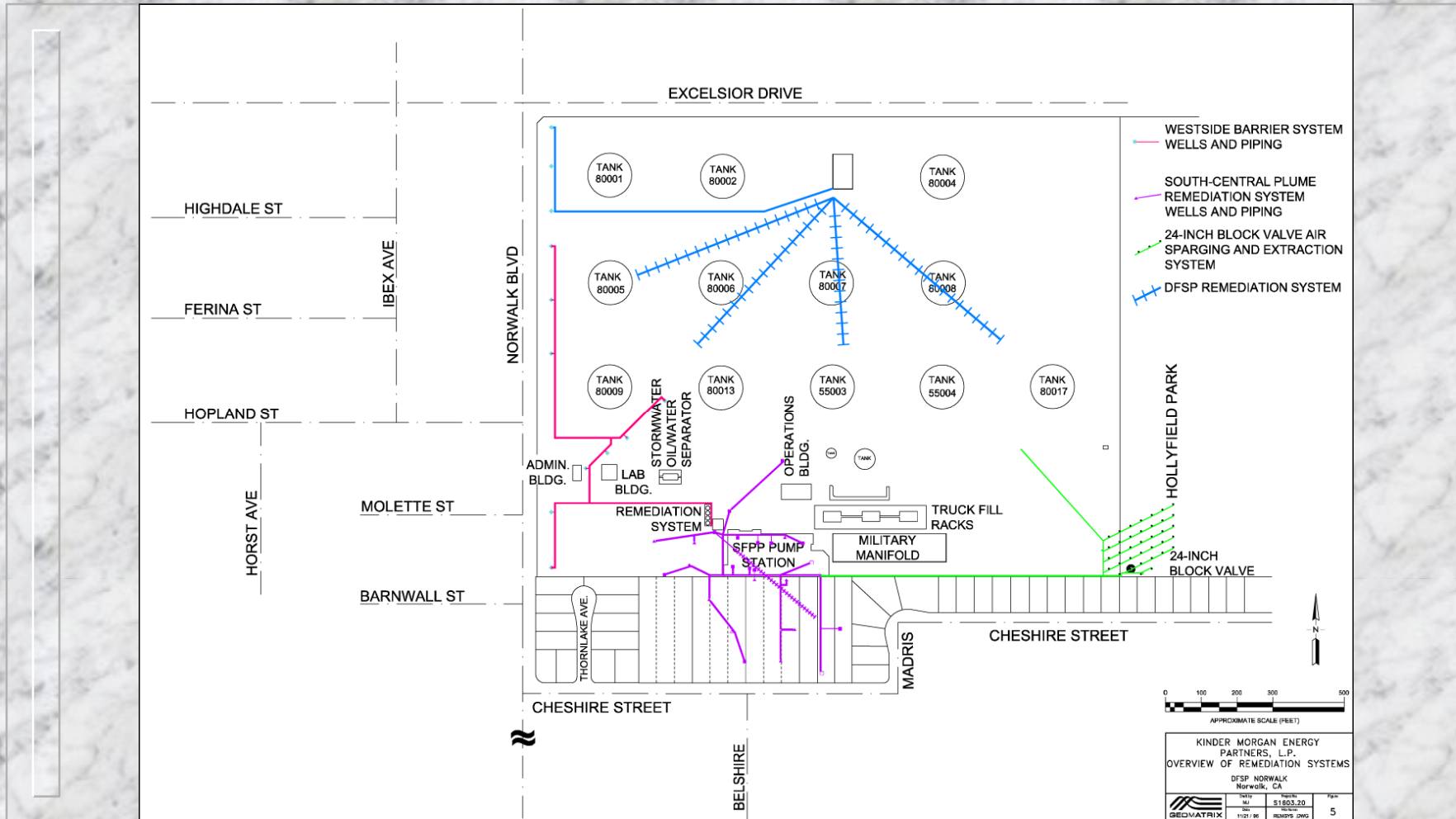
HRA Update cont.

- OCCS kick-off meeting was held at the Norwalk City Hall on April 13, 2004 to discuss the work plan outline (see meeting minutes). Issues discussed included:
 - Scope of Risk Assessment
 - Calculating Risk vs. Developing Risk-Based Remediation Goals
 - Collecting New Soil and Soil Vapor Data
 - Modeling Approach for Indoor Air Analysis
 - Chemicals of Potential Concern
 - Future Land Use

HRA Update cont.

- As discussed by OCCS members, a HRA was conducted by the DESC for the DTSC in 1993. The 1993 HRA included the following:
 - Indoor air analysis
 - Risk assessment for the southern off-site residential area
- KMEP will review the 1993 HRA and identify additional areas for assessment, if necessary, to meet the request of the RWQCB.

Map of Current Remediation Systems



KINDER MORGAN ENERGY PARTNERS, L.P.
 OVERVIEW OF REMEDIATION SYSTEMS
 DFSP NORWALK
 Norwalk, CA

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Soil Vapor Extraction System

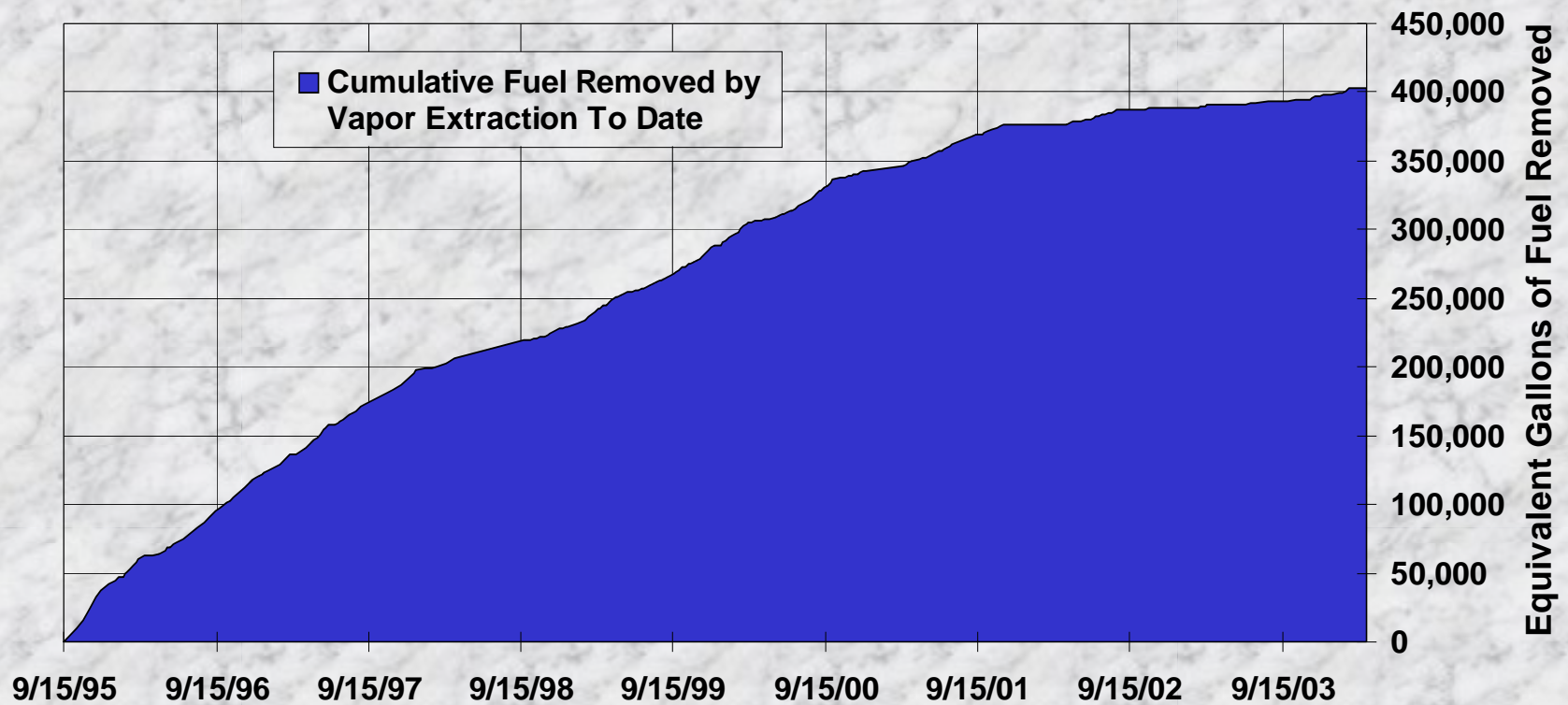
- 17 onsite and 6 off-site vapor extraction wells in the South-Central Plume area.
- 2 vapor extraction wells in the Southeastern 24-Inch Block Valve area.

Soil Vapor Extraction System Operations Summary

- Approximately 5,220 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since the January 2004 RAB meeting.
- Approximately 403,460 gallons equivalent of fuel removed from soil and destroyed by thermal oxidation since September 1995.

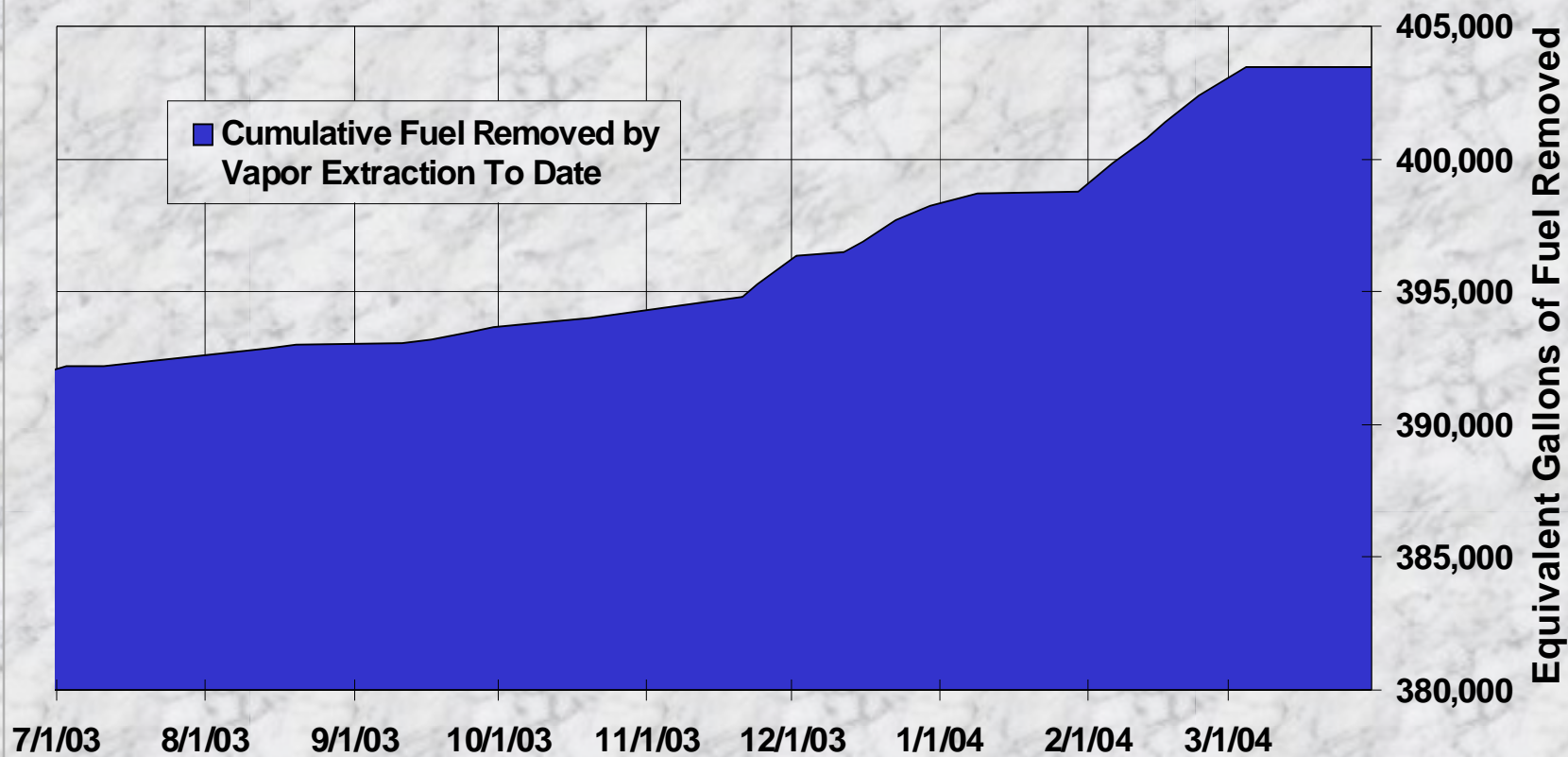
Soil Vapor Extraction System Operations Summary

Cumulative Fuel Removed by Vapor Extraction To Date



Soil Vapor Extraction System Operations Summary

Cumulative Fuel Removed by Vapor Extraction - Past Nine Months



Groundwater/Product Extraction System

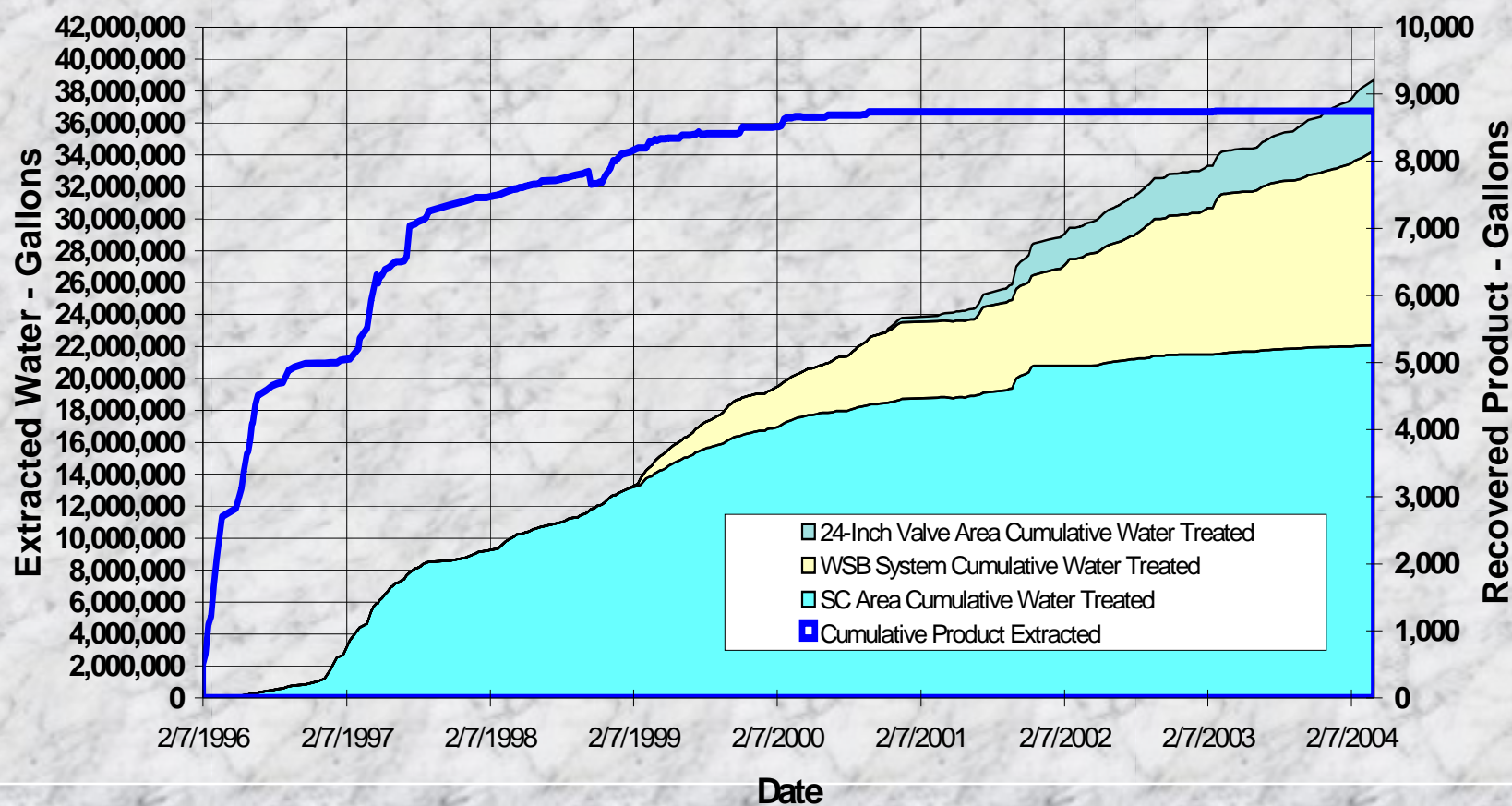
- 8 groundwater extraction wells in the West Side Barrier area
- 8 groundwater/product extraction wells in the South-Central Plume area
 - Total fluids pumps installed in MW-O-2 and GMW-O-21 during February 2004.
- 3 groundwater/product extraction wells and 2 groundwater extraction wells in the Southeastern 24-Inch Block Valve area

Groundwater/Product Extraction System Operations Summary

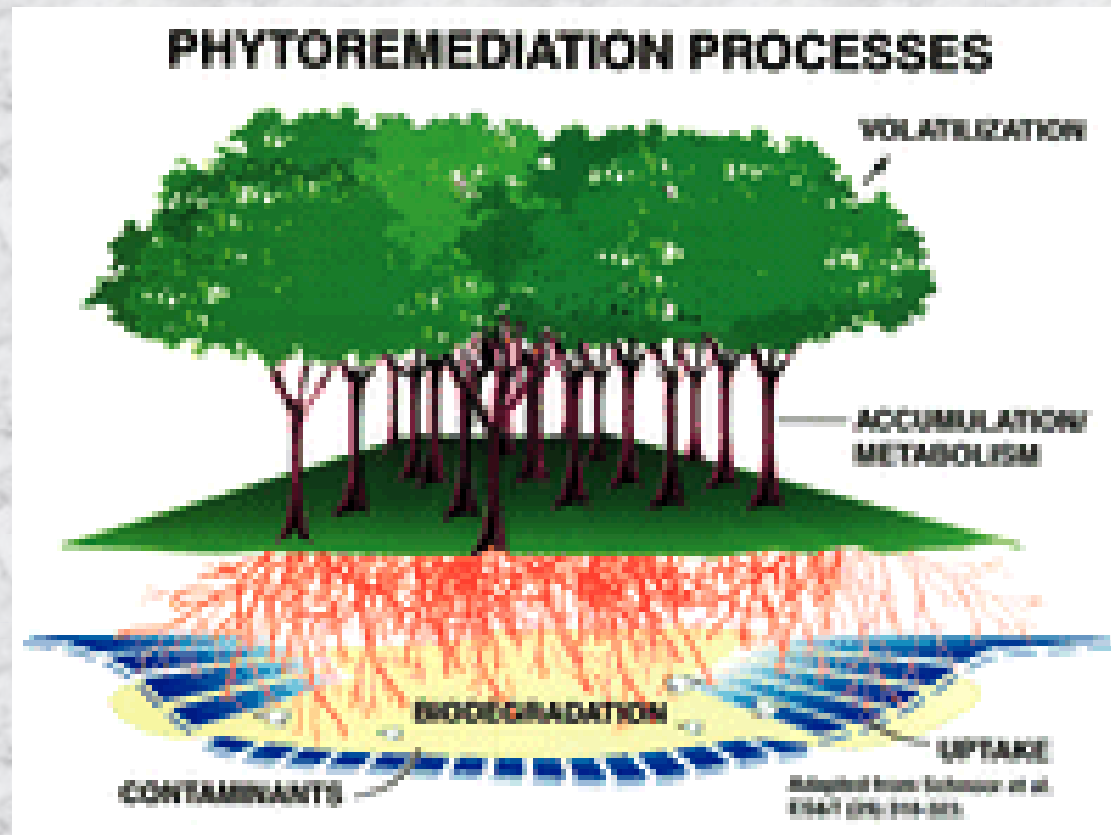
- Total groundwater extracted since January 2004 RAB meeting:
 - South-Central Plume area, 81,100 gallons
 - Southeastern 24-Inch Valve area, 537,200 gallons
 - West Side Barrier area, 1,055,000 gallons
 - No free product was recovered
- Total groundwater extracted since September 1995:
 - South-Central Plume area, 22 million gallons
 - Southeastern 24-Inch Valve area, 4.4 million gallons
 - West Side Barrier area, 12.2 million gallons
 - Total groundwater extracted, 38.7 million gallons
 - 8,745 gallons free product removed

Groundwater/Product Extraction System Operations Summary

Producted Extracted and Water Treated Summary



The Phytoremediation Process



Phytoremediation cont.

- Currently performing maintenance activities and groundwater monitoring
- Response to question regarding leaf analysis:
 - Several methods exist for examining accumulation of VOCs in plant tissue (i.e. vacuum distillation, headspace method)
 - Poplars do not hyperaccumulate VOCs. VOCs are usually evapotranspired or phytotransformed.
 - Therefore, it is not practical to analyze leaves for accumulation of VOCs.

Phytoremediation Areas

