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U. S. Department of Energy
Office of Environmental Management
Paducah Gaseous Diffusion Plant

Enzyme Activity Probe and Geochemical Assessment for Potential Aerobic Cometabolism of Trichloroethene in Groundwater of the Northwest Plume, Paducah Gaseous Diffusion Plant, Kentucky

June 2008

Paducah Gaseous Diffusion Plant (PGDP)
Paducah KY

Prepared for:
Office of Groundwater and Soil Remediation
Office of Engineering and Technology

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Acronyms

bgs	:	below ground surface
CSIA	:	compound specific stable isotope analysis
DNA	:	deoxyribonucleic acid
DoD	:	Department of Defense
DOE	:	U.S. Department of Energy
DQO	:	data quality objective(s)
EAP	:	enzyme activity probe
EM	:	Office of Environmental Management (DOE)
EPA	:	U.S. Environmental Protection Agency
HPA	:	hydroxy-phenylacetylene
ITRC	:	Interstate Technology and Regulatory Council
KRCEE	:	Kentucky Research Consortium for Energy and Environment
LRGA	:	lower RGA
MRGA	:	middle RGA
ORP	:	oxidation-reduction potential
PA	:	phenylacetylene
PCE	:	tetrachloroethene
PCR	:	polymerase chain reaction
PGDP	:	Paducah Gaseous Diffusion Plant
pH	:	negative log of the hydrogen ion concentration
PRS	:	Paducah Remediation Services
QA	:	quality assurance
qPCR	:	quantitative PCR
RGA	:	regional gravel aquifer
sMMO	:	soluble methane monooxygenase
SRNL	:	Savannah River National Laboratory
Tc	:	technetium
TCE	:	trichoroethene
TMO	:	toluene monooxygenase
TOD	:	toluene dioxygenase
T-RFLP	:	terminal restriction fragment length polymorphism
UCRS	:	upper continental recharge system
URGA	:	upper RGA
U.S.	:	United States of America
WSRC	:	Washington Savannah River Company

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Executive Summary

Portions of the groundwater underlying the Paducah Gaseous Diffusion Plant (PGDP) are contaminated by chlorinated solvents, principally trichloroethene (TCE), as well as other contaminants such as technetium-99 (^{99}Tc). Keys to effective long-term environmental management of the PGDP Site are: understanding, mitigating and ensuring that risks from the groundwater contaminant plumes are low and that the site will achieve regulatory goals in an acceptable time frame. Identification of the important mechanisms that impact the fate of TCE in PGDP plumes and documentation of TCE degradation rates for these active mechanisms are integral to this effort. A TCE Fate and Transport project scoping team (Project Team) was assembled to coordinate study of the migration of TCE and controlling processes in the groundwater at PGDP.

> ***Key point:***
>
> Aerobic cometabolism is occurring throughout the Northwest Plume at PGDP and is contributing to the degradation and attenuation of TCE.

The Project Team consists of representatives from Paducah Remediation Services (PRS) and Portage Environmental, the Commonwealth of Kentucky Division of Waste Management, The Environmental Protection Agency (EPA) Region 4, and the Kentucky Research Consortium for Energy and Environment (KRCEE). This team was supported by representatives of the EPA Robert S. Kerr Laboratory in Ada OK, the University of Oklahoma, Savannah River National Laboratory (SRNL), North Wind Inc. and others. The DOE Paducah Portsmouth Project Office (PPPO) and the DOE Office of Environmental Management (EM) sponsored the efforts of the team. All of the individuals and organizations contributed to the planning and execution of this research and worked to identify the wells used in the Northwest Plume, and established the research data quality objectives (DQOs).

Recent and emerging data from diverse sites across the U.S. suggest that cometabolism may be a significant TCE degradation mechanism occurring in aerobic contaminant plumes. Since PGDP groundwater is generally aerobic, elucidating the potential site-specific significance of cometabolism is central to the efforts and studies of the Project Team.

The PGDP aerobic cometabolism assessment was conducted in the Northwest Plume located within the regional gravel aquifer (RGA). This assessment was based on enzyme activity probe (EAP) assays supplemented by multiple lines of supporting evidence, including molecular techniques, stable carbon isotope analysis, and geochemical measurements for 10 RGA wells that are located along the plume centerline and 2 control wells located outside the footprint of the Northwest Plume. The various EAP assays each provide a clear, definitive fluorescent signal if a particular "oxygenase" enzyme is active at the time of analysis. The assays test either for the enzyme that oxidizes methane (soluble methane mono-oxygenase) or for one of a suite of enzymes that oxidize aromatic compounds (e.g., toluene oxygenases). The specific enzymes that are targeted with EAPs are representative of those that have been documented to break down TCE. Such enzymes result in degradation and subsequent mineralization of TCE to harmless end products such as carbon dioxide and chloride ions. If detected, the enzymes are active and capable of cometabolic degradation of TCE.

For the 10 wells within the Northwest Plume: 80% showed significant presence of toluene oxidizers, 50% showed significant sMMO activity, and 90% showed at least one type of oxidizing capability. Vertically within the RGA, the expression and activity in the upper and lower portions of the RGA had particularly diverse and robust EAP signals.

The EAP data indicate that aerobic cometabolic activity is occurring throughout the Northwest Plume at PGDP and is contributing to the attenuation of TCE. The positive EAP responses in the control wells from outside the plume suggest that there is a widespread potential for the aerobic degradation of TCE. The geochemistry throughout the PGDP Northwest Plume was spatially variable, but all of the wells had geochemical conditions that are generally consistent with those required for aerobic cometabolism. To address the representativeness of the microbial population samples, a supplementary study of community characteristics was performed. These supplementary data provide scientifically and statistically defensible results that the groundwater sampled and analyzed for enzyme probe activity primarily represents sampling of the groundwater plume (i.e. formation water), rather than sampling the micro-communities present in specific and/or individual well casings, or biofilms present therein.

The specific goals for this aerobic cometabolism assessment were developed by the Project Team and are presented in detail in the document – *TCE Fate and Transport Project Evaluation of Aerobic Degradation Enzyme Activity Probe Sampling Scoping Document* (KRCEE, 2007). Based on the results of this effort, the following decision/estimation determinations were developed (which correlate with the five key questions from the Project Team):

- Decision / Estimation Statement #1. Bacteria capable of aerobically biodegrading TCE are present in the PGDP Northwest Plume.
- Decisions / Estimation Statement #2. Stable isotope information will be developed based on evaluation of compound specific isotope analysis (CSIA) in a companion report.
- Decision / Estimation Statements #3. The number and distribution of bacteria are sufficient to contribute to the biodegradation of TCE in RGA groundwater. The organic carbon in this oligotrophic, “nutrient limited” system is low and the microbial community appears to be stable and sustainable (e.g., the control wells were similar to plume wells).
- Decision / Estimation Statement #4. Based on the information collected during the initial phase of work, a follow-on kinetic (rate) study was recommended for consideration by the TCE Fate and Transport Team. The objective of this study would be development of an independent site-specific degradation rate constant. Two wells, MW125 and either MW236 or MW381 appear to be promising for the kinetic study phase of the work based on: a) location in the mid to distal plume area where attenuation processes are particularly important, b) representative EAP responses, c) representative geochemistry, etc.
- Decision / Estimation Statement #5. The previously estimated degradation rates for PGDP based on comparison of plume scale TCE transport to a conservative tracer (^{99}Tc) are consistent with the published literature for aerobic cometabolism in large aerobic plumes (half life in the range of 9 to 25 years). Additional kinetic data for multiple sites across the U.S. are being developed through research funded by DOE and DoD. These data will be finalized and published and available to support the final estimated rates for PGDP.

Objectives

The overarching objective of the Paducah Gaseous Diffusion Plant (PGDP) enzyme activity probe (EAP) effort is to determine if aerobic cometabolism is contributing to the attenuation of trichloroethene (TCE) and other chlorinated solvents in the contaminated groundwater beneath PGDP. The site-specific objective for the EAP assessment is to identify if key metabolic pathways are present and expressed in the microbial community – namely the pathways that are responsible for degradation of methane and aromatic (e.g. toluene, benzene, phenol) substrates. The enzymes produced to degrade methane and aromatic compounds also break down TCE through a process known as cometabolism. EAPs directly measure if methane and/or aromatic enzyme production pathways are operating and, for the aromatic pathways, provide an estimate of the number of active organisms in the sampled groundwater. This study in the groundwater plumes at PGDP is a major part of a larger scientific effort being conducted by Interstate Technology and Regulatory Council (ITRC), U.S. Department of Energy (DOE) Office of Environmental Management (EM), Savannah River National Laboratory (SRNL), and North Wind Inc. in which EAPs are being applied to contaminated groundwater from diverse hydrogeologic and plume settings throughout the U.S. to help standardize their application as well as their interpretation.

While EAP data provide key information to support the site specific objective for PGDP, several additional lines of evidence are being evaluated to increase confidence in the determination of the occurrence of biodegradation and the rate and sustainability of aerobic cometabolism. These complementary efforts include:

- Examination of plume flowpaths and comparison of TCE behavior to “conservative” tracers in the plume (e.g., ^{99}Tc)
- Evaluation of geochemical conditions throughout the plume
- Evaluation of stable isotopes in the contaminants and their daughter products throughout the plume

If the multiple lines of evidence support the occurrence of cometabolism and the potential for the process to contribute to temporal and spatial attenuation of TCE in PGDP groundwater, then a follow-up enzyme probe microcosm study to better estimate biological degradation rate(s) is warranted.

Technical Background

Cometabolism – How does it contribute to contaminant natural attenuation?

Accurate prediction of, and response to, potential future impacts from TCE and organic-solvent contaminated groundwater requires that the key processes that impact the fate and transport of the contaminant in the groundwater environment be identified and quantified. A number of physical, chemical, and biological processes affect the fate of TCE and other contaminants in a groundwater plume. Physical and chemical processes include advection, dispersion, sorption, dilution and degradation. Biological processes include aerobic and anaerobic metabolism and cometabolism by organisms indigenous to the particular groundwater environment. Cumulatively, the chemical, physical and biological processes that affect a contaminant's fate are referred to as natural attenuation processes.

A decision to rely on natural attenuation processes as part of a site-remediation strategy depends on the combined effectiveness of all the various attenuation processes, along with remediation and source treatment actions, to meet site-specific remediation goals. Remediation goals for chlorinated solvents include low risk, demonstrable plume stability, documentation of the expression of accepted and sustainable attenuation processes, and projection of an acceptable remedial time frame. DOE, the U.S. Environmental Protection Agency (EPA) and other agencies have developed a number of relevant guidelines and protocols, including:

- *Scenarios Evaluation Tool for Chlorinated Solvent Monitored Natural Attenuation (MNA), WSRC-STI-2006-00096, Rev. 1* (SRNL, 2006) to help identify key natural attenuation processes for a particular site
- *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater*, EPA/600/R-98/128 (EPA, 1998), to help quantify the role of particular natural attenuation processes and to help determine the appropriateness of an attenuation based remedy

In the Technical Protocol, EPA relies on multiple lines of evidence to identify and account for the significance of natural attenuation processes to impact contaminant fate and transport. The "First Line of Evidence" is based on evaluation of contaminant and daughter product concentration trends over time and space at monitoring wells along a contaminant plume's flow path. The "Second Line of Evidence" consists of the identification and recognition of specific attenuation processes and hydrogeochemical conditions to support those processes. If needed, the "Third Line of Evidence" aims to confirm site specific degradation processes and establish a degradation rate (e.g., a contaminant half life) through the use of a microcosm, or an alternative laboratory or field study. These traditional lines of evidence remain central to identifying and quantifying attenuation processes, especially for sites with anaerobic groundwater conditions that are suited to reductive biological and abiotic degradation processes.

The Technical Protocol for natural attenuation of chlorinated solvents (EPA, 1998) recognizes that, over time, a variety of additional biotic and abiotic attenuation mechanisms will be identified and documented in the scientific literature. The Technical Protocol provides specific guidance for including a "Third Line of Evidence" for emerging degradation mechanisms in the evaluation of natural attenuation. The "Third Line of Evidence" includes the use of microcosm data, modeling, technical evaluation, and documentation of the geochemical conditions. This "Third Line of Evidence" is particularly important for sites with biogeochemical conditions that do not support the traditionally emphasized anaerobic natural attenuation processes.

> *Enzyme probes and related microcosms focus on documenting and quantifying aerobic cometabolism and represent an opportunity to cost-effectively contribute to the requirements of the Third Line of Evidence.*

Degradation of chlorinated ethenes by microbial communities has been extensively studied over the past 20 years. While some of the earliest efforts focused on aerobic cometabolism (Wilson and Wilson, 1985), the focus of natural attenuation research quickly shifted toward anaerobic processes (EPA, 1998). Anaerobic processes have been shown to occur reliably at a significant number of contaminated sites (sites that have low levels of dissolved oxygen, sulfate and other electron acceptors in the groundwater) and to rapidly degrade many chlorinated solvents through a series of identifiable daughter products.

Aerobic cometabolism is a process in which available organic matter in an aerobic environment induces the production of specific types of enzymes that are also capable of breaking down a contaminant such as TCE. During the 1980s and 1990s, interest in cometabolism (see Grindstaff, 1998, and Fries et al., 1997) focused on active bioremediation via addition of short-lived substrates such as methane, propane, toluene and phenol to facilitate degradation. However, there was little focus on quantifying the potential role of cometabolism in aerobic groundwater environments as a significant component of natural attenuation. Under natural conditions, aerobic cometabolism rates tend to be relatively slow and do not produce easily-observable diagnostic daughter products. Rather, aerobic cometabolism results in the

A few important definitions

enzyme – a biological catalyst that speeds up the rate of a reaction.

substrate -- a substance on which an enzyme acts.

The enzymes that are important to aerobic cometabolism are "oxygenases," chemicals that help break down a target molecule by inserting oxygen. Most enzymes catalyze one type of reaction and act on one primary substrate and sometimes act on related compounds. The link between enzymes and substrates is often tight so that enzymes are typically named after the primary substrate and reaction, simply by adding the suffix "*ase.*" For example, toluene 2-monooxygenase inserts an oxygen atom into toluene at the designated location. The substrates that are important to aerobic cometabolism are those that encourage the production of oxygenases that are "promiscuous," meaning that they oxidize a relatively wide range of compounds besides the primary substrate. For aerobic cometabolism, the enzyme oxidizes a contaminant such as TCE in addition to the primary substrate. Primary substrates that are known to result in TCE cometabolism include chemicals like toluene that contain "aromatic" carbon rings and simple carbon or nitrogen compounds like methane, propane or ammonia.

fortuitous degradation of the contaminant to carbon dioxide, water and chloride. Recently, however, aerobic cometabolism has been documented to occur at rates that can meaningfully contribute, in appropriate aerobic settings, to natural attenuation and stabilization of contaminant plumes (Lee et al., 2005; 2008; Wymore et al., 2007) leading to a renewed interest in cometabolism under natural conditions.

Chlorinated ethenes, including trichloroethene, are among the most common and most widespread contaminants in soil and groundwater. Notable examples within DOE include the Savannah River Site in SC, PGDP in KY, the Oak Ridge Site in TN, the Idaho National Laboratory (INL) in ID, the Hanford Reservation in WA, the Sandia and Los Alamos National Laboratories in NM, and the Lawrence Livermore National Laboratory in CA. At many chlorinated ethene contaminated sites, including all of these major DOE facilities, the contaminated groundwater often contains dissolved oxygen. Thus, the primary natural attenuation mechanisms that are widely recognized, reductive biological and abiotic destruction, are not active at these sites. Recent laboratory and field activities have documented that EAPs, in combination with DNA confirmation, can be used to identify and quantify groups of organisms that are actively contributing to aerobic cometabolism (Lee et al., 2005; 2008; Wymore et al., 2007). Through the utilization of laboratory microcosms these researchers have developed protocols to estimate degradation rates and relate the rate results to field conditions (Lee et al., 2005) as Third Lines of Evidence for the Technical Protocol.

Concurrent and ongoing progress in the related area of compound specific stable isotope analysis (CSIA) constitutes an additional “Third Line of Evidence” for the occurrence of biotic and abiotic degradation processes impacting chlorinated ethenes in groundwater. The CSIA research has successfully linked plume-scale changes in the profiles of stable carbon and hydrogen isotope ratios within the molecules of the contaminants and daughter products along a plume flowpath to the expected fractionation caused by different degradation processes – in some cases, these data help narrow down the degradation process(es) and the rate of degradation.

Because many of the major DOE solvent plumes occur in aerobic groundwater in a variety of hydrogeologic and geochemical settings, the various scientific developments related to identification and quantification of aerobic microbial activity have the potential to be transformational to the DOE EM Program. Documenting significant and sustainable attenuation at a site will facilitate a disciplined and defensible transition of cleanup activities to monitored natural attenuation or enhanced attenuation.

> ***Key Point:***
>
> While aerobic cometabolism has been applied as an *in situ* engineered remedy at several sites, traditional thinking has been that cometabolism is of limited importance to natural attenuation due to slow degradation rates in typical environmental conditions. Recent work has suggested that cometabolism may substantively contribute to monitored natural attenuation (MNA) at some sites where groundwater is contaminated by chlorinated ethenes.

Conceptual Model of Aerobic Cometabolism of Chlorinated Organics in Aerobic-"Oligotrophic" Plumes

Figure 1 summarizes some of the documented cometabolism pathways for TCE. Note that the initial step in each of the pathways is the oxidation of TCE by an enzyme that is actually being produced to target an aromatic compound (i.e, toluene), a light hydrocarbon (i.e., methane or propane), or another compound (i.e., ammonia). The oxidation of these "primary substrates" typically involves insertion, or addition, of oxygen to the molecule. The primary substrates are all relatively difficult to oxidize and the enzymes produced to oxidize them tend to be promiscuous. Therefore, these enzymes often capable of oxidizing a variety of nontarget compounds such as chlorinated solvents (e.g., Figure 1) and the EAP test reagents (as described in the next section).

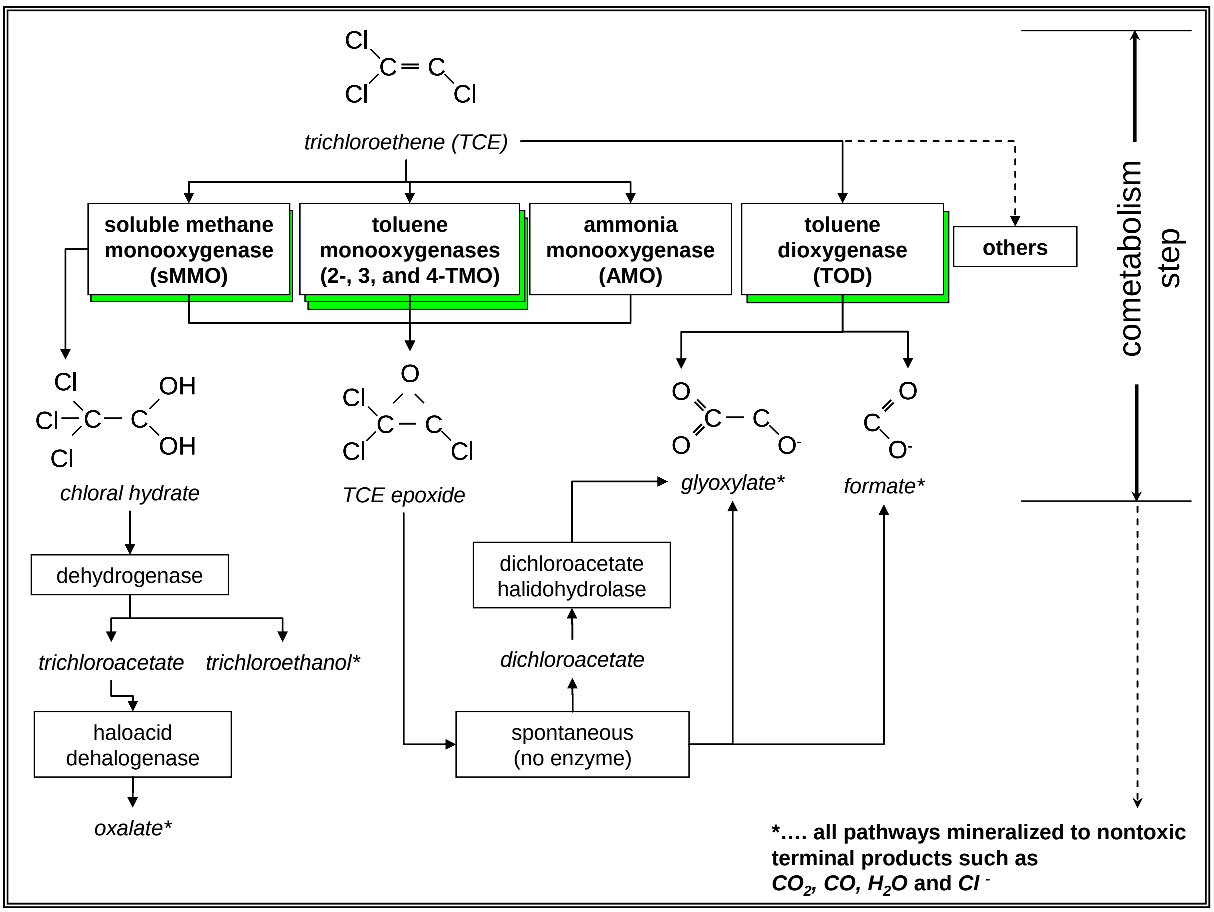

Figure 1. Some of the cometabolic pathways for TCE
(this figure represents a compilation of pathways documented in the University of Minnesota Biocatalysis/Biodegradation Database, http://umbbd.msi.umn.edu/)
Existing EAP assays available for the highlighted items

An ecosystem or environment that offers little to sustain life is termed oligotrophic: a word derived from the Greek oligo meaning small or few and trophe meaning nutrients or food. Many groundwater systems, even those that are contaminated by chlorinated solvents, are oligotrophic so that the microorganisms that live there are “starving.” In these systems, there is selective pressure favoring “low nutrient specialists.” In some cases, these organisms survive by recycling carbon released from the decay of previous generations. In other cases, however, the organisms are thought to survive by slowly degrading recalcitrant natural organic carbon sources, such as humic and fulvic acids. Thus, we propose the following hypotheses:

- Because of the ecological pressures in oligotrophic aquifers, *slow utilization of the recalcitrant natural organic matter is a potential contributor to the carbon/energy need of the ecosystem*.
- Because natural organic matter is approximately 30% aromatic, *microorganisms that produce enzymes capable of oxidizing recalcitrant aromatic compounds will be a significant component of the microbial community*. Note that co-contaminants can also support a microbial community capable of cometabolism and that remediation technologies based on amendment with aromatic substrates or light hydrocarbons have been documented (e.g., DOE, 1995, McCarty et al., 1998, Fries et al., 1997).
- Because many enzymes that oxidize recalcitrant aromatic compounds also degrade chlorinated solvents by cometabolism, *chlorinated solvents are being slowly degraded and attenuated in oligotrophic aerobic groundwater plumes*.

The data collected at Paducah, in combination with the data being collected in other large aerobic plumes will be used to test these hypotheses and determine the significance of cometabolism as an attenuation mechanism and the impact of cometabolism on plume stabilization and plume size.

Enzyme Activity Probes – How do they work?

Cometabolic oxidation results in mineralization of the contaminant to common inorganic species (e.g, carbon dioxide and chloride ion). As a result, the traditional chemical evidence for cometabolic degradation is the presence of appropriate conditions (i.e., dissolved oxygen and an appropriate carbon substrate) and the disappearance of the contaminants themselves (unlike anaerobic processes where detection of intermediate daughter products provides clear evidence of degradation). Emerging methods such as EAPs and CSIA have the potential to advance the assessment of cometabolism. The first provides a tool to directly measure if key enzymes are active *in situ*. The second provides a tool to examine the ratio of stable isotopes in the contaminant molecules throughout the plume to (a) determine if isotopic fractionation resulting from degradation processes is observable and (b) to provide insight into the specific processes (abiotic, anaerobic, aerobic, etc.) and rates of those processes.

Traditional microbial methods for assessing bacteria capable of cometabolism looked for the presence of particular DNA sequences. These methods do not provide evidence of actual enzyme production in the field (i.e., enzyme activity), but rather indicate either the presence or the potential for enzyme activity. However, EAPs have recently been developed that specifically assess both the presence and activity of specific microorganisms in contaminated subsurface environments. These probes are innovative tools that provide direct evidence that the mechanism for aerobic cometabolic oxidation is present and active in an aquifer. EAPs are compounds that take advantage of the nonspecificity of the cometabolic enzyme of interest and its ability to oxidize compounds other than the primary substrate. Probes that serve as alternate substrates for several of the "promiscuous" enzymes that are capable of cometabolizing TCE have been developed. These include probes for enzymes that target aromatic compounds (e.g., toluene, phenol, benzene), and enzymes such as soluble methane monooxygenases (sMMO) that target light hydrocarbons such as methane (Keener et al., 1998; 2001; Miller et al., 2002; Kauffman et al., 2003; Clingenpeel et al., 2005). These colorless probes undergo transformation to yield a fluorescent product only when the enzyme of interest is actively functioning. The specific probes used in this assessment include the sMMO probe coumarin and three aromatic enzyme probes: phenylacetylene (PA), 3-hydroxy-phenylacetylene (3HPA) and trans-cinnamonitrile. If the appropriate enzyme is not present, or it is present but not active in a given sample, then the probes will not be transformed and no fluorescence will be detected.

The general concept of the EAP is shown in Figure 2. Note that the "probe" is not a physical piece of equipment, such as a probe used with a pH meter, but rather, is a chemical that is added to a sample for a short time (10 to 15 minutes). Each probe is a commercially-available nonfluorescent compound that is transformed by a targeted enzyme (if present) into a fluorescent molecule that is easily quantifiable by microscopy or fluorometry. The compounds used as EAPs are selected to indicate a particular enzyme, or closely related enzymes. A short exposure period is used to avoid induction of the enzyme by the presence of the probe molecules. Thus, a positive result means that the enzyme has been induced by environmental conditions, and the enzyme is being produced in that environment.

EAPs measure the actual activity of microorganisms and represent *in situ* conditions as sampled in water from the subsurface. As noted above, molecular techniques (i.e., DNA analysis) provide evidence that the blueprint for the enzyme is present; therefore, these methods are used as a control analysis and to provide context for the EAP results. Microbial DNA can be extracted out of water, soil, or sediment samples and used in molecular assays. These assays are designed to look for the presence of the genes coding for the biological oxygenases. Coupling molecular assessments with EAP analyses provides direct and supporting evidence of cometabolic enzyme activity toward chlorinated solvents (Lee et al., 2005; 2008; Wymore et al., 2007). Natural attenuation of TCE through cometabolism can be verified using this type of complementary monitoring technique.

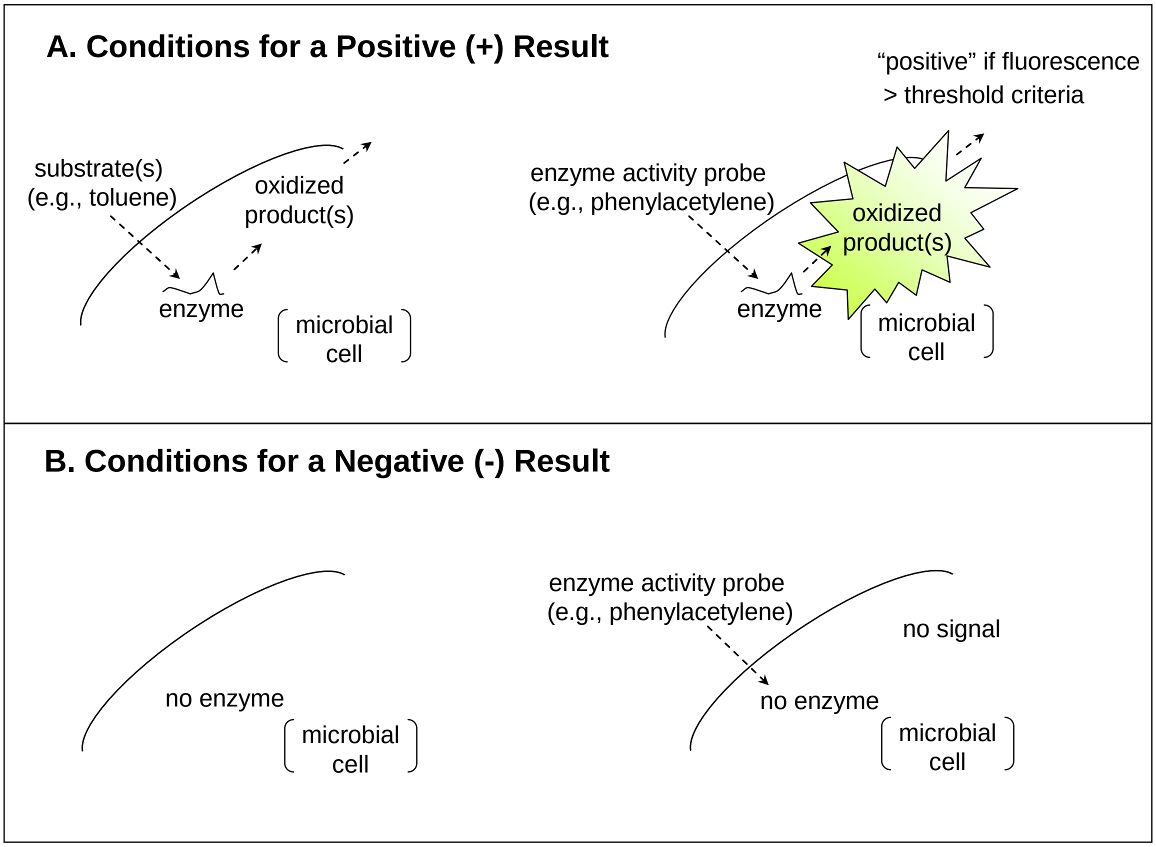

Figure 2. Schematic diagram of the enzyme activity probe concept showing a positive result (A) and a negative result (B).

Additional lines of evidence being collected to support evaluation of natural attenuation in PGDP groundwater include the following:

- Examination of plume stability
- Comparison of TCE behavior to "conservative" tracers
- Evaluation of geochemical conditions throughout the plume
- Evaluation of stable isotopes in the contaminants and daughter products throughout the plume.

Site Background

General site history, hydrostratigraphy and observed contaminant plumes

The groundwater underlying the PGDP is contaminated by chlorinated solvents, principally trichloroethene (TCE; Figure 3), as well as other contaminants such as ^{99}Tc (Figure 4). TCE was released as a dense nonaqueous phase liquid (DNAPL) to subsurface soils and groundwater as a result of operations that began in 1952. As shown in Figure 3, the Building C-400 area is coincident with the highest TCE concentrations (i.e., the centroid) in the groundwater plumes at PGDP. While there are other known and potential sources of TCE at PGDP (e.g., various hazardous and radioactive burial grounds and disposal facilities), the residual contamination in the vicinity of Building C-400 is a dominant historical and current source of TCE solvent contributing to the large PGDP groundwater plume(s). PGDP is in the final planning phases for removing residual DNAPL contaminants near Building C-400 using electrical resistance heating. Moreover, PGDP is working with regulators and stakeholders to comprehensively address soil and groundwater contamination, and to develop a risk-based end-state goal for the site (DOE, 2005). A key aspect of the broad long-term environmental management of the site is collecting data to help understand, mitigate and assure that risks from the existing groundwater contaminant plumes are acceptable and that the site will achieve regulatory goals in an acceptable time frame. Identification of the important natural attenuation mechanisms occurring in the PGDP TCE plumes and documentation of degradation rates are integral to this effort.

The subsurface at PGDP (Figure 5) has three relevant hydrogeologic zones: 1) the Upper Continental Recharge System (UCRS; about 0-65 feet deep); 2) the Regional Gravel Aquifer (RGA; about 65-87 feet deep); and 3) the underlying McNairy Formation (McNairy; greater than about 87 feet deep). Contaminants, primarily TCE and ^{99}Tc, have been detected in all three zones. As shown in Figure 5, however, the dissolved phase plume is transported by groundwater flow primarily in the relatively permeable RGA after release from the source zone. Spatially, three major plumes -- Northwest, Northeast, and Southwest -- have been identified beneath PGDP based on contaminants, migration patterns and plume origins.

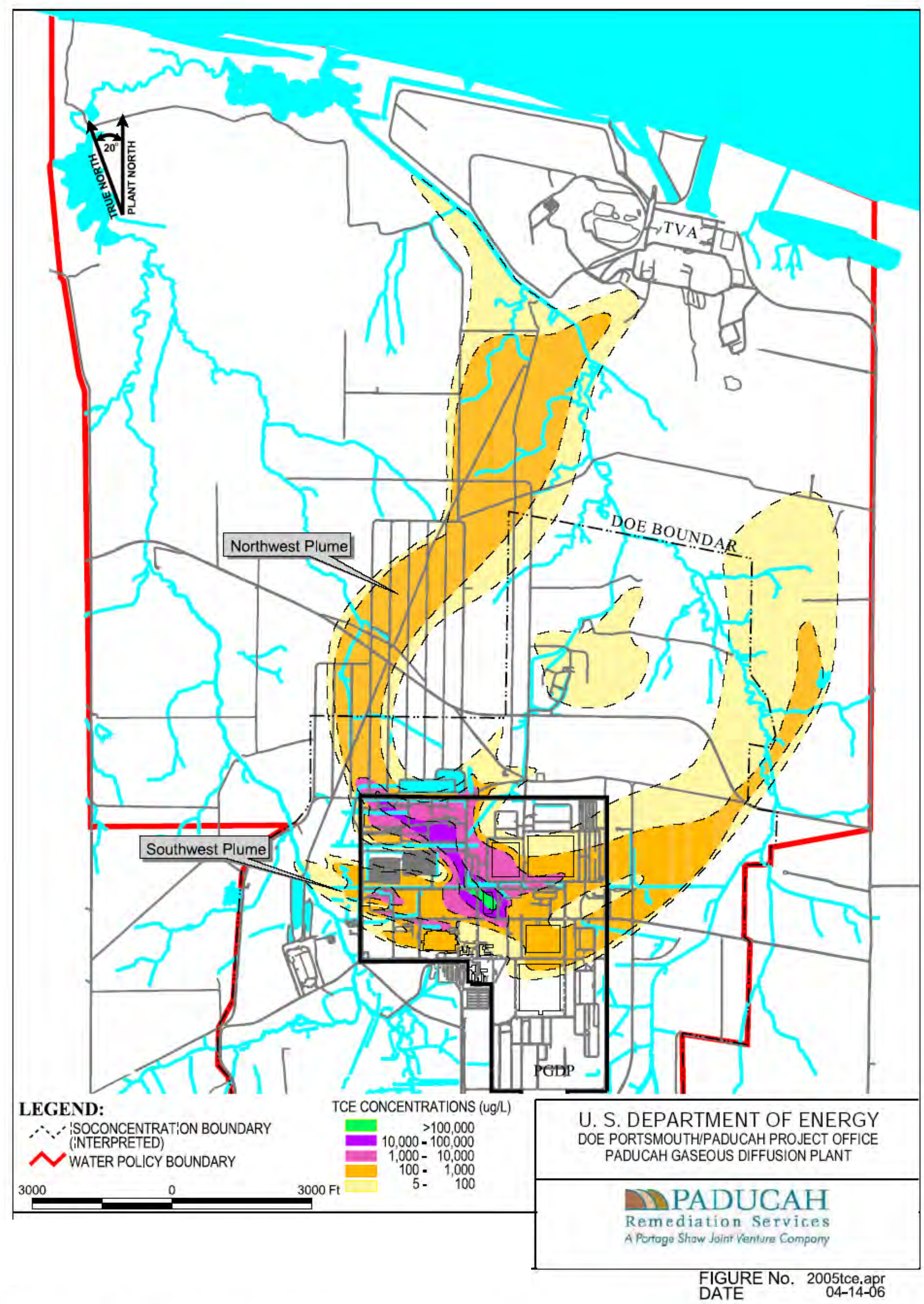

Figure 3. Calendar Year 2005 TCE Plumes in the RGA Underlying PGDP (PRS, 2007)

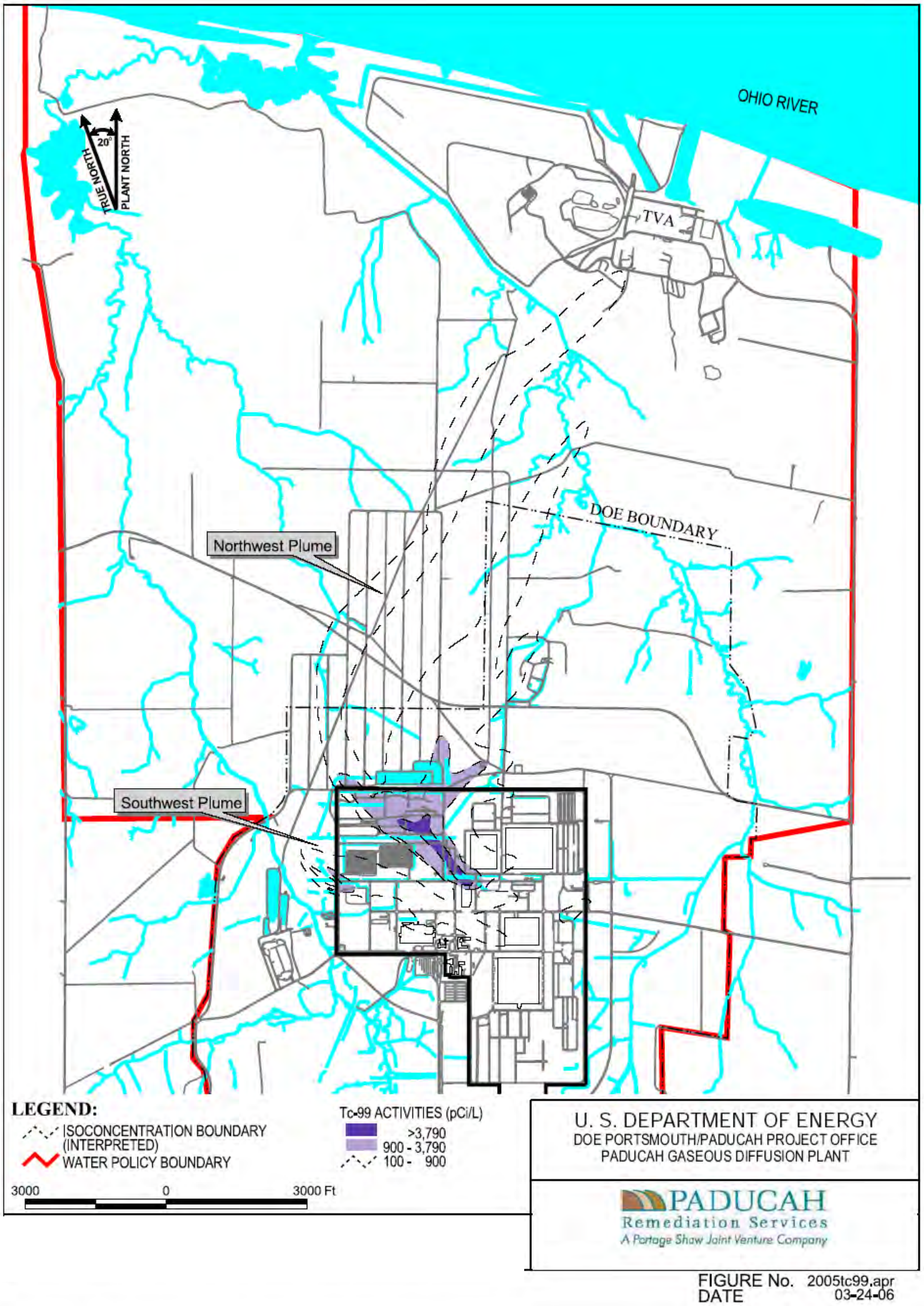

Figure 4. Calendar Year 2005 ^{99}Tc Plumes in the RGA Underlying PGDP (PRS, 2007)

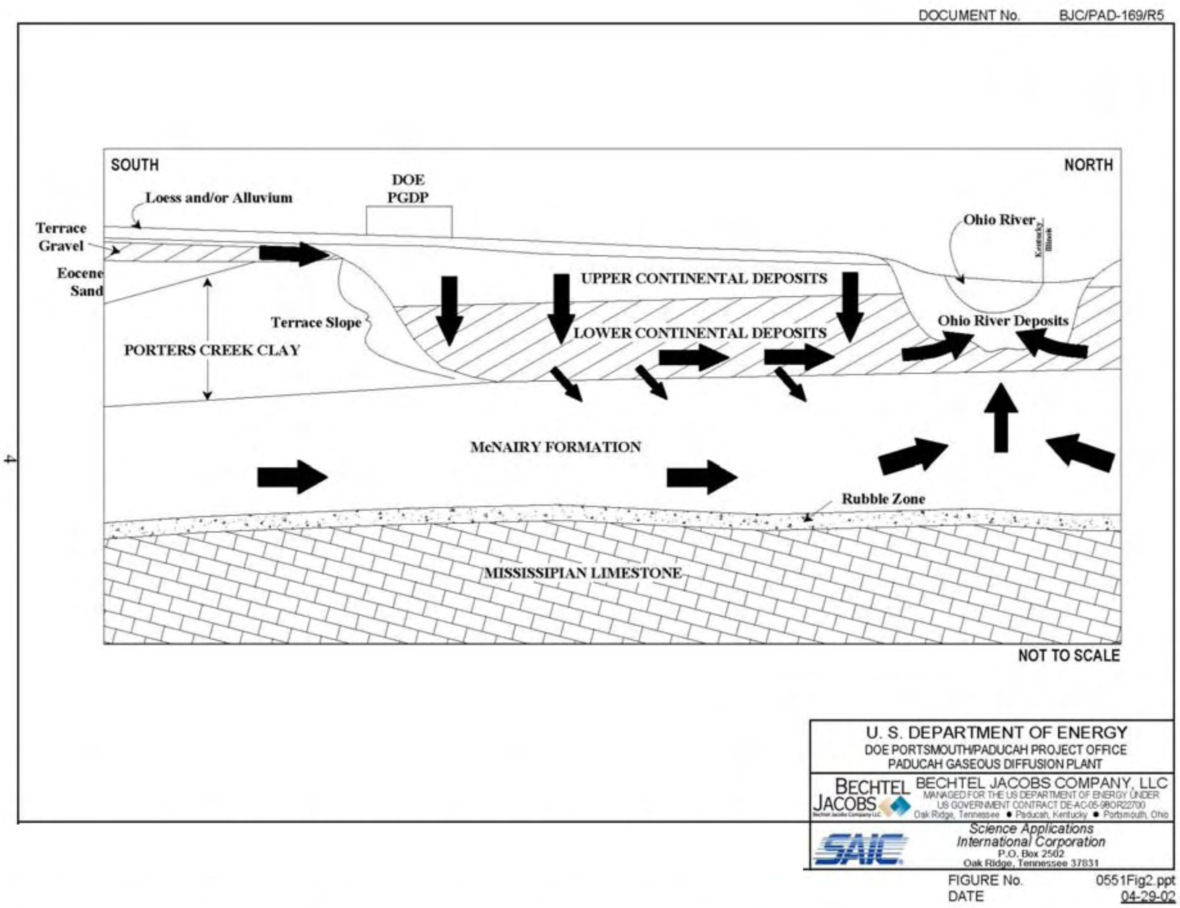

Figure 5. PGDP geologic/hydrogeologic conceptual model. The Upper continental deposits represent the "Upper Coninental Recharge System" or UCRS, and the Lower Continental Deposits represent the Regional Gravel Aquifer or RGA (PRS, 2007).

In the report, *Evaluation of Natural Attenuation Processes for Trichloroethylene and Technetium-99 in the Northwest Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, Clausen et al. (1997) provided an overview of RGA geochemistry and provided an early evaluation of TCE biodegradation. Clausen et al. (1997) concluded that degradation was occurring, that the degradation rates were relatively slow compared to literature values for reductive dechlorination with an estimated TCE half-life at PGDP in the range of 9.4 to 26.7 years, and that reductive dechlorination was not a substantive contributor to attenuation/degradation in this plume.

The spatial and temporal concentration data from the Northwest Plume have been periodically re-evaluated by subsequent investigators. All of the efforts are based on field-scale observations of the structure of the plume centerline concentration and a comparison of the behavior of TCE to a relatively conservative co-contaminant, ^{99}Tc, using interpretive methods recommended by EPA (1998). All of the studies performed in the Northwest Plume have confirmed Clausen's initial findings that TCE appears to be degrading as it migrates through the PGDP groundwater system and that the half life based on a first order decay model calculation is nominally in the range of 9 to 25 years.

Emerging data from the literature suggest that the apparent degradation rates observed at PGDP are similar to those measured at other sites that have similar aerobic geochemistry. For example, at INL Test Area North (TAN), dilution-corrected field scale plume data suggest that TCE is attenuating relative to two internal tracers with a half-life of 9 to 21 years. Molecular and biological assays, as well as laboratory microcosms using water from this site confirmed that aerobic cometabolism is the probable degradation mechanism and yielded an independent half-life estimate of 22 years (Lee et al., 2005).

DOE and DOD are currently funding research to determine the potential utility of broader application of molecular and biological assays for aerobic cometabolism. Preliminary data from plumes underlying the PGDP (this study), Sandia National Laboratory, Hill Air Force Base, Tinker Air Force Base, and the Savannah River Site suggest that cometabolism plays a role in attenuating large aerobic plumes. Similar to PGDP, the plume structure at these diverse contaminated sites are consistent with degradation at the approximate rates observed at TAN.

Enzyme activity probe study and related efforts

An assessment of the potential for aerobic cometabolism was conducted for the Northwest Plume located within RGA at PGDP. This assessment was based on EAPs supplemented by multiple lines of supporting evidence (DNA, geochemistry, CSIA, etc.) for 12 RGA wells that are located along the plume centerline and two control wells located outside the footprint of the Northwest Plume (see Figure 6). The study is a central activity in a larger program to understand the fate and transport of TCE in PGDP groundwater. The TCE Fate and Transport Project scoping team (Project Team) consists of representatives from Paducah Remediation Services (PRS) and Portage Environmental, the Commonwealth of Kentucky Division of Waste Management, EPA Agency Region 4 in Atlanta GA, and the Kentucky Research Consortium for Energy and Environment (KRCEE). This team was supported by representatives of the EPA Robert S. Kerr Laboratory in Ada OK, the University of Oklahoma, Savannah River National Laboratory

(SRNL), North Wind Inc. and others. The DOE Paducah Portsmouth Project Office (PPPO) and EM sponsored the efforts of the team. All of the individuals and organizations contributed to the planning and execution of this research and worked to identify the wells used in the Northwest Plume, and established the research data quality objectives (DQOs)..

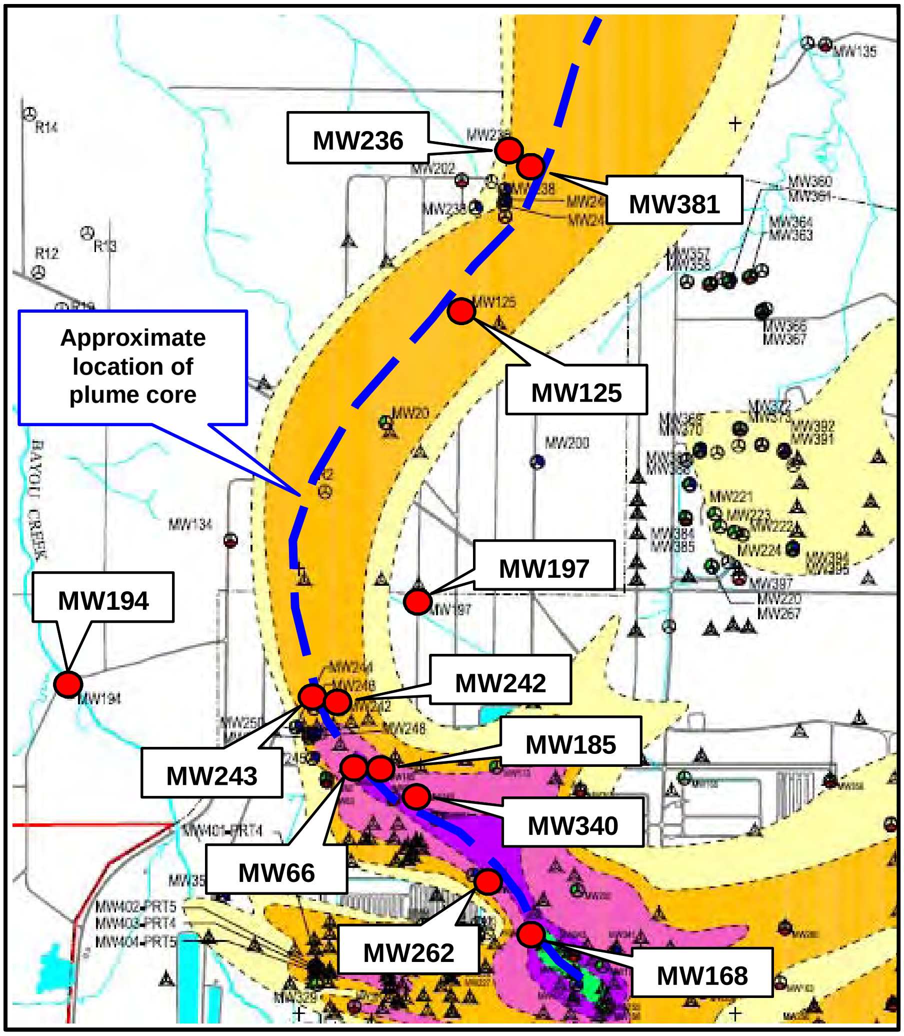

Figure 6. Wells sampled to support the assessment of attenuation processes in the Northwest Plume, PGDP

The Project Team specified the goals of this research effort, as presented in the document: *TCE Fate & Transport Project, Evaluation of Aerobic Degradation, Enzyme Activity Probe Sampling Scoping Document* (KRCEE, 2007). The following questions are summarized from the report:

1. Is aerobic biodegradation, cometabolism, employing an appropriate oxygenase enzyme, occurring in the RGA plumes?
2. Are the bacteria present in sufficient numbers to impact the plumes?
3. Are conditions in the RGA conducive for ongoing and sustainable aerobic biodegradation?
4. If aerobic biodegradation is occurring, what is the rate?
5. Is the calculated biodegradation rate or rates qualitatively supported by literature values?

Each of these main questions was expanded and then used to generate a set of decision/estimation statements to be addressed in this research. These decision/estimation statements are as follows:

Decision / Estimation Statement #1. Based on use of specific oxygenase probes, determine whether bacteria capable of aerobically biodegrading TCE are present and therefore require an estimation of their impact on the plumes or recommend that other mechanisms of TCE degradation/attenuation be evaluated.

Decisions / Estimation Statement #2. Based on the use of stable carbon isotope (SCI) fractionation tests, determine whether SCI supports the occurrence of aerobic biodegradation process or other biotic/abiotic degradation processes.

Decision / Estimation Statement #3. Estimate whether the distribution and number of bacteria are sufficient to significantly biodegrade TCE in RGA groundwater. If the distribution and number of microorganisms are sufficient to biodegrade TCE in RGA groundwater, determine whether biodegradation is sustainable. If it is determined that biodegradation is not sustainable, recommend that other mechanisms of TCE degradation/ attenuation be evaluated.

Decision / Estimation Statement #4. Determine whether conditions including, but not limited to, the existence of a bioavailable and sustainable substrate in the RGA are conducive for ongoing and sustainable aerobic biodegradation of TCE. If conditions are determined to be ongoing and sustainable, conduct an evaluation of the biodegradation rate using a multiple lines of evidence approach. If conducive conditions are not determined to be present, recommend that other mechanisms of TCE degradation/attenuation be evaluated.

Decision / Estimation Statement #5. Based upon a comparison to the calculated biodegradation *rate* or range of rates *to values* in the literature, either accept the calculated rate(s) for use in future fate-and-transport modeling or access the team's confidence in the unsupported results.

The decision/estimation statements were further expanded and amplified by the Project Team to include specific quantitative decision rules and criteria. These criteria will be used as the initial basis for the conclusions from the study. Any modifications or deviations from these criteria, and the basis for the modification, are described in the report.

The Northwest Plume at PGDP was identified by the Project Team as the focus of sampling and characterization activities. Wells within the Northwest Plume were previously used for first-order, rate-constant tracer normalization analyses. These wells also offer the greatest number and areal distribution of RGA monitoring wells at PGDP, compared to the Northeast and Southwest Plumes. Sampling of suitable Northwest Plume RGA wells is intended to provide a profile of potential aerobic microbial degradation along the plume axis (Figure 7).

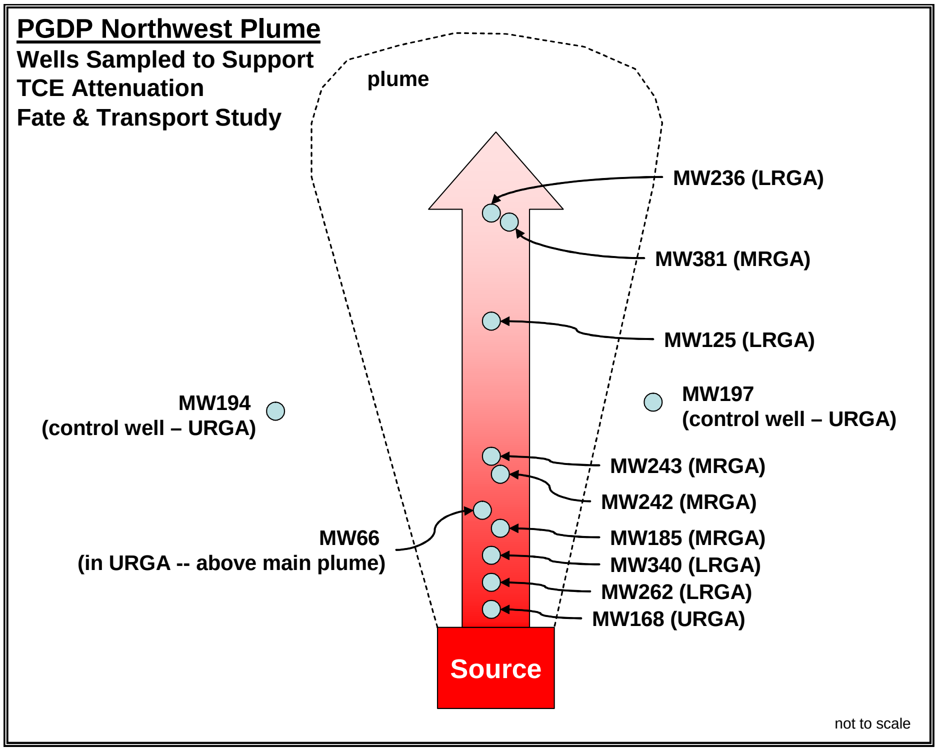

Figure 7. Schematic diagram of PGDP NW Plume and the wells selected by the Project Team

The factors considered for identification of monitoring wells suited for this study included:

1) Relative position of monitoring wells to the centerline of the Northwest Plume
2) Relative location of monitoring wells in relation to TCE sources, wells representing a range from high to low TCE concentration, and control wells located outside the plume
3) Relative location of candidate wells to one another
4) Screened interval of wells to represent the vertical distribution and flow lines
5) General geochemical characteristics of each well including alkalinity, pH, dissolved oxygen, and TCE concentration

Other criteria considered for project well selection included: TCE trend analysis, scheduled well sampling dates, and costs for additional analytes, or special sampling. Geochemical characteristics of the wells were evaluated relative to each parameter's potential to support or inhibit microbial populations capable of TCE degradation. Foremost, the Project Team selected the well network to identify the presence and extent of aerobic cometabolism degradation processes in the Plume. The Team agreed that the well network was reasonable for these purposes, and that it would support the DQO process.

The data presented throughout this report are categorized by vertical zone within the RGA: the upper RGA (URGA) with wells screened between 47-68 feet below ground surface (bgs), the middle RGA (MRGA) with wells screened between 65-76 feet bgs, and the lower RGA (LRGA) with wells screened between 69-95 feet bgs.

This report summarizes the methods (Section 2), results (Section 3), and significance (Section 4) of this EAP assessment and related geochemical testing.

Methods

Enzyme Activity Probes

<u>Toluene Enzyme Activity Determination</u>
A schematic of the steps in the toluene enzyme activity determination is shown in Figure 8. Note that there are three distinct toluene enzyme probes and a separate filter was used for each. Thus, the toluene enzyme activity determinations for each groundwater sample required a minimum of three filters (each probe analysis is performed on three independent samples such that statistical significance can be obtained). Each of these filters was subject to the process shown in Figure 8 using the appropriate compound as the EAP in step II. Details of the various steps in the toluene enzyme activity determination are described and expanded below.

Groundwater (10 mL) was vacuum filtered onto 0.22 μm, 25 mm diameter, black, polycarbonate filters (Figure 8, step I). Once the vacuum was released, 1 mL of 5 mM of an enzyme activity-dependent probe (phenylacetylene, *trans*-cinnamonitrile, 3-hydroxyphenylacetylene) in 40 mM phosphate buffer was pipetted onto the filter (step II). After fifteen minutes (step III), the vacuum was reapplied to remove the probe/buffer solution (step IV). Next, DAPI (4,6-diamidino-phenylindole) was added to the filter surface in order to obtain a total cell count. After a few minutes, the DAPI solution was removed from the filter surface, which was then washed with 1 mL of buffer solution. The filter was allowed to air dry and then mounted on a glass microscope slide with non-fluorescent immersion oil and a cover slip. The filters were examined for fluorescent cells by epifluorescent microscopy using a 100X oil-immersion fluorescent objective and a filter set for blue excitation wavelengths (step V). Probe response was visualized on a Leica DMRB fluorescence microscope equipped with a PL APO (plan apochromatic) 100x 1.30 oil objective (Leica Microsystems, Inc., Bannockburn, IL, USA). An XF34 longpass orange-red filter set was used (excitation 535±17.5nm, dichroic mirror 570nm, emission 590nm) (Omega Optical, Inc., Brattleboro, VT, USA). The imaging system used included a Spot cooled color digital camera and commercial (Spot version 3.0.4 for Windows) imaging software (Diagnostic Instruments, Inc., Sterling Heights, MI, USA).

The data were processed twice, first qualitatively and then quantitatively, to support interpretation of the potential significance of cometabolism in the original wells. In the qualitative processing, approximately 5-10 random visual fields on the slide were rapidly examined to determine if labeled (fluorescent) cells were present; scores were recorded as positive if more than 5-7 fluorescent cells were visualized. However, if most of the fields contained minimal activity (1-2 total cells or no fluorescence), then the sample was qualitatively identified as negative (-) for activity of enzymes that converted that particular probe. The quantitative processing included collecting 20 random fields for at least three separate prepared slides (or an appropriate number of fields to count a minimum 200 total cells) with the microscope-attached digital camera. Each image was then processed using software to count the labeled (fluorescent) cells and estimate the activity in the original sample in standard reporting units (cells/mL). A minimum of 1 image of every 10 images captured was also counted manually by the experimenter and compared with the counts collected and recorded by the software.

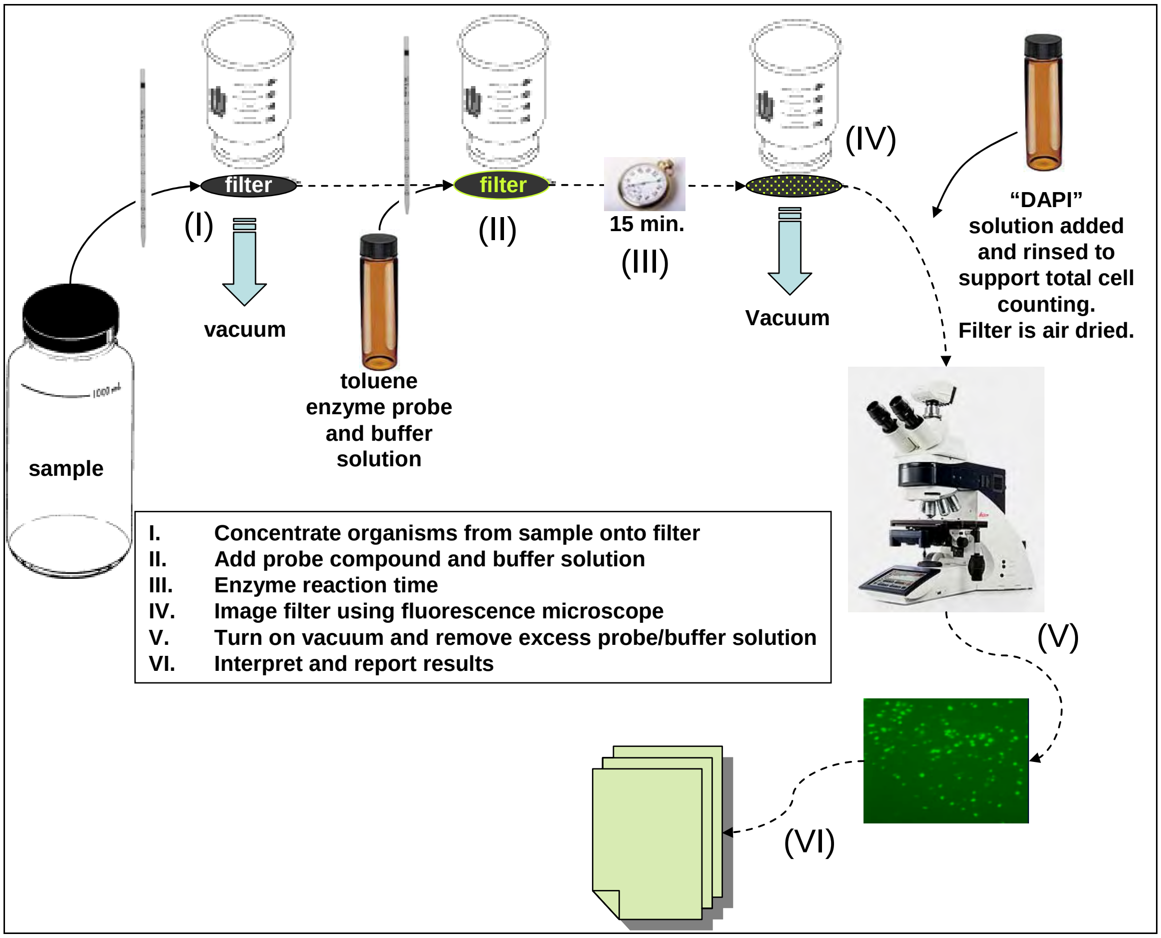

Figure 8. Schematic diagram of the steps in toluene enzyme activity determinations

For interpretation of the quantitative measurements of toluene probes, the DQO specified that those samples with more than 10^3 cells/mL would be identified as positive (+) for significant cometabolic activity and samples with less than 10^3 cells/mL would be identified as negative (-). Based on comparison to the qualitative measurements, these initial quantitative criteria were determined to be too low. A screening level of 10^3 cells/mL results in identifying all the samples as positive, even those that were determined to be negative in the qualitative examination. One of the goals of the national DOE applied research effort is development and refinement of quantitative criteria to support the use of EAPs. Examination of the PGDP data, in combinations with data from several other sites (Savannah River Site, Hill Air Force Base, Tinker Air Force Base, etc.) indicated that a more defensible criterion for a positive determination is approximately 8×10^3 cells/mL. Based on this information, we have analyzed and presented the data in three bins: < 3×10^3 cells/mL = low activity, 3×10^3 to 8×10^3 cells/mL = moderate activity, and > 8×10^3 cells/mL = high activity. This approach is methodologically consistent with the DQO but provides an assessment that was deemed by the investigators to be a better metric of the potential significance of cometabolism. Notably, the refined significance criteria developed herein, 8×10^3 cells/mL for high activity, is similar to cell activity levels (1×10^4 cells/mL) recently documented by Lu et al. as a screening level for significant populations of Dehalococcoides spp.

to support reasonable rates of anaerobic degradation. While the results of Lu et al. and the screening values we determined for this effort are not precisely analogous (Lu et al. based the determination on anaerobic degradation, a degradation rate of 0.3 $year^{-1}$, and diverse scientific literature data for many sites and from lab studies), the independent development of similar screening levels is encouraging and provides further justification for refining (increasing) the initial criteria in the DQO.

sMMO Enzyme Activity Determination

A schematic of the steps in the sMMO enzyme activity determination is shown in Figure 9. Due to the nature of the sMMO enzyme and the solubility of the fluorescent product formed from the sMMO probe coumarin (7-hydroxy-coumarin), fluorescence from a positive probe is found predominantly in the solution rather than associated with individual cells. In this particular determination, the fluorescent product is measured in the bulk solution rather than by imaging labeled cells. The results for the sMMO probe and the estimates of significance are based on overall solution fluorescence. Because the results for the sMMO probe are not directly related to the number of organisms that are actively expressing the enzyme, and they are not reported in units such as cells/mL (or percent of population), all of these results will be reported as qualitative. Details of the various steps in the sMMO enzyme activity determination are described and expanded below.

Whole water (unaltered) groundwater samples (10 mL each) were filtered onto 25mm Supor filters (Figure 9, step I). These filters were placed into separate glass Petri plates (step II), 1mL of 5mM coumarin solution in phosphate buffer was pipetted onto each filter (step III), and the filters were incubated for 10 minutes at room temperature (step IV). Following the incubation, each plate was positioned at a 35^{o} angle, and phosphate buffer was used to wash the product from each filter. The buffer was re-pipetted over the filter 6 times to ensure quantitative recovery of the product (step V). Solution fluorescence was determined (excitation wavelength 338 nm, emission wavelength 450 nm) using a Hitachi F-2000 fluorescence spectrophotometer (Hitachi, Tokyo, Japan), with a quartz cuvette of 1 cm path length (Amersham). Ten replicate fluorescent scans were performed for each of the samples (step VI).

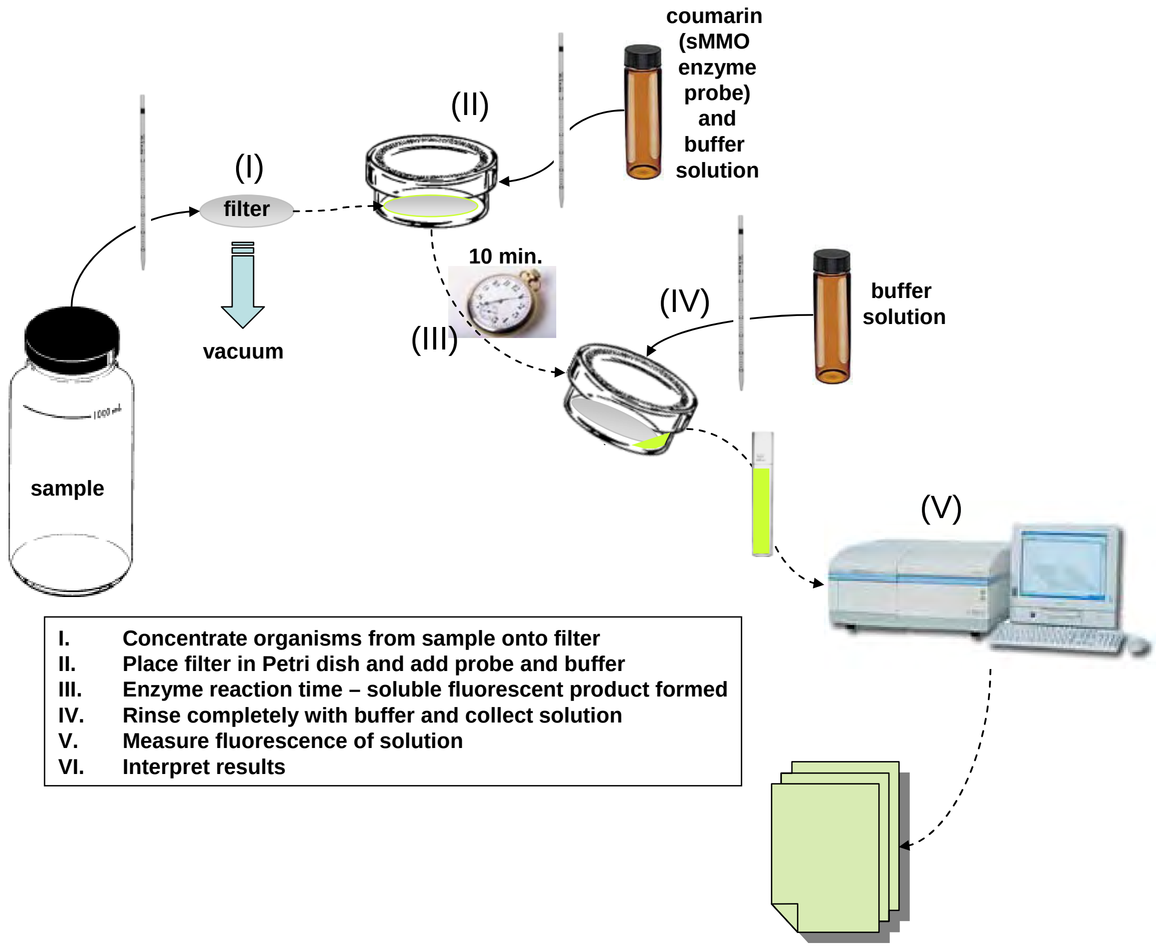

Figure 9. Schematic diagram of the steps in sMMO enzyme activity determinations

Inhibition assays to confirm sMMO and toluene enzyme activity results -- To verify the dependence of product formation on the activity of the targeted oxygenases rather than the activity of other enzymes, select inhibitors were added to the samples and then analyzed for target enzyme activity. Groundwater samples (5 mL) were placed in 10-mL serum vials, and acetylene (sMMO inhibitor) was added as a vapor to each. Vials were sealed and incubated for 30 minutes at room temperature. To verify the reaction of groundwater with various toluene/aromatic probes, 1-pentyne (3.5%) was used as selective inhibitor for these pathways (method described in Keener et al., 2001). After treatment by the inhibitors, samples were filtered and analyzed with enzyme probes as described previously.

DNA Extraction and PCR Amplification – “DNA Control Study”

DNA was isolated from the cells trapped on filters. DNA extraction was performed using both Bio 101 and the MoBio UltraClean Soil DNA kit as described by the manufacturers. Two kits were used to ensure that biases associated with one kit or another did not provide a false positive for the presence of the gene of interest. The samples consistently yielded high-quality bacterial DNA, based on gel electrophoresis. DNA extraction and PCR amplifications were used to confirm that relevant DNA was present in the samples and provide a quality assurance and verification step to support the interpretation of the enzyme activity determinations.

PCR amplification reactions were performed in 50 μL (total volume) reaction mixtures in 0.2 mL thin-walled tubes using a DNA thermocycler. The PCR experiments were performed using the *Taq* PCR Core kit from Qiagen. The PCR conditions for the toluene oxygenase primers were as stated in Baldwin et al. (2003). The PCR primers were designated: RMO-F/R, which amplify the toluene-3 and -4-monooxygenase genes, TOD-F/R which amplifies the toluene 2,3-dioxygenase gene, and PHE-F/R which amplifies the toluene-2, -3, -4-monooxygenase genes (Baldwin et al., 2003). PCR amplified DNA was visualized using a 2% (w/v) agarose gel electrophoresis with TBE buffer at 75V for 1.5 hours.

Supplementary Microbial Diversity “T-RFLP” Study

Terminal restriction fragment length polymorphism (T-RFLP) was also performed on all 12 of the groundwater samples collected from the PGDP Northwest Plume. T-RFLP is a DNA (or RNA) fingerprinting technique that provides a broad look at the diversity of the Bacterial and/or Archaeal communities in a sample (Marsh et al., 1999; 2000; Dunbar et al., 2000; 2001; Osborn et al., 2000; Blackwood et al., 2003). T-RFLP is a relatively straightforward technique that relies on the presence of the 16S rDNA gene, which has been shown to be present in all known organisms (Woese, 1975). Briefly, DNA was amplified from the samples as described previously. PCR amplification of DNA from the samples was performed with 16S universal primers 8F and 907R with the forward primer also carrying a fluorescent label (FAM). Following the PCR, the amplified DNA was subjected to a restriction enzyme digest with Msp I that cuts the DNA fragments into pieces based on the identification of unique cut sites; in this case, Msp I cuts the DNA each time it “finds” the sequence CCGG. Each organism present in the sample (extracted directly from PGDP groundwater) theoretically has a unique sequence and as such would produce unique size fragments when digested with MSP I. Once digested (DNA cut into many small fragments), the fluorescently-labeled end fragments were run through a DNA sequencer to determine the length (base pairs, bp) and abundance (fluorescence) of each of the fluorescent fragments produced from steps one and two (Figure 10).

The fingerprint resulting from a T-RFLP analysis has been shown to be a powerful technique for identifying differences in population structure and determining the overall diversity of a population. T-RFLP fingerprints can easily be compared across temporal or spatial scales (for example: Dunbar et al., 2000; Osborn et al., 2000; Scala and Kerkhof, 2000; Mummey and Stahl, 2003). It should be noted, however, that because an organism can produce more than one unique fragment, multiple organisms could theoretically produce the same size fragment, and analysis of the resulting fingerprints needs to consider these potential complexities.

For the particular concern at PGDP, T-RFLP was proposed as a simple approach to identify the potential contribution of biofilm (i.e. biofouling) communities to the total microbial makeup of the groundwater samples collected for enzyme probe analysis. It was thought that biofilm communities would have a distinct makeup based on the microbial metabolisms present in those biofilms (anaerobic, sessile) versus those communities that would dominate aerobic groundwater, indicative of the plume.

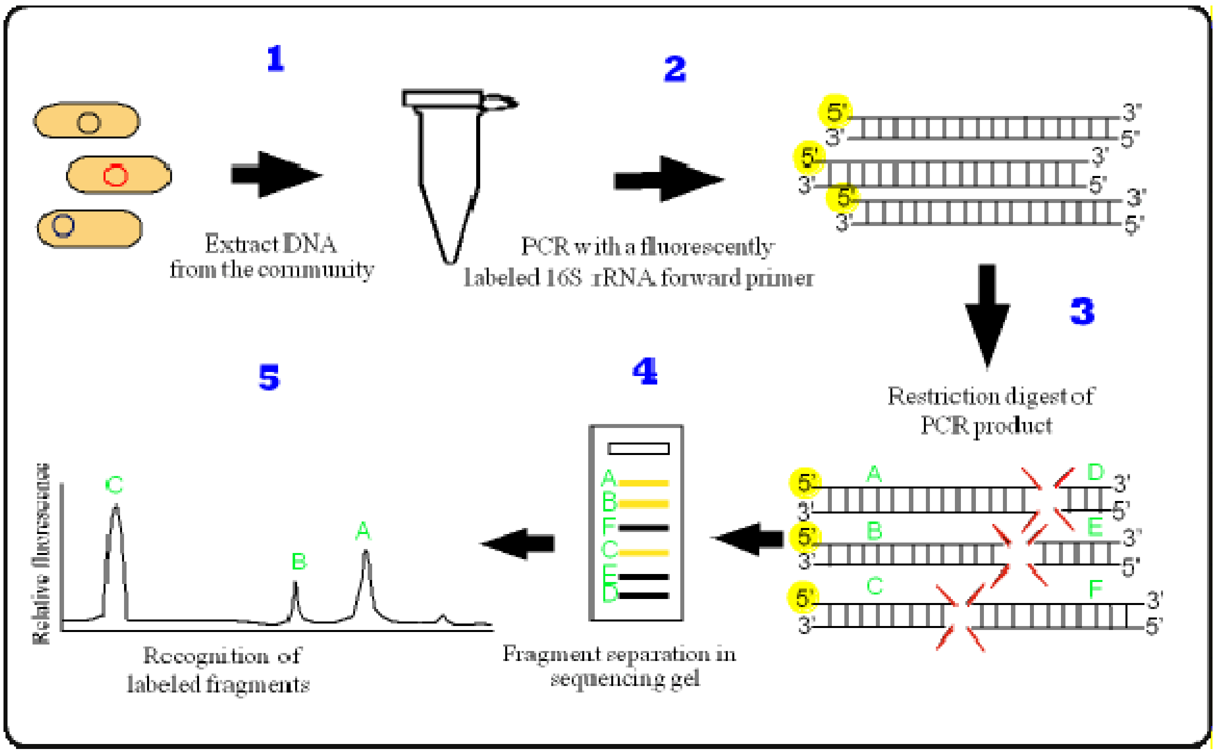

Figure 10. T-RFLP schematic, copied with permission from the Center for Microbial Ecology, Michigan State University.

Geochemical Parameters

Supporting geochemical measurements were collected during this study to determine the impacts of environmental conditions on key aspects of the microbial ecology. The data collected include the traditional "master variables" such as pH and oxidation-reduction potential (ORP), as well as related parameters such as dissolved oxygen and various cations and anions. The samples for geochemistry and the molecular and biological assays were collected by the onsite environmental sampling crew. Sampling, measurement of field parameters, and handling/measurement of geochemical parameters in the laboratory were all performed using the existing site infrastructure (packaging, shipping, QA, data management, etc.) according to the Paducah Site Environmental Monitoring Plan (BJC, 2004).

The geochemical and field parameters measured to support this effort are shown in Table 1 along with the nominal detection limits. The most significant results (i.e., detectable and potentially diagnostic) are indicated in bold in Table 1 and are reported in the following section. Two geochemical sampling events were conducted to support this study, a primary sampling (May 2007) in which all of the listed parameters were measured, and a follow-up sampling (December 2007) in which a subset of the listed parameters was measured. All of the supporting geochemistry data are provided in Appendix A.

Table 1. Supporting Geochemical and Field Measurements

Parameter	Detection Limit *	Units
Barometric Pressure	--	in./Hg
Depth to Water	--	ft
Dissolved Oxygen	--	mg/L
Oxidation-Reduction Potential	--	mV
pH	--	Std Unit
Temperature	--	deg F
Conductivity	--	umho/cm
Turbidity	--	NTU
chloride	2	mg/L
nitrate	4.4	mg/L
sulfate	2	mg/L
iron (II)	0.02	mg/L
dissolved organic carbon	1	mg/L
total organic carbon	1	mg/L
alkalinity as $CaCO_3$	10	mg/L
orthophosphate	3.1	mg/L
phosphate as P	1	mg/L
calcium	1	mg/L
dissolved copper	0.025	mg/L
total copper	0.025	mg/L
magnesium	0.025	mg/L
potassium	2	mg/L
sodium	2	mg/L
carbon dioxide	10	mg/L
bicarbonate as $CaCO_3$	10	mg/L
carbonate as $CaCO_3$	10	mg/L
Technetium-99	17	pCi/L

Parameter	Detection Limit *	Units
1,1,1-Trichloroethane	5	ug/L
1,1,2,2-Tetrachloroethane	5	ug/L
1,1,2-Trichloroethane	5	ug/L
1,1-Dichloroethane	1	ug/L
1,1-Dichloroethene	1	ug/L
1,2-Dichloroethane	5	ug/L
1,2-Dichloropropane	5	ug/L
1,2-Dimethylbenzene	5	ug/L
2-Butanone	10	ug/L
2-Hexanone	10	ug/L
4-Methyl-2-pentanone	10	ug/L
Acetone	10	ug/L
Benzene	5	ug/L
Bromodichloromethane	5	ug/L
Bromoform	5	ug/L
Bromomethane	5	ug/L
Carbon disulfide	5	ug/L
Carbon tetrachloride	5	ug/L
Chlorobenzene	5	ug/L
Chloroethane	5	ug/L
Chloroform	5	ug/L
Chloromethane	5	ug/L
cis-1,2-Dichloroethene	1	ug/L
cis-1,3-Dichloropropene	5	ug/L
Dibromochloromethane	5	ug/L
Dimethylbenzene, Total	15	ug/L
Ethylbenzene	5	ug/L
meta/para Xylene	10	ug/L
Methylene chloride	5	ug/L
Styrene	5	ug/L
Tetrachloroethene	5	ug/L
Toluene	5	ug/L
trans-1,2-Dichloroethene	1	ug/L
trans-1,3-Dichloropropene	5	ug/L
Trichloroethene	1	ug/L
Vinyl acetate	10	ug/L
Vinyl chloride	2	ug/L

* Tabulated values are the nominal detection limits. Detection limits for an individual sample may be higher than those listed if a related parameter requires dilution for measurement.

Compound Specific Isotope Analysis

The Project Team developed the following questions for CSIA relative to the aerobic biodegradation investigation:

1. Does CSIA support the occurrence of aerobic biodegradation and/or other possible degradation mechanisms?
2. How will CSIA be utilized to characterize sustainability of biodegradation?
3. Can CSIA-independent calculations of the degradation rate be established?
4. Does CSIA allow for the differentiation of biotic and abiotic degradation processes?

To address these questions, nationally-recognized CSIA scientists developed and expanded the questions into decision/estimation statements and associated analytical methods. The CSIA experts included Paul Philp and Tomasz Kuder (University of Oklahoma), John Wilson (EPA), and a focus group from the Project Team that included Ed Winner and Scott Little (Commonwealth of Kentucky Division of Waste Management), and Steve Hampson (KRCEE). This effort is documented in a separate report. In summary, the CSIA experts and focus group developed the following approach:

1. Calculate apparent extent of removal of TCE compared to a conservative tracer (such as technetium in the PGDP northwest plume:
2. Conduct CSIA for carbon and hydrogen isotopes (note that the current literature supports preliminary application of carbon isotopes for aerobic cometabolism but that more information will be needed to interpret the hydrogen isotopes – the stable hydrogen isotope analyses will be appended to the results when available).
3. Based on analysis of stable carbon isotopes, independently calculate C/C_0 based on changes in the stable carbon isotope ratios ($\delta^{13}C$) in the TCE as the plume moves from upgradient to downgradient in the PGDP Northwest Plume.
4. Perform a similar scoping evaluation for hydrogen isotope ratios.
5. Compare the TCE data C/C_0 to CSIA C/C_0
6. Calculate 1st order rate constant
7. Apply Decision Rule 4: If the natural logarithm of the value of C/C_0 provided from the analysis of stable isotope ratios is more negative than natural logarithm of the value of C/Co as calculated from measured concentrations of TCE as normalized to the measured concentrations of ^{99}Tc, or if the natural logarithm of the value of C/C_0 provided from the analysis of stable isotope ratios is no more than a factor of 0.33 more positive than the natural logarithm of the value of C/C_0 as calculated from measured concentrations of TCE as normalized to the measured concentrations of ^{99}Tc, the stable isotope analyses will be considered to provide a third line of evidence for MNA processes
8. Apply Decision Rule 5: If the natural logarithm of the value of C/C_0 provided from the analysis of stable isotope ratios is more than a factor of 0.33 more positive than the natural logarithm of the value of C/C_0 as calculated from measured concentrations of TCE as normalized to the measured concentrations of ^{99}Tc, the stable isotope analyses will be considered to provide no interpretable information, and will not be used to support a decision.
9. Apply Decision Rule 6: Evaluate uncertainty in the assessment based on sample standard deviations.

Results

The results for the enzyme activity assessment, the plume geochemistry, and the compound specific isotopes are presented below.

Enzyme Activity Probes

The EAP assessment is presented as follows: EAP assays, DNA control study, and T-RFLP study. The EAP assays were conducted in two steps. Initial qualitative EAP results were generated to provide initial evidence for sMMO and toluene activity at the site. The toluene EAPs were then quantified to evaluate the significance of toluene enzyme activity using the methods described in the DQOs. The DNA control study was used to determine if organisms that contain the genes of interest were present at the site. Finally, the T-RFLP evaluation was performed to develop some general conclusions about the community structure in the samples and to assess the "representativeness" of the samples.

<u>Qualitative Toluene and sMMO Enzyme-Activity Probe Results</u>
The qualitative toluene EAP data from June 4, 2007 are presented in Table 2. A positive result (+) indicates that the probe was determined to be significant based on a fluorescent signal upon viewing a limited number of fields with an epifluorescent microscope, and it indicates the fluorescence of one or more cells in the typical observed fields from the given groundwater sample. Each probe responds to a primary oxidation pathway (or in a reproducible manner to the various primary pathways). Thus, a single sample can be positive for one, two, or three probes. No single probe provides more or less information regarding the activity or potential activity in a groundwater consortia of bacteria, rather, pathways are stimulated or induced under different conditions. Variable activity, or a positive response in one or more groundwater samples with all of the probes, may be indicative of a diverse metabolic community.

The sMMO results (Table 2) were determined based on solution fluorescence and indicated a fluorescence that was statistically greater than background and control samples.

Table 2. Preliminary results of EAP analysis in groundwater from monitoring wells at the Northwest Plume at PGDP. A positive mark means activity was determined in the sample.

Monitoring Well	Aquifer Designation	sMMO probe Coumarin	Toluene probes*
MW168	URGA	-	-
MW66		+	+++
MW194		+	+++
MW197		-	+
MW185	MRGA	-	++
MW242		-	-
MW243		-	-
MW381		-	++
MW262	LRGA	+	+++
MW340		+	+
MW236		+	+++
MW125		+	++

+ denotes a positive response

+++ denotes a positive response to all three toluene enzyme-activity probes

*denotes the number of toluene probes where there was a positive response

LRGA: Lower Regional Gravel Aquifer

MRGA: Middle Regional Gravel Aquifer

URGA: Upper Regional Gravel Aquifer

sMMO: Soluble Methane Monooxygenase

Quantitative Toluene Enzyme-Activity Probe Results

Toluene EAP data were quantified to determine where significant toluene activity was present (example micrograph in Figure 11). The quantitative toluene results are presented in Table 3. Highlighted values indicate moderate and high activity as described in the methods section. The refined binning criteria resulted in a good concordance between the qualitative and the quantitative results. Total microorganism counts (DAPI results, Table 3) showed that the Northwest Plume groundwater has total microbial population levels typical of groundwater systems with cell counts ranging from 10^5 and 10^6 cells per mL of sample.

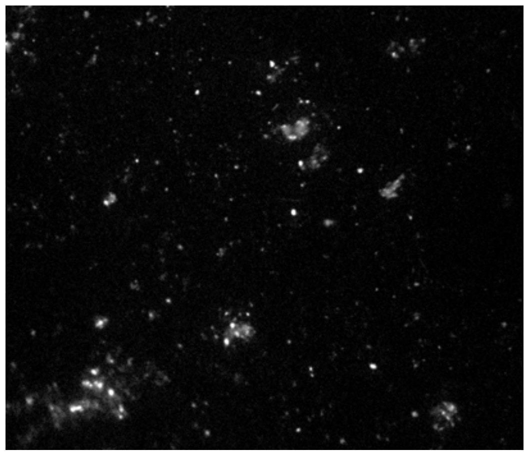

Figure 11. Micrograph of groundwater from MW66 exposed to phenylacetylene (PA).

Both of the control wells outside the plume (MW194 and MW197) showed high (significant) presence of toluene degraders and one of these wells showed sMMO activity. Among the 10 wells in the plume, 80% showed significant presence of toluene oxidizers, 50% showed sMMO activity, and 80% showed at least one type of oxidizing capability. Using the original DQO criteria (quantitative results above $1x10^3$ cells/mL), 100% of the control and plume wells showed at least one type of oxidizing activity. Notably, the activity appears to vary vertically within the RGA. The expression and activity are lower in the middle portion of the aquifer (MRGA) for both methane and aromatic (toluene) oxidation. Both the URGA and LRGA showed diverse and robust oxidation potential. Spatially, the presence and activity of methane and aromatic oxidizers was measured throughout the plume. The location of wells with positive enzyme-activity response is shown in relation to TCE footprint for the Northwest Plume at the PGDP (Figure 12). Wells with positive EAP response to the sMMO probe are denoted with an “M” and wells with significant positive response to the toluene EAPs are denoted with a “T”.

Table 3. Enzyme Activity Probe assay results for groundwater from monitoring wells at the Northwest Plume at PGDP.

Monitoring Well	Aquifer Designation	Screened Interval Depth (ft bgs)	Qualitative data (6/4/7)		Toluene probes			Total –DAPI cells/mL
			sMMO probe Coumarin	Toluene probes	Quantitative data (fluorescent cells/mL)			
					3HPA	PA	Cinnamonitrile	
MW168	URGA	63 - 68	-	-	nd	$2.41x10^3$	nd	$1.90x10^5$
MW66	URGA	55 - 60	+	+++	$1.43x10^4$	$2.10x10^4$	$9.14x10^3$	$3.67x10^5$
MW194	URGA	47 - 52	+	+++	$3.13x10^3$	$9.52x10^3$	$1.20x10^4$	$1.76x10^5$
MW197	URGA	58 - 63	-	+	$1.73x10^4$	$6.28x10^4$	$2.23x10^3$	$1.59x10^5$
MW197 (resample)	URGA		na	na	$5.03x10^3$	$1.20x10^4$	$2.04x10^3$	$7.05x10^5$
MW185	MRGA	68 - 73	-	++	$1.79x10^4$	$1.37x10^4$	$1.95x10^3$	$9.75x10^5$
MW242	MRGA	65 - 75	-	-	$3.57x10^3$	$1.24x10^3$	$8.85x10^3$	$7.76x10^5$
MW243	MRGA	65 - 75	-	-	$3.29x10^3$	$4.61x10^3$	$1.32x10^3$	$4.27x10^5$
MW381	MRGA	66 - 76	-	++	$6.14x10^4$	$3.52x10^4$	$5.51x10^3$	$9.66x10^5$
MW262	LRGA	90 - 95	+	+++	$1.35x10^4$	$1.36x10^4$	$2.79x10^4$	$3.52x10^5$
MW 262 (resample)	LRGA		na	na	$1.05x10^4$	$1.22x10^4$	$5.71x10^3$	$2.84x10^5$
MW340	LRGA	85.5 - 95.3	+	+	$3.63x10^2$	$9.57x10^3$	nd	$7.25x10^5$
MW236	LRGA	69.5 - 79.5	+	+++	$3.24x10^4$	$5.26x10^4$	$9.28x10^3$	$8.84x10^5$
MW125	LRGA	78 - 88	+	++	$1.39x10^4$	$6.37x10^4$	$2.03x10^4$	$7.99x10^5$

URGA: Upper Regional Gravel Aquifer
MRGA: Middle Regional Gravel Aquifer
LRGA: Lower Regional Gravel Aquifer
3HPA: 3-hydroxy-phenylacetylene --> probe for toluene oxidase and related activity
PA: Phenylacetylene --> probe for toluene oxidase and related activity
cinnamonitrile: probe for tolulene dioxygenase and related activity
DAPI: 4',6-Diamidino-2-Phenylindole (double stranded DNA staining)

ft bgs– feet below ground surface
µg/L – micrograms per liter
pCi/L – picocuries per liter
cells/mL – per milliliter

Highlight denotes that the toluene probe response was considered moderate (fluorescent activity > $3x10^3$ cells/mL and < $8x10^3$ cells/mL) – see text for explanation
Highlight denotes that the sMMO probe was significantly above background or the toluene probe response was considered significant (> $8x10^3$ cells/mL fluorescent activity)

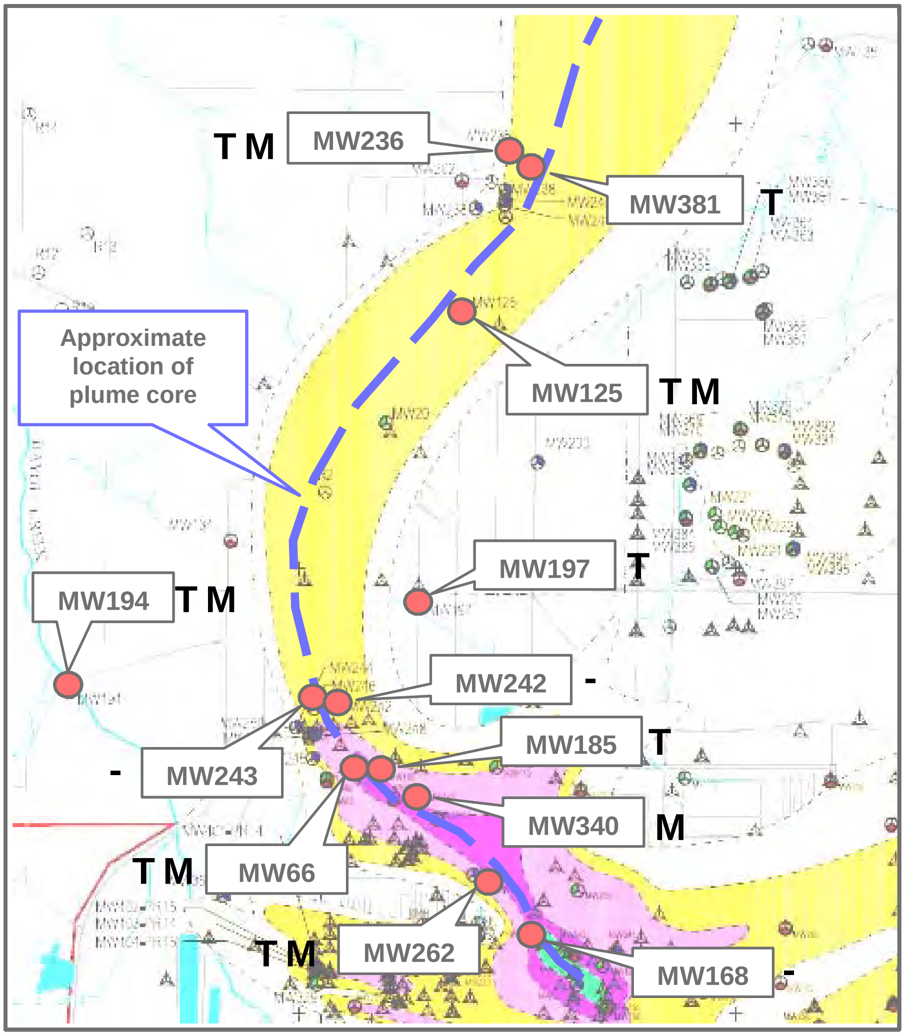

Figure 12: Map displaying wells where either sMMO enzyme-activity probe, denoted with an "M", and/or one or more toluene enzyme-activity probes, denoted with a "T", are significant.

DNA Control Study Results

A DNA control study was performed to determine if key genes of interest were present in the microbial community isolated from groundwater collected from the PGDP monitoring wells. Although the DNA control study data do not provide information about enzyme activity at the site, the data do provide information about the potential for degradative activity at the site. DNA control study data are shown in Table 4. A positive result (+) indicates the gene of interest was amplified from the groundwater sample and a negative (-) indicates that amplification was not successful.

Positive response with the primers (Table 4) provides significant evidence that the oxygenase genes of interest, sMMO and toluene monooxygenases, are present in groundwater from each particular monitoring well. This DNA data provides (1) evidence of the potential for activity in any groundwater sample and (2) support for the enzyme activity assessment. Although amplification identifies which monitoring wells demonstrate a positive response to the genes of interest, it does not necessarily identify expression of the pathway and a positive response to the EAP.

The sMMO results (Table 3) were compared to the sMMO DNA control study (Table 4) to determine the degree of concordance between the EAP and the associated DNA targeted genes. Several wells showed a positive response to the genes of interest but did not display a positive response to the EAP. MW168, MW242, and MW243 were positive for the target genes, but EAP response was not displayed. This indicates that enzyme activity was not observed even though the genes necessary to produce the enzyme were present in the microbial population.

For aromatic oxidation, two of the EAP compounds, PA (phenylacetylene) and 3HPA (3-hydroxyphenylacetylene), do not strictly correlate with a single enzymatic pathway. Each of the EAP probes reliably works with a preferred pathway but may also function with other pathways. For example, the 2 and 3 monooxygenase are both targeted with 3HPA; therefore, the two pathways can not be distinguished using EAP alone. However since the two PCR primer sets, RMO and PHE discriminate between the 2- and 3-monooxygenase pathways, some assessment of which pathway predominates is possible when the EAP data and PCR data are combined in a complementary fashion (see Table 5). Since the PGDP wells showed a general positive response with PA and HPA probes, the only way to determine the significance of the 2- versus the 3-mooxygenase is to examine the PCR results. MW168, MW185, MW242, MW243, and MW340 all had a negative PCR response with the RMO primer sets but a positive with the PHE, suggesting that in these groundwater samples, 2-monooxygenase is a contributing pathway to cometabolic attenuation of TCE. Basic science efforts are underway to improve the understanding of the various potential combined response profiles for the EAPs and the PCR primers.

The only aromatic oxidation probe response that can be directly compared with the DNA results is cinnamontrile, which preferentially targets the dioxygenase (TOD) gene. MW 197, MW185, MW243 and MW340 assayed positive for the gene sequence for TOD when amplified using DNA primers. However, these wells showed low activity with the EAP cinnamonitrile. Wells 242, 381 and 236 assayed positive for the gene sequence for TOD and showed moderate activity with the EAP cinnamonitrile. This indicates that significant (high) enzyme activity was not observed in the EAP results for these seven wells even though the genes necessary to produce the enzyme were present in the microbial population.

Table 4. Results of DNA control studies. A positive mark indicates the gene of interest was amplified from the groundwater sample.

Monitoring Well	Aquifer Designation	Genes amplified sMMO	RMO	PHE	TOD
MW168	URGA	+	-	+	-
MW66		+	+	+	+
MW194		+	+	+	+
MW197		-	+	+	+
MW185	MRGA	-	-	+	+
MW242		+	-	+	+
MW243		+	-	+	+
MW381		-	+	+	+
MW262	LRGA	+	+	+	+
MW340		+	-	+	+
MW236		+	+	+	+
MW125		+	+	+	+

URGA: Upper Regional Gravel Aquifer
MRGA: Middle Regional Gravel Aquifer
LRGA: Lower Regional Gravel Aquifer
sMMO: Soluble Methane Monooxygenase
RMO: Ringhydroxylation Toluene Monooxygenase
PHE: Phenol Monooxygenase
TOD: Toluene/xylene Monooxygenase

Table 5. Relationships between EAPs, PCR, and toluene (aromatic) enzymatic pathways

Pathway	EAP response	PCR
side-chain monooxygenase	3EB	TOL
2-monooxygenase	3HPA *maybe* PA	PHE
3-monooxygenase	3HPA *maybe* PA	RMO, PHE
4-monooxygenase	NO PROBE	RMO, PHE
2,3-dioxygenase	trans-cinnamonitrile *likely* PA *maybe* 3HPA	TOD

Supplementary T-RFLP Study Results

The full report for the TRFLP study is provided in Appendix B. The following criteria were set forth prior to the analysis of groundwater from the Northwest Plume for TRFLP community profiling to assess whether the samples were providing representative formation water:

1. Community profiles will differ based on TCE concentrations,
2. Community profiles will differ based on geochemical or biogeochemical parameters,
3. Community profiles of the wells that were cleaned in the same time frame should look more similar to one another than those that were cleaned more recently or never,
4. If a biofilm is present, all of the profiles should have similarities that “outweigh” the differences.

In general, the diversity profiles/fingerprints of each monitoring well evaluated were greater than expected. Each well produced a distinct profile, detailing the micro-niches and diversity of genetic and physiological activities of microbial populations in situ. Based on this overall diversity and the distinct differences of each of the fingerprints generated, is it clear that:

- There is no dominance of any one organism or even group of organisms in the groundwater plume based on DNA amplification.
- Dominant organisms from any given monitoring well are different than those from other monitoring wells, even when the wells exhibit similar geochemical or contaminant concentrations.
- The groundwater evaluated using EAPs does not appear biased by biofouling in the well casings.
- The groundwater sampled appears to represent distinct micro-communities present within the Northwest Plume, as would be expected if the plume, rather than the well casings and associated biofilms, were being sampled and analyzed.

These data provide scientifically and statistically defensible results that the groundwater sampled and analyzed for enzyme activity primarily represents sampling of the groundwater plume (i.e. formation water), rather than sampling the micro-communities present in specific and/or individual well casings, or biofilms present therein.

Geochemical Results

A summary of key geochemical results is presented in Table 6. A complete dataset is provided in Appendix A. The groundwater geochemistry varied spatially within the Northwest Plume. Nonetheless, all of the wells had conditions generally conducive to aerobic cometabolism (e.g., pH, oxygen, redox potential, etc.). The overall geochemistry within the plume was similar to that of the two control wells in these key parameters, with the main difference being the presence of elevated TCE and ^{99}Tc in the plume. Organic carbon was generally low (<1 mg/L) in all wells indicating an oligotrophic condition in which the microbial ecology would be dominated by organisms that can survive under low nutrient conditions. Data are tabulated for both the primary sampling (May 2007) and the follow-up sampling (December 2007). The geochemical data for the two sampling events are similar indicating that the plume geochemistry is relatively stable over intermediate timeframes (e.g., months).

Table 6. Summary of key geochemical characteristics in the PGDP Northwest Plume – Samples were collected from 12 wells to support a study of attenuation mechanisms for TCE

Data from Primary Sampling: May 2007

Monitoring Well	Aquifer Designation	Screened Interval Depth (ft)	TCE (µg/L)	DCE (µg/L)	technetium (pCi / L)		dissolved oxygen (mg/L)	pH (std units)	oxidation - reduction potential (mV)	specific conductivity (umhos/cm)	chloride (mg/L)	nitrate (mg/L)	sulfate (mg/L)	Iron (II) (mg/L)	total organic carbon (mg/L)	alkalinity (mg/L as $CaCO_3$)
					result	error										
MW168	URGA	63 - 68	110	< 100	--	--	2.5	5.76	428	533	92	17	11	0.035	< 1	77
MW66		55 - 60	700	< 5	--	--	5.8	6.01	304	213	13	5.8	11	< 0.02	< 1	72
MW194		47 - 52	1	< 5	--	--	5.4	5.98	367	249	27	7.0	6.5	< 0.02	< 1	72
MW197		58 - 63	3.9	< 5	--	--	0.6	6.01	-7	440	65	< 4.4	16	23.9	2.3	78
MW185	MRGA	68 - 73	3300	140	--	--	2.0	6.08	527	437	57	7.5	12	< 0.02	< 1	109
MW242		65 - 75	110	< 5	--	--	1.5	5.62	166	358	63	< 4.4	12	8.13	< 1	55
MW243		65 - 75	100	< 5	--	--	5.9	6.22	252	459	12	< 4.4	67	0.046	< 1	113
MW381		66 - 76	50	< 5	--	--	3.2	6.18	286	372	41	6.7	24	< 0.02	< 1	98
MW262	LRGA	90 - 95	950	< 50	--	--	0.6	5.89	339	679	110	5.6	39	< 0.02	< 1	105
MW340		85.5 - 95.3	6500	< 250	--	--	3.5	5.94	367	460	61	7.2	28	< 0.02	< 1	109
MW236		69.5 - 79.5	21	< 5	--	--	3.4	6.19	332	321	31	7.3	21	< 0.02	< 1	90
MW125		78 - 88	700	< 25	--	--	2.8	6.05	303	302	33	5.8	19	< 0.02	< 1	91

Data from Follow-up Sampling: December 2007

Monitoring Well	Aquifer Designation	Screened Interval Depth (ft)	TCE (µg/L)	DCE (µg/L)	technetium (pCi / L)		dissolved oxygen	pH (std units)	oxidation - reduction potential (mV)	specific conductivity (umhos/cm)
					result	error				
MW168	URGA	63 - 68	110	< 1.2	2400	45	3.1	5.87	233	492
MW66		55 - 60	930	< 5	530	24	5.7	6.01	285	190
MW194		47 - 52	1	< 1	ND	--	3.6	6.20	114	251
MW197		58 - 63	3.5	< 1	ND	--	0.7	6.13	2	424
MW185	MRGA	68 - 73	3600	76	696	26	1.7	6.10	269	382
MW242		65 - 75	150	4.4	110	15	0.8	6.09	63	395
MW243		65 - 75	590	< 5	306	19	3.8	5.96	150	378
MW381		66 - 76	47	< 1	21.5	12.5	6.1	6.65	261	502
MW262	LRGA	90 - 95	1400	11	519	23	0.8	5.97	218	601
MW340		85.5 - 95.3	9700	< 80	647	26	3.2	6.04	254	453
MW236		69.5 - 79.5	72	< 1	29.1	12.7	6.1	6.65	261	502
MW125		78 - 88	620	< 5	220	18	2.9	6.11	400	310

Notes:
"--" not measured or not available
The remaining measured parameters were either nondetect in all samples or did not vary substantively between wells.
Total and dissoved copper were nondetect (< 0.025 mg/L) in all wells
All data from both sample events are presented in appendices.

Compound Specific Isotope Analysis

Table 7 presents a high level summary of the CSIA results. These data will be presented and interpreted in more detail in a stand alone document that reflects the interpretation of the principal investigators. Qualitatively, there appear to be some changes in the carbon isotope ratios in the TCE as the plume moves from the source toward the distal region of the plume. The complete data set (including detailed assessment of the replicates and statistics) are being evaluated vis-à-vis the decision estimation rules, and will be incorporated into the determination of the Project Team.

Table 7. Summary of CSIA results.

Sample ID	TCE d13C (permil)	
PGDP NW plume wells along flow path		
MW-168	-24.8	near source
MW-262	-25.8	↓
MW-340	-25.9	↓
MW-185	-25.9	↓
MW-242	-24.6	↓
MW-243	-25.3	↓
MW-125	-25.6	↓
MW-381	-25.4	↓
MW-236	-25.3	distal portion of plume
PGDP well near downgradient source		
MW-66	-25.3	
PGDP control wells outside plume		
MW-194	na	
MW-197	-23.1	

Discussion and Key Findings

The EAP data suggest that aerobic cometabolic activity is occurring in groundwater from monitoring wells at the Northwest Plume at PGDP and is contributing to the attenuation of TCE. The positive EAP responses in the control wells from outside the plume suggest that there is widespread potential for the aerobic degradation of TCE. The geochemistry throughout the Northwest Plume is spatially variable; however, all of the wells exhibit geochemical conditions consistent with that required for aerobic cometabolism. There are no clear geochemical factors strongly correlated with either high enzyme activity or with low enzyme activity. EAP conclusions are presented as follows:

Overall Conclusions for all wells --

- sMMO activity was detected in 6 out of the 12 monitoring wells sampled. Significant aromatic oxidation enzyme activity was measured in 10 out of the 12 wells sampled, and moderate aromatic oxidation enzyme activity was measured in 1 additional well.

- sMMO activity was not detected at MW168, MW197, MW185, MW242, MW243 or MW381. However, the DNA control study demonstrated the presence of the gene sequences needed to produce sMMO in MW168, MW242 and MW243. Therefore, these three locations have the potential for sMMO-related degradative microbial activity, but it was not expressed sufficiently to generate a positive EAP assay response.

- Toluene dioxygenase (TOD) activity, as detected by the cinnamonitrile enzyme probe, was low in MW168, MW197, MW185, MW243 and MW340. TOD activity was moderate in MW381. However, all monitoring locations except MW168 demonstrated a positive response to the TOD primers during the DNA control study. Therefore, the data indicate a widespread genetic potential for TOD-related degradative microbial activity, but this potential was not expressed sufficiently to generate significant EAP assay responses in approximately 50% of the wells tested.

- Toluene monooxygenase (TMO) activity, as detected by the PA and 3HPA enzyme probes, was moderate (MW242 and MW243) or significant in all tested wells.

Conclusions for the three RGA zones --

- For the sMMO probe:
  - Activity was detected in two of the four URGA wells, MW66 and MW194.
  - Activity was not detected in any of MRGA wells.
  - Activity was detected in all of the LRGA wells: MW262, MW340, MW236, and MW125.
- For the aromatic toluene probes:
  - Significant activity was detected in three of the four URGA wells: MW66, MW194, and MW197.

- Significant activity was detected in three of the four MRGA wells (MW185, MW242, and MW381) and moderate activity was detected in the remaining well, MW243.
- Significant activity was detected all four LRGA wells: MW262, MW236, MW340, and MW125.

The goals of this aerobic cometabolism assessment were developed by the Project Team, and are presented in detail in the document *TCE Fate & Transport Project, Evaluation of Aerobic Degradation, Enzyme Activity Probe Sampling Scoping Document* (KRCEE, 2007). Based on the results of this assessment, the following decision/estimation conclusions can be stated to address the five key questions from the TCE Fate and Transport Team:

- <u>Decision / Estimation Statement #1</u>. Bacteria capable of aerobically biodegrading TCE are present in the Northwest Plume at PGDP.
- <u>Decisions / Estimation Statement #2.</u> Decision/estimation conclusions for #2 (related to CSIA) will be developed in a companion report based on evaluation of compound specific isotope results and statistical interpretations.
- <u>Decision / Estimation Statement #3.</u> The number and distribution of bacteria appear sufficient to contribute to the biodegradation of TCE in RGA groundwater. The organic carbon in this oligotrophic, “nutrient limited” system is low. The microbial community appears to be stable and sustainable; that is, the control and plume well data are similar.
- <u>Decision / Estimation Statement #4</u>. Based on the information collected during this phase of the work, a follow-on kinetic rate study is recommended to develop a site-specific degradation rate constant. The Project Team recommends determining degradation rates for two wells*: MW125, and either MW236 or MW381.
- <u>Decision / Estimation Statement #5</u>. The previously-estimated degradation rates for PGDP, based on comparison of plume-scale TCE transport to a conservative tracer (^{99}Tc), are consistent with the published literature for aerobic cometabolism in large aerobic plumes, with a half-life in the range of 9 to 25 years. Additional kinetic data for multiple sites across the United States are being developed through research funded by DOE and DoD. These data will be published and used for reference to support the final estimated rates for PGDP.

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* Well MW125 is a promising candidate for the kinetic study phase of the work based on its: a) location (in the mid-plume area where attenuation processes are particularly important), b) representative EAP responses, c) representative geochemistry, and d) representative easily measured TCE concentrations. Wells MW236 and MW381 are aerobic and are “in-line” with MW 125. Including one of these distal wells will help bound the attenuation rates in the plume. As with other aspects of the PGDP studies, the kinetic study will require effort to assure the logistics are in place to handle samples containing technetium co-contamination.

Well	TCE (DEC-07)	Number of probes positive	Notes
MW125	700	3	
MW236	21	3	downgradient of MW125, along plume center
MW 381	50	2	downgradient of MW125, along plume center

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Appendix A

Raw Geochemistry Data

Primary Samples (May 2007)

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-9056	ANION	Chloride	MW125	33	mg/L		5/21/2007	5/22/2007	2
SW846-9056	ANION	Chloride	MW168	92	mg/L		5/16/2007	5/17/2007	20
SW846-9056	ANION	Chloride	MW185	57	mg/L		5/23/2007	5/24/2007	10
SW846-9056	ANION	Chloride	MW194	27	mg/L		5/17/2007	5/21/2007	2
SW846-9056	ANION	Chloride	MW197	65	mg/L		5/21/2007	5/22/2007	5
SW846-9056	ANION	Chloride	MW236	31	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Chloride	MW236	31	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Chloride	MW242	63	mg/L		5/17/2007	5/18/2007	10
SW846-9056	ANION	Chloride	MW243	12	mg/L		5/15/2007	5/16/2007	2
SW846-9056	ANION	Chloride	MW262	110	mg/L		5/16/2007	5/17/2007	20
SW846-9056	ANION	Chloride	MW340	61	mg/L		5/23/2007	5/24/2007	10
SW846-9056	ANION	Chloride	MW381	41	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Chloride	MW66	13	mg/L		5/15/2007	5/16/2007	2
SW846-9056	ANION	Chloride	QC	2	mg/L	U	5/22/2007	5/23/2007	2
SW846-9056	ANION	Chloride	QC	2	mg/L	U	5/22/2007	5/23/2007	2
SW846-9056	ANION	Nitrate	MW125	5.8	mg/L		5/21/2007	5/22/2007	4.4
SW846-9056	ANION	Nitrate	MW168	17	mg/L		5/16/2007	5/17/2007	4.4
SW846-9056	ANION	Nitrate	MW185	7.5	mg/L		5/23/2007	5/24/2007	4.4
SW846-9056	ANION	Nitrate	MW194	7	mg/L		5/17/2007	5/21/2007	4.4
SW846-9056	ANION	Nitrate	MW197	4.4	mg/L	U	5/21/2007	5/22/2007	4.4
SW846-9056	ANION	Nitrate	MW236	7.3	mg/L		5/22/2007	5/23/2007	4.4
SW846-9056	ANION	Nitrate	MW236	7.3	mg/L		5/22/2007	5/23/2007	4.4
SW846-9056	ANION	Nitrate	MW242	4.4	mg/L	U	5/17/2007	5/18/2007	4.4
SW846-9056	ANION	Nitrate	MW243	4.4	mg/L	U	5/15/2007	5/16/2007	4.4
SW846-9056	ANION	Nitrate	MW262	5.6	mg/L		5/16/2007	5/17/2007	4.4
SW846-9056	ANION	Nitrate	MW340	7.2	mg/L		5/23/2007	5/24/2007	4.4
SW846-9056	ANION	Nitrate	MW381	6.7	mg/L		5/22/2007	5/23/2007	4.4
SW846-9056	ANION	Nitrate	MW66	5.8	mg/L		5/15/2007	5/16/2007	4.4
SW846-9056	ANION	Nitrate	QC	4.4	mg/L	U	5/22/2007	5/23/2007	4.4
SW846-9056	ANION	Nitrate	QC	4.4	mg/L	U	5/22/2007	5/23/2007	4.4
SW846-9056	ANION	Orthophosphate	MW125	3.1	mg/L	U	5/21/2007	5/22/2007	3.1
SW846-9056	ANION	Orthophosphate	MW168	3.1	mg/L	BU	5/16/2007	5/17/2007	3.1
SW846-9056	ANION	Orthophosphate	MW185	3.1	mg/L	U	5/23/2007	5/24/2007	3.1
SW846-9056	ANION	Orthophosphate	MW194	3.1	mg/L	U	5/17/2007	5/21/2007	3.1
SW846-9056	ANION	Orthophosphate	MW197	3.1	mg/L	U	5/21/2007	5/22/2007	3.1
SW846-9056	ANION	Orthophosphate	MW236	3.1	mg/L	U	5/22/2007	5/23/2007	3.1
SW846-9056	ANION	Orthophosphate	MW236	3.1	mg/L	U	5/22/2007	5/23/2007	3.1
SW846-9056	ANION	Orthophosphate	MW242	3.1	mg/L	U	5/17/2007	5/18/2007	3.1
SW846-9056	ANION	Orthophosphate	MW243	16	mg/L	BX	5/15/2007	5/16/2007	3.1
SW846-9056	ANION	Orthophosphate	MW262	3.1	mg/L	BU	5/16/2007	5/17/2007	3.1
SW846-9056	ANION	Orthophosphate	MW340	3.1	mg/L	U	5/23/2007	5/24/2007	3.1
SW846-9056	ANION	Orthophosphate	MW381	3.1	mg/L	U	5/22/2007	5/23/2007	3.1
SW846-9056	ANION	Orthophosphate	MW66	3.1	mg/L	BUX	5/15/2007	5/16/2007	3.1
SW846-9056	ANION	Orthophosphate	QC	3.1	mg/L	U	5/22/2007	5/23/2007	3.1
SW846-9056	ANION	Orthophosphate	QC	3.1	mg/L	U	5/22/2007	5/23/2007	3.1
SW846-9056	ANION	Sulfate	MW125	19	mg/L		5/21/2007	5/22/2007	2
SW846-9056	ANION	Sulfate	MW168	11	mg/L		5/16/2007	5/17/2007	2
SW846-9056	ANION	Sulfate	MW185	12	mg/L		5/23/2007	5/24/2007	2
SW846-9056	ANION	Sulfate	MW194	6.5	mg/L		5/17/2007	5/21/2007	2
SW846-9056	ANION	Sulfate	MW197	16	mg/L		5/21/2007	5/22/2007	2
SW846-9056	ANION	Sulfate	MW236	21	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Sulfate	MW236	21	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Sulfate	MW242	12	mg/L		5/17/2007	5/18/2007	2
SW846-9056	ANION	Sulfate	MW243	67	mg/L		5/15/2007	5/16/2007	5
SW846-9056	ANION	Sulfate	MW262	39	mg/L		5/16/2007	5/17/2007	2
SW846-9056	ANION	Sulfate	MW340	28	mg/L		5/23/2007	5/24/2007	2
SW846-9056	ANION	Sulfate	MW381	24	mg/L		5/22/2007	5/23/2007	2
SW846-9056	ANION	Sulfate	MW66	11	mg/L		5/15/2007	5/16/2007	2
SW846-9056	ANION	Sulfate	QC	2	mg/L	U	5/22/2007	5/23/2007	2
SW846-9056	ANION	Sulfate	QC	2	mg/L	U	5/22/2007	5/23/2007	2
FS	FS	Conductivity	MW125	302	umho/cm		5/21/2007		
FS	FS	Conductivity	MW168	533	umho/cm		5/16/2007		
FS	FS	Conductivity	MW185	437	umho/cm		5/23/2007		
FS	FS	Conductivity	MW194	249	umho/cm		5/17/2007		
FS	FS	Conductivity	MW197	440	umho/cm		5/21/2007		
FS	FS	Conductivity	MW236	321	umho/cm		5/22/2007		
FS	FS	Conductivity	MW236	321	umho/cm		5/22/2007		
FS	FS	Conductivity	MW242	358	umho/cm		5/17/2007		
FS	FS	Conductivity	MW243	439	umho/cm		5/15/2007		

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
FS	FS	Conductivity	MW262	679	umho/cm		5/16/2007		
FS	FS	Conductivity	MW340	460	umho/cm		5/23/2007		
FS	FS	Conductivity	MW381	372	umho/cm		5/22/2007		
FS	FS	Conductivity	MW66	213	umho/cm		5/15/2007		
FS	FS	Dissolved Oxygen	MW125	2.77	mg/L		5/21/2007		
FS	FS	Dissolved Oxygen	MW168	2.46	mg/L		5/16/2007		
FS	FS	Dissolved Oxygen	MW185	1.96	mg/L		5/23/2007		
FS	FS	Dissolved Oxygen	MW194	5.43	mg/L		5/17/2007		
FS	FS	Dissolved Oxygen	MW197	0.62	mg/L		5/21/2007		
FS	FS	Dissolved Oxygen	MW236	3.36	mg/L		5/22/2007		
FS	FS	Dissolved Oxygen	MW236	3.36	mg/L		5/22/2007		
FS	FS	Dissolved Oxygen	MW242	1.5	mg/L		5/17/2007		
FS	FS	Dissolved Oxygen	MW243	5.94	mg/L		5/15/2007		
FS	FS	Dissolved Oxygen	MW262	0.6	mg/L		5/16/2007		
FS	FS	Dissolved Oxygen	MW340	3.51	mg/L		5/23/2007		
FS	FS	Dissolved Oxygen	MW381	3.23	mg/L		5/22/2007		
FS	FS	Dissolved Oxygen	MW66	5.78	mg/L		5/15/2007		
FS	FS	pH	MW125	6.05	Std Unit		5/21/2007		
FS	FS	pH	MW168	5.76	Std Unit		5/16/2007		
FS	FS	pH	MW185	6.08	Std Unit		5/23/2007		
FS	FS	pH	MW194	5.98	Std Unit		5/17/2007		
FS	FS	pH	MW197	6.01	Std Unit		5/21/2007		
FS	FS	pH	MW236	6.19	Std Unit		5/22/2007		
FS	FS	pH	MW236	6.19	Std Unit		5/22/2007		
FS	FS	pH	MW242	5.62	Std Unit		5/17/2007		
FS	FS	pH	MW243	6.22	Std Unit		5/15/2007		
FS	FS	pH	MW262	5.89	Std Unit		5/16/2007		
FS	FS	pH	MW340	5.94	Std Unit		5/23/2007		
FS	FS	pH	MW381	6.18	Std Unit		5/22/2007		
FS	FS	pH	MW66	6.01	Std Unit		5/15/2007		
FS	FS	Redox	MW125	303	mV		5/21/2007		
FS	FS	Redox	MW168	428	mV		5/16/2007		
FS	FS	Redox	MW185	527	mV		5/23/2007		
FS	FS	Redox	MW194	367	mV		5/17/2007		
FS	FS	Redox	MW197	-7	mV		5/21/2007		
FS	FS	Redox	MW236	332	mV		5/22/2007		
FS	FS	Redox	MW236	332	mV		5/22/2007		
FS	FS	Redox	MW242	166	mV		5/17/2007		
FS	FS	Redox	MW243	252	mV		5/15/2007		
FS	FS	Redox	MW262	339	mV		5/16/2007		
FS	FS	Redox	MW340	367	mV		5/23/2007		
FS	FS	Redox	MW381	286	mV		5/22/2007		
FS	FS	Redox	MW66	304	mV		5/15/2007		
FS	FS	Temperature	MW125	64.1	deg F		5/21/2007		
FS	FS	Temperature	MW168	65.1	deg F		5/16/2007		
FS	FS	Temperature	MW185	70.3	deg F		5/23/2007		
FS	FS	Temperature	MW194	61.5	deg F		5/17/2007		
FS	FS	Temperature	MW197	61.2	deg F		5/21/2007		
FS	FS	Temperature	MW236	62.4	deg F		5/22/2007		
FS	FS	Temperature	MW236	62.4	deg F		5/22/2007		
FS	FS	Temperature	MW242	59.7	deg F		5/17/2007		
FS	FS	Temperature	MW243	61.7	deg F		5/15/2007		
FS	FS	Temperature	MW262	64.6	deg F		5/16/2007		
FS	FS	Temperature	MW340	74.1	deg F		5/23/2007		
FS	FS	Temperature	MW381	61	deg F		5/22/2007		
FS	FS	Temperature	MW66	65.9	deg F		5/15/2007		
SW846-6010B	METAL	Calcium	MW125	21.8	mg/L		5/21/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW168	33.6	mg/L		5/16/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW185	39	mg/L		5/23/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW194	16	mg/L		5/17/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW197	24.6	mg/L		5/21/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW236	23.2	mg/L		5/22/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW236	23.2	mg/L		5/22/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW242	23.9	mg/L		5/17/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW243	18.2	mg/L		5/15/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW262	50.6	mg/L		5/16/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW340	31.2	mg/L		5/23/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW381	27.2	mg/L		5/22/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	MW66	18.8	mg/L		5/15/2007	6/8/2007	1

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-6010B	METAL	Calcium	QC	1	mg/L	U	5/22/2007	6/8/2007	1
SW846-6010B	METAL	Calcium	QC	1	mg/L	U	5/22/2007	6/8/2007	1
SW846-6010B	METAL	Copper	MW125	0.025	mg/L	BU	5/21/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW168	0.025	mg/L	BU	5/16/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW185	0.025	mg/L	BU	5/23/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW194	0.025	mg/L	BU	5/17/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW197	0.025	mg/L	BU	5/21/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW236	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW236	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW242	0.025	mg/L	BU	5/17/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW243	0.025	mg/L	BU	5/15/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW262	0.025	mg/L	BU	5/16/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW340	0.025	mg/L	BU	5/23/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW381	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	MW66	0.025	mg/L	BU	5/15/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	QC	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Copper	QC	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SM-3500-Fe D	METAL	Iron (2+)	MW125	0.02	mg/L	U	5/21/2007	5/22/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW168	0.02	mg/L	U	5/16/2007	5/17/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW185	0.02	mg/L	U	5/23/2007	5/24/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW194	0.02	mg/L	U	5/17/2007	5/18/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW197	23.9	mg/L		5/21/2007	5/22/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW236	0.02	mg/L	U	5/22/2007	5/23/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW236	0.02	mg/L	U	5/22/2007	5/23/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW242	8.13	mg/L		5/17/2007	5/18/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW243	0.0462	mg/L		5/15/2007	5/16/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW262	0.02	mg/L	U	5/16/2007	5/17/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW340	0.02	mg/L	U	5/23/2007	5/24/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW381	0.02	mg/L	U	5/22/2007	5/23/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	MW66	0.0353	mg/L		5/15/2007	5/16/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	QC	0.02	mg/L	U	5/22/2007	5/23/2007	0.02
SM-3500-Fe D	METAL	Iron (2+)	QC	0.02	mg/L	U	5/22/2007	5/23/2007	0.02
SW846-6010B	METAL	Magnesium	MW125	8.44	mg/L		5/21/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW168	13.1	mg/L		5/16/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW185	11.9	mg/L		5/23/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW194	6.84	mg/L		5/17/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW197	11.2	mg/L		5/21/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW236	9.14	mg/L		5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW236	9.16	mg/L		5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW242	10.6	mg/L		5/17/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW243	7.38	mg/L		5/15/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW262	19.8	mg/L		5/16/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW340	12.4	mg/L		5/23/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW381	10.7	mg/L		5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	MW66	6.21	mg/L		5/15/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	QC	0.025	mg/L	U	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Magnesium	QC	0.025	mg/L	U	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL	Potassium	MW125	2	mg/L	U	5/21/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW168	2	mg/L	U	5/16/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW185	2	mg/L	U	5/23/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW194	2	mg/L	U	5/17/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW197	2	mg/L	U	5/21/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW236	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW236	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW242	2	mg/L	U	5/17/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW243	2	mg/L	U	5/15/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW262	2.3	mg/L		5/16/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW340	2	mg/L	U	5/23/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW381	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	MW66	2	mg/L	U	5/15/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	QC	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Potassium	QC	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW125	31.9	mg/L		5/21/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW168	46.2	mg/L		5/16/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW185	31.2	mg/L		5/23/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW194	27.8	mg/L		5/17/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW197	25.8	mg/L		5/21/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW236	30.4	mg/L		5/22/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW236	30.4	mg/L		5/22/2007	6/8/2007	2

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-6010B	METAL	Sodium	MW242	25.7	mg/L		5/17/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW243	63	mg/L		5/15/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW262	47	mg/L		5/16/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW340	44.1	mg/L		5/23/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW381	33.7	mg/L		5/22/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	MW66	16.2	mg/L		5/15/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	QC	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL	Sodium	QC	2	mg/L	U	5/22/2007	6/8/2007	2
SW846-6010B	METAL-D	Copper, Dissolved	MW125	0.025	mg/L	BU	5/21/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW168	0.025	mg/L	BU	5/16/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW185	0.025	mg/L	BU	5/23/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW194	0.025	mg/L	BU	5/17/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW197	0.025	mg/L	BU	5/21/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW236	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW236	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW242	0.025	mg/L	BU	5/17/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW243	0.025	mg/L	BU	5/15/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW262	0.025	mg/L	BU	5/16/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW340	0.025	mg/L	BU	5/23/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW381	0.025	mg/L	BU	5/22/2007	6/8/2007	0.025
SW846-6010B	METAL-D	Copper, Dissolved	MW66	0.025	mg/L	BU	5/15/2007	6/8/2007	0.025
SW846-8260	VOA	1,1,1-Trichloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,1,1-Trichloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,1,1-Trichloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,1,1-Trichloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,1,1-Trichloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,1-Trichloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2,2-Tetrachloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,1,2-Trichloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,1,2-Trichloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	1,1,2-Trichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,1,2-Trichloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,1,2-Trichloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1,2-Trichloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,1-Dichloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,1-Dichloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,1-Dichloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,1-Dichloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,1-Dichloroethene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,1-Dichloroethene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,1-Dichloroethene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,1-Dichloroethene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,1-Dichloroethene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,2-Dichloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,2-Dichloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dichloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,2-Dichloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,2-Dichloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	1,2-Dichloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,2-Dichloropropane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,2-Dichloropropane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,2-Dichloropropane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,2-Dichloropropane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dichloropropane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	1,2-Dimethylbenzene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	1,2-Dimethylbenzene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	1,2-Dimethylbenzene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	1,2-Dimethylbenzene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	1,2-Dimethylbenzene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	2-Butanone	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	2-Butanone	MW168	10	ug/L	JU	5/16/2007	5/30/2007	10
SW846-8260	VOA	2-Butanone	MW185	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	2-Butanone	MW194	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Butanone	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	2-Butanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	MW242	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Butanone	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	2-Butanone	MW262	100	ug/L	JU	5/16/2007	5/30/2007	100
SW846-8260	VOA	2-Butanone	MW340	500	ug/L	U	5/23/2007	6/5/2007	500
SW846-8260	VOA	2-Butanone	MW381	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	2-Butanone	QC	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	JU	5/16/2007	5/30/2007	10

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Butanone	QC	10	ug/L	U	5/23/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	2-Hexanone	MW168	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	2-Hexanone	MW185	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	2-Hexanone	MW194	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Hexanone	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	2-Hexanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	MW242	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Hexanone	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	2-Hexanone	MW262	100	ug/L	U	5/16/2007	5/30/2007	100
SW846-8260	VOA	2-Hexanone	MW340	500	ug/L	U	5/23/2007	6/5/2007	500
SW846-8260	VOA	2-Hexanone	MW381	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	2-Hexanone	QC	10	ug/L	U	5/23/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	4-Methyl-2-pentanone	MW168	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW185	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	4-Methyl-2-pentanone	MW194	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW242	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW262	100	ug/L	U	5/16/2007	5/30/2007	100
SW846-8260	VOA	4-Methyl-2-pentanone	MW340	500	ug/L	U	5/23/2007	6/5/2007	500
SW846-8260	VOA	4-Methyl-2-pentanone	MW381	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	4-Methyl-2-pentanone	QC	10	ug/L	U	5/23/2007	6/5/2007	10
SW846-8260	VOA	Acetone	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	Acetone	MW168	10	ug/L	JU	5/16/2007	5/30/2007	10
SW846-8260	VOA	Acetone	MW185	250	ug/L	JU	5/23/2007	6/5/2007	250
SW846-8260	VOA	Acetone	MW194	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Acetone	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	Acetone	MW236	10	ug/L	JU	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	MW236	10	ug/L	JU	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	MW242	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Acetone	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	Acetone	MW262	100	ug/L	JU	5/16/2007	5/30/2007	100
SW846-8260	VOA	Acetone	MW340	500	ug/L	JU	5/23/2007	6/5/2007	500
SW846-8260	VOA	Acetone	MW381	10	ug/L	JU	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	Acetone	QC	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Acetone	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	Acetone	QC	10	ug/L	JU	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	Acetone	QC	10	ug/L	JU	5/16/2007	5/30/2007	10
SW846-8260	VOA	Acetone	QC	54	ug/L	J	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	QC	14	ug/L	J	5/22/2007	6/5/2007	10
SW846-8260	VOA	Acetone	QC	10	ug/L	JU	5/23/2007	6/5/2007	10
SW846-8260	VOA	Benzene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Benzene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Benzene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Benzene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Benzene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Benzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Benzene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Benzene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Benzene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Benzene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Benzene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Bromodichloromethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromodichloromethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Bromodichloromethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromodichloromethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromodichloromethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromodichloromethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Bromodichloromethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Bromodichloromethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Bromodichloromethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromodichloromethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Bromoform	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromoform	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Bromoform	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromoform	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromoform	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromoform	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Bromoform	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Bromoform	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Bromoform	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromoform	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Bromomethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromomethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Bromomethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromomethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromomethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromomethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Bromomethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Bromomethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Bromomethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Bromomethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Carbon disulfide	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Carbon disulfide	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Carbon disulfide	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon disulfide	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Carbon disulfide	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon disulfide	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Carbon disulfide	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Carbon disulfide	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Carbon disulfide	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon disulfide	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Carbon tetrachloride	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Carbon tetrachloride	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Carbon tetrachloride	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Carbon tetrachloride	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Carbon tetrachloride	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Chlorobenzene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chlorobenzene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Chlorobenzene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chlorobenzene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chlorobenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chlorobenzene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chlorobenzene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Chlorobenzene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Chlorobenzene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/21/2007	6/1/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chlorobenzene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Chloroethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloroethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Chloroethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloroethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Chloroethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Chloroethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Chloroform	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloroform	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Chloroform	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroform	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloroform	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroform	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloroform	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Chloroform	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Chloroform	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloroform	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	MW125	25	ug/L	JU	5/21/2007	6/1/2007	25
SW846-8260	VOA	Chloromethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloromethane	MW185	120	ug/L	JU	5/23/2007	6/5/2007	120
SW846-8260	VOA	Chloromethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloromethane	MW197	5	ug/L	JU	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloromethane	MW236	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	MW236	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloromethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloromethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Chloromethane	MW340	250	ug/L	JU	5/23/2007	6/5/2007	250
SW846-8260	VOA	Chloromethane	MW381	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Chloromethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	JU	5/21/2007	6/1/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	JU	5/22/2007	6/5/2007	5
SW846-8260	VOA	Chloromethane	QC	5	ug/L	JU	5/23/2007	6/5/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	cis-1,2-Dichloroethene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	cis-1,2-Dichloroethene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW185	140	ug/L	D	5/23/2007	6/5/2007	120
SW846-8260	VOA	cis-1,2-Dichloroethene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	cis-1,2-Dichloroethene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	cis-1,2-Dichloroethene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,2-Dichloroethene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	cis-1,3-Dichloropropene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	cis-1,3-Dichloropropene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	cis-1,3-Dichloropropene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	cis-1,3-Dichloropropene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	cis-1,3-Dichloropropene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
RSK175	VOA	CO2	MW125	76100	ug/L		5/21/2007	5/23/2007	13480
RSK175	VOA	CO2	MW168	110000	ug/L		5/16/2007	5/18/2007	13480
RSK175	VOA	CO2	MW185	74100	ug/L		5/23/2007	5/29/2007	13480
RSK175	VOA	CO2	MW194	52700	ug/L		5/17/2007	5/22/2007	13480
RSK175	VOA	CO2	MW197	78900	ug/L		5/21/2007	5/23/2007	13480
RSK175	VOA	CO2	MW236	61800	ug/L		5/22/2007	5/23/2007	13480
RSK175	VOA	CO2	MW236	65800	ug/L		5/22/2007	5/23/2007	13480
RSK175	VOA	CO2	MW242	94700	ug/L		5/17/2007	5/22/2007	13480
RSK175	VOA	CO2	MW243	74800	ug/L		5/15/2007	5/18/2007	13480
RSK175	VOA	CO2	MW262	110000	ug/L		5/16/2007	5/18/2007	13480
RSK175	VOA	CO2	MW340	204000	ug/L		5/23/2007	5/29/2007	13480
RSK175	VOA	CO2	MW381	60500	ug/L		5/22/2007	5/23/2007	13480
RSK175	VOA	CO2	MW66	57400	ug/L		5/15/2007	5/18/2007	13480
RSK175	VOA	CO2	QC	674	ug/L	U	5/17/2007	5/22/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/15/2007	5/18/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/21/2007	5/23/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/22/2007	5/23/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/16/2007	5/18/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/22/2007	5/23/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/22/2007	5/23/2007	674
RSK175	VOA	CO2	QC	674	ug/L	U	5/23/2007	5/29/2007	674
SW846-8260	VOA	Dibromochloromethane	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Dibromochloromethane	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Dibromochloromethane	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Dibromochloromethane	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Dibromochloromethane	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Dibromochloromethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Dibromochloromethane	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Dibromochloromethane	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Dibromochloromethane	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Dibromochloromethane	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Dibromochloromethane	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Dibromochloromethane	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Dibromochloromethane	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Dibromochloromethane	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Ethylbenzene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Ethylbenzene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Ethylbenzene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Ethylbenzene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Ethylbenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Ethylbenzene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Ethylbenzene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Ethylbenzene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Ethylbenzene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Ethylbenzene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	m,p-Xylene	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	m,p-Xylene	MW168	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	m,p-Xylene	MW185	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	m,p-Xylene	MW194	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	m,p-Xylene	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	m,p-Xylene	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	MW242	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	m,p-Xylene	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	m,p-Xylene	MW262	100	ug/L	U	5/16/2007	5/30/2007	100
SW846-8260	VOA	m,p-Xylene	MW340	500	ug/L	U	5/23/2007	6/5/2007	500
SW846-8260	VOA	m,p-Xylene	MW381	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/16/2007	5/30/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/17/2007	5/30/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	m,p-Xylene	QC	10	ug/L	U	5/23/2007	6/5/2007	10
RSK175	VOA	Methane	MW125	0.32	ug/L	U	5/21/2007	5/23/2007	0.32
RSK175	VOA	Methane	MW168	0.32	ug/L	U	5/16/2007	5/18/2007	0.32
RSK175	VOA	Methane	MW185	0.32	ug/L	U	5/23/2007	5/29/2007	0.32
RSK175	VOA	Methane	MW194	0.32	ug/L	U	5/17/2007	5/21/2007	0.32
RSK175	VOA	Methane	MW197	27.7	ug/L		5/21/2007	5/23/2007	0.32
RSK175	VOA	Methane	MW236	0.32	ug/L	U	5/22/2007	5/23/2007	0.32
RSK175	VOA	Methane	MW236	0.32	ug/L	U	5/22/2007	5/23/2007	0.32
RSK175	VOA	Methane	MW242	0.32	ug/L	U	5/17/2007	5/21/2007	0.32
RSK175	VOA	Methane	MW243	0.5	ug/L		5/15/2007	5/17/2007	0.32
RSK175	VOA	Methane	MW262	0.32	ug/L	U	5/16/2007	5/18/2007	0.32
RSK175	VOA	Methane	MW340	0.32	ug/L	U	5/23/2007	5/29/2007	0.32
RSK175	VOA	Methane	MW381	0.32	ug/L	U	5/22/2007	5/23/2007	0.32

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
RSK175	VOA	Methane	MW66	0.32	ug/L	U	5/15/2007	5/17/2007	0.32
RSK175	VOA	Methane	QC	0.904	ug/L		5/17/2007	5/21/2007	0.32
RSK175	VOA	Methane	QC	0.923	ug/L		5/15/2007	5/17/2007	0.32
RSK175	VOA	Methane	QC	0.829	ug/L		5/21/2007	5/23/2007	0.32
RSK175	VOA	Methane	QC	1.16	ug/L		5/22/2007	5/23/2007	0.32
RSK175	VOA	Methane	QC	1.07	ug/L		5/16/2007	5/18/2007	0.32
RSK175	VOA	Methane	QC	1.01	ug/L		5/22/2007	5/23/2007	0.32
RSK175	VOA	Methane	QC	0.32	ug/L	U	5/22/2007	5/23/2007	0.32
RSK175	VOA	Methane	QC	0.32	ug/L	U	5/23/2007	5/29/2007	0.32
SW846-8260	VOA	Methylene chloride	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Methylene chloride	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Methylene chloride	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Methylene chloride	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Methylene chloride	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Methylene chloride	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Methylene chloride	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Methylene chloride	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Methylene chloride	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Methylene chloride	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Methylene chloride	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Styrene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Styrene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Styrene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Styrene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Styrene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Styrene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Styrene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Styrene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Styrene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Styrene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Styrene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Tetrachloroethene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Tetrachloroethene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Tetrachloroethene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Tetrachloroethene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Tetrachloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Tetrachloroethene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Tetrachloroethene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Tetrachloroethene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Tetrachloroethene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/16/2007	5/30/2007	5

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Tetrachloroethene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Toluene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	Toluene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Toluene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	Toluene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Toluene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Toluene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Toluene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Toluene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	Toluene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Toluene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	Toluene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Total Xylene	MW125	75	ug/L	U	5/21/2007	6/1/2007	75
SW846-8260	VOA	Total Xylene	MW168	15	ug/L	U	5/16/2007	5/30/2007	15
SW846-8260	VOA	Total Xylene	MW185	380	ug/L	U	5/23/2007	6/5/2007	380
SW846-8260	VOA	Total Xylene	MW194	15	ug/L	U	5/17/2007	5/30/2007	15
SW846-8260	VOA	Total Xylene	MW197	15	ug/L	U	5/21/2007	6/1/2007	15
SW846-8260	VOA	Total Xylene	MW236	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	MW236	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	MW242	15	ug/L	U	5/17/2007	5/30/2007	15
SW846-8260	VOA	Total Xylene	MW243	15	ug/L	U	5/15/2007	5/29/2007	15
SW846-8260	VOA	Total Xylene	MW262	150	ug/L	U	5/16/2007	5/30/2007	150
SW846-8260	VOA	Total Xylene	MW340	750	ug/L	U	5/23/2007	6/5/2007	750
SW846-8260	VOA	Total Xylene	MW381	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	MW66	300	ug/L	U	5/15/2007	5/29/2007	300
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/17/2007	5/30/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/15/2007	5/29/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/21/2007	6/1/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/16/2007	5/30/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/22/2007	6/5/2007	15
SW846-8260	VOA	Total Xylene	QC	15	ug/L	U	5/23/2007	6/5/2007	15
SW846-8260	VOA	trans-1,2-Dichloroethene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	trans-1,2-Dichloroethene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120
SW846-8260	VOA	trans-1,2-Dichloroethene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	trans-1,2-Dichloroethene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	trans-1,2-Dichloroethene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,2-Dichloroethene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW125	25	ug/L	U	5/21/2007	6/1/2007	25
SW846-8260	VOA	trans-1,3-Dichloropropene	MW168	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW185	120	ug/L	U	5/23/2007	6/5/2007	120

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	trans-1,3-Dichloropropene	MW194	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW197	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW236	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW242	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW243	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW262	50	ug/L	U	5/16/2007	5/30/2007	50
SW846-8260	VOA	trans-1,3-Dichloropropene	MW340	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	trans-1,3-Dichloropropene	MW381	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	MW66	100	ug/L	U	5/15/2007	5/29/2007	100
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/16/2007	5/30/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/17/2007	5/30/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/21/2007	6/1/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/15/2007	5/29/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/22/2007	6/5/2007	5
SW846-8260	VOA	trans-1,3-Dichloropropene	QC	5	ug/L	U	5/23/2007	6/5/2007	5
SW846-8260	VOA	Trichloroethene	MW125	700	ug/L	D	5/21/2007	6/1/2007	5
SW846-8260	VOA	Trichloroethene	MW168	110	ug/L		5/16/2007	5/30/2007	1
SW846-8260	VOA	Trichloroethene	MW185	3300	ug/L	D	5/23/2007	6/5/2007	25
SW846-8260	VOA	Trichloroethene	MW194	1	ug/L	U	5/17/2007	5/30/2007	1
SW846-8260	VOA	Trichloroethene	MW197	3.9	ug/L		5/21/2007	6/1/2007	1
SW846-8260	VOA	Trichloroethene	MW236	21	ug/L		5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	MW236	22	ug/L		5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	MW242	110	ug/L		5/17/2007	5/30/2007	1
SW846-8260	VOA	Trichloroethene	MW243	100	ug/L		5/15/2007	5/29/2007	1
SW846-8260	VOA	Trichloroethene	MW262	950	ug/L	D	5/16/2007	5/30/2007	10
SW846-8260	VOA	Trichloroethene	MW340	6500	ug/L	D	5/23/2007	6/5/2007	50
SW846-8260	VOA	Trichloroethene	MW381	50	ug/L		5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	MW66	700	ug/L	D	5/15/2007	5/29/2007	20
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/17/2007	5/30/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/21/2007	6/1/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/15/2007	5/29/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/16/2007	5/30/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	QC	1	ug/L	U	5/22/2007	6/5/2007	1
SW846-8260	VOA	Trichloroethene	QC	1.7	ug/L		5/23/2007	6/5/2007	1
SW846-8260	VOA	Vinyl acetate	MW125	50	ug/L	U	5/21/2007	6/1/2007	50
SW846-8260	VOA	Vinyl acetate	MW168	10	ug/L	JU	5/16/2007	5/30/2007	10
SW846-8260	VOA	Vinyl acetate	MW185	250	ug/L	U	5/23/2007	6/5/2007	250
SW846-8260	VOA	Vinyl acetate	MW194	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Vinyl acetate	MW197	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	Vinyl acetate	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	MW236	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	MW242	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Vinyl acetate	MW243	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	Vinyl acetate	MW262	100	ug/L	JU	5/16/2007	5/30/2007	100
SW846-8260	VOA	Vinyl acetate	MW340	500	ug/L	U	5/23/2007	6/5/2007	500
SW846-8260	VOA	Vinyl acetate	MW381	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	MW66	200	ug/L	U	5/15/2007	5/29/2007	200
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	JU	5/17/2007	5/30/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/15/2007	5/29/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	JU	5/16/2007	5/30/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/22/2007	6/5/2007	10
SW846-8260	VOA	Vinyl acetate	QC	10	ug/L	U	5/23/2007	6/5/2007	10
SW846-8260	VOA	Vinyl chloride	MW125	10	ug/L	U	5/21/2007	6/1/2007	10
SW846-8260	VOA	Vinyl chloride	MW168	2	ug/L	U	5/16/2007	5/30/2007	2
SW846-8260	VOA	Vinyl chloride	MW185	50	ug/L	U	5/23/2007	6/5/2007	50
SW846-8260	VOA	Vinyl chloride	MW194	2	ug/L	U	5/17/2007	5/30/2007	2
SW846-8260	VOA	Vinyl chloride	MW197	2	ug/L	U	5/21/2007	6/1/2007	2
SW846-8260	VOA	Vinyl chloride	MW236	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	MW236	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	MW242	2	ug/L	U	5/17/2007	5/30/2007	2
SW846-8260	VOA	Vinyl chloride	MW243	2	ug/L	U	5/15/2007	5/29/2007	2

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-8260	VOA	Vinyl chloride	MW262	20	ug/L	U	5/16/2007	5/30/2007	20
SW846-8260	VOA	Vinyl chloride	MW340	100	ug/L	U	5/23/2007	6/5/2007	100
SW846-8260	VOA	Vinyl chloride	MW381	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	MW66	40	ug/L	U	5/15/2007	5/29/2007	40
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/17/2007	5/30/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/21/2007	6/1/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/15/2007	5/29/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/16/2007	5/30/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/22/2007	6/5/2007	2
SW846-8260	VOA	Vinyl chloride	QC	2	ug/L	U	5/23/2007	6/5/2007	2
EPA-310.1	WETCHEM	Alkalinity	MW125	91	mg/L		5/21/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW168	77	mg/L		5/16/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW185	109	mg/L		5/23/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW194	72	mg/L		5/17/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW197	78	mg/L		5/21/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW236	88	mg/L		5/22/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW236	92	mg/L		5/22/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW242	55	mg/L		5/17/2007	5/30/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW243	113	mg/L		5/15/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW262	105	mg/L		5/16/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW340	109	mg/L		5/23/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW381	98	mg/L		5/22/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	MW66	72	mg/L		5/15/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	QC	10	mg/L	U	5/22/2007	5/24/2007	10
EPA-310.1	WETCHEM	Alkalinity	QC	10	mg/L	U	5/22/2007	5/24/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW125	91	mg/L		5/21/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW168	77	mg/L		5/16/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW185	109	mg/L		5/23/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW194	72	mg/L		5/17/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW197	78	mg/L		5/21/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW236	88	mg/L		5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW236	92	mg/L		5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW242	55	mg/L		5/17/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW243	113	mg/L		5/15/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW262	105	mg/L		5/16/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW340	109	mg/L		5/23/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW381	98	mg/L		5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	MW66	72	mg/L		5/15/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	QC	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Bicarbonate as CaCO3	QC	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW125	10	mg/L	U	5/21/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW168	10	mg/L	U	5/16/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW185	10	mg/L	U	5/23/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW194	10	mg/L	U	5/17/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW197	10	mg/L	U	5/21/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW236	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW236	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW242	10	mg/L	U	5/17/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW243	10	mg/L	U	5/15/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW262	10	mg/L	U	5/16/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW340	10	mg/L	U	5/23/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW381	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	MW66	10	mg/L	U	5/15/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	QC	10	mg/L	U	5/22/2007	5/29/2007	10
SM-2320 B 17	WETCHEM	Carbonate as CaCO3	QC	10	mg/L	U	5/22/2007	5/29/2007	10
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW125	1	mg/L	U	5/21/2007	6/4/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW168	8.2	mg/L		5/16/2007	6/1/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW185	1	mg/L	U	5/23/2007	6/5/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW194	1	mg/L	U	5/17/2007	6/4/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW197	2	mg/L		5/21/2007	6/4/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW236	1	mg/L	U	5/22/2007	6/5/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW236	1	mg/L	U	5/22/2007	6/5/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW242	1	mg/L	U	5/17/2007	6/1/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW243	1	mg/L	U	5/15/2007	6/1/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW262	1	mg/L	U	5/16/2007	6/1/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW340	1	mg/L	U	5/23/2007	6/5/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW381	1	mg/L	U	5/22/2007	6/5/2007	1

Method	AnaType	Chemical Name	Station	Results	Units	Result Qualifier	Date Collected	Date Analyzed	Detection Limit
SW846-9060	WETCHEM	Dissolved Organic Carbon	MW66	1	mg/L	U	5/15/2007	6/1/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	QC	1	mg/L	U	5/22/2007	6/4/2007	1
SW846-9060	WETCHEM	Dissolved Organic Carbon	QC	1	mg/L	U	5/22/2007	6/4/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW125	1	mg/L	U	5/21/2007	5/22/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW168	1	mg/L	BU	5/16/2007	5/17/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW185	1	mg/L	U	5/23/2007	5/24/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW194	1	mg/L	U	5/17/2007	5/21/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW197	1	mg/L	U	5/21/2007	5/22/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW236	1	mg/L	U	5/22/2007	5/23/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW236	1	mg/L	U	5/22/2007	5/23/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW242	1	mg/L	U	5/17/2007	5/18/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW243	5.3	mg/L	BX	5/15/2007	5/16/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW262	1	mg/L	BU	5/16/2007	5/17/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW340	1	mg/L	U	5/23/2007	5/24/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW381	1	mg/L	U	5/22/2007	5/23/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	MW66	1	mg/L	BUX	5/15/2007	5/16/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	QC	1	mg/L	U	5/22/2007	5/23/2007	1
SW846-9056	WETCHEM	Phosphate as Phosphorous	QC	1	mg/L	U	5/22/2007	5/23/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW125	1	mg/L	U	5/21/2007	6/4/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW168	1	mg/L	U	5/16/2007	6/1/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW185	1	mg/L	U	5/23/2007	6/5/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW194	1	mg/L	U	5/17/2007	6/4/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW197	2.3	mg/L		5/21/2007	6/4/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW236	1	mg/L	U	5/22/2007	6/5/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW236	1	mg/L	U	5/22/2007	6/5/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW242	1	mg/L	U	5/17/2007	6/1/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW243	1	mg/L	U	5/15/2007	6/1/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW262	1	mg/L	U	5/16/2007	6/1/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW340	1	mg/L	U	5/23/2007	6/5/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW381	1	mg/L	U	5/22/2007	6/5/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	MW66	1	mg/L	U	5/15/2007	6/1/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	QC	1	mg/L	U	5/22/2007	6/4/2007	1
SW846-9060	WETCHEM	Total Organic Carbon (TOC)	QC	1	mg/L	U	5/22/2007	6/4/2007	1

Follow-Up Samples (December 2007)

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
FS	METEO	Barometric Pressure	MW125	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW168	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW185	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW194	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW197	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW236	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW242	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW243	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW262	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW340	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW381	30.21		Inches/Hg		12/19/2007		
FS	METEO	Barometric Pressure	MW66	30.21		Inches/Hg		12/19/2007		
FS	PHYSC	Depth to Water	MW125	54.1		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW168	54.45		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW185	51.26		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW194	33.75		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW197	46.25		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW236	48.71		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW242	46.84		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW243	45.05		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW262	50.64		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW340	51.69		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW381	48.71		ft		12/19/2007		
FS	PHYSC	Depth to Water	MW66	48.55		ft		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW125	2.88		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW168	3.13		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW185	1.68		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW194	3.61		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW197	0.72		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW236	6.07		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW242	0.8		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW243	3.81		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW262	0.76		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW340	3.17		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW381	6.07		mg/L		12/19/2007		
FS	PHYSC	Dissolved Oxygen	MW66	5.69		mg/L		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW125	400		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW168	233		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW185	269		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW194	114		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW197	2		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW236	261		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW242	63		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW243	150		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW262	218		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW340	254		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW381	261		mV		12/19/2007		
FS	PHYSC	Oxidation-Reduction Potential	MW66	285		mV		12/19/2007		
FS	PHYSC	pH	MW125	6.11		Std Unit		12/19/2007		
FS	PHYSC	pH	MW168	5.87		Std Unit		12/19/2007		
FS	PHYSC	pH	MW185	6.1		Std Unit		12/19/2007		
FS	PHYSC	pH	MW194	6.2		Std Unit		12/19/2007		
FS	PHYSC	pH	MW197	6.13		Std Unit		12/19/2007		
FS	PHYSC	pH	MW236	6.65		Std Unit		12/19/2007		
FS	PHYSC	pH	MW242	6.09		Std Unit		12/19/2007		
FS	PHYSC	pH	MW243	5.96		Std Unit		12/19/2007		
FS	PHYSC	pH	MW262	5.97		Std Unit		12/19/2007		
FS	PHYSC	pH	MW340	6.04		Std Unit		12/19/2007		
FS	PHYSC	pH	MW381	6.65		Std Unit		12/19/2007		
FS	PHYSC	pH	MW66	6.01		Std Unit		12/19/2007		
FS	PHYSC	Temperature	MW125	55.8		deg F		12/19/2007		
FS	PHYSC	Temperature	MW168	62.7		deg F		12/19/2007		
FS	PHYSC	Temperature	MW185	59.4		deg F		12/19/2007		
FS	PHYSC	Temperature	MW194	57.6		deg F		12/19/2007		
FS	PHYSC	Temperature	MW197	57.7		deg F		12/19/2007		
FS	PHYSC	Temperature	MW236	57.8		deg F		12/19/2007		
FS	PHYSC	Temperature	MW242	57		deg F		12/19/2007		
FS	PHYSC	Temperature	MW243	57.2		deg F		12/19/2007		
FS	PHYSC	Temperature	MW262	61.6		deg F		12/19/2007		
FS	PHYSC	Temperature	MW340	60.7		deg F		12/19/2007		
FS	PHYSC	Temperature	MW381	57.8		deg F		12/19/2007		

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
FS	PHYSC	Temperature	MW66	60.3		deg F		12/19/2007		
RL-7100	RADS	Technetium-99	MW125	220	17.8	pCi/L		12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW168	2400	45.1	pCi/L		12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW185	696	26.4	pCi/L		12/19/2007	1/16/2008	16.1
RL-7100	RADS	Technetium-99	MW194	6.11	11.5	pCi/L	U	12/19/2007	1/16/2008	16.1
RL-7100	RADS	Technetium-99	MW197	-8.38	11.4	pCi/L	U	12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW236	29.1	12.7	pCi/L		12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW242	110	15.1	pCi/L		12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW243	306	19.4	pCi/L		12/19/2007	1/16/2008	16.1
RL-7100	RADS	Technetium-99	MW262	519	23.4	pCi/L		12/19/2007	1/16/2008	16.1
RL-7100	RADS	Technetium-99	MW340	647	25.6	pCi/L		12/19/2007	1/16/2008	16.1
RL-7100	RADS	Technetium-99	MW381	21.5	12.5	pCi/L		12/19/2007	1/14/2008	16.7
RL-7100	RADS	Technetium-99	MW66	530	23.7	pCi/L		12/19/2007	1/16/2008	16.1
8260B	VOA	1,1,1-Trichloroethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,1-Trichloroethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,1,1-Trichloroethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,1,1-Trichloroethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,1-Trichloroethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,1,1-Trichloroethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,1,1-Trichloroethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,1-Trichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,1-Trichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2,2-Tetrachloroethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,1,2,2-Tetrachloroethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,1,2,2-Tetrachloroethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2,2-Tetrachloroethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,1,2,2-Tetrachloroethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,1,2,2-Tetrachloroethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2,2-Tetrachloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2,2-Tetrachloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2-Trichloroethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,1,2-Trichloroethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,1,2-Trichloroethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2-Trichloroethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,1,2-Trichloroethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,1,2-Trichloroethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1,2-Trichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1,2-Trichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethane	MW125	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethane	MW168	1.2		ug/L	U	12/19/2007	12/27/2007	1.2
8260B	VOA	1,1-Dichloroethane	MW185	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1-Dichloroethane	MW194	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	MW197	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	MW236	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	MW242	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	MW243	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethane	MW262	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	1,1-Dichloroethane	MW340	80		ug/L	U	12/19/2007	12/27/2007	80
8260B	VOA	1,1-Dichloroethane	MW381	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	MW66	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethane	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethane	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW125	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethene	MW168	2.8		ug/L	D	12/19/2007	12/27/2007	1.2

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	1,1-Dichloroethene	MW185	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,1-Dichloroethene	MW194	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW197	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW236	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW242	1.8		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW243	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethene	MW262	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	1,1-Dichloroethene	MW340	80		ug/L	U	12/19/2007	12/27/2007	80
8260B	VOA	1,1-Dichloroethene	MW381	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	MW66	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,1-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,1-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	1,2-Dichloroethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloroethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,2-Dichloroethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,2-Dichloroethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloroethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,2-Dichloroethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,2-Dichloroethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloropropane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,2-Dichloropropane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,2-Dichloropropane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloropropane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,2-Dichloropropane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,2-Dichloropropane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dichloropropane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dichloropropane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dimethylbenzene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	1,2-Dimethylbenzene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	1,2-Dimethylbenzene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dimethylbenzene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	1,2-Dimethylbenzene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	1,2-Dimethylbenzene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	1,2-Dimethylbenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	1,2-Dimethylbenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	2-Butanone	MW125	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Butanone	MW168	12		ug/L	U	12/19/2007	12/27/2007	12
8260B	VOA	2-Butanone	MW185	250		ug/L	U	12/19/2007	12/27/2007	250
8260B	VOA	2-Butanone	MW194	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	MW197	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	MW236	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	MW242	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	MW243	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Butanone	MW262	100		ug/L	U	12/19/2007	12/27/2007	100
8260B	VOA	2-Butanone	MW340	800		ug/L	U	12/19/2007	12/27/2007	800
8260B	VOA	2-Butanone	MW381	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	MW66	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Butanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Butanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW125	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Hexanone	MW168	12		ug/L	U	12/19/2007	12/27/2007	12
8260B	VOA	2-Hexanone	MW185	250		ug/L	U	12/19/2007	12/27/2007	250

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	2-Hexanone	MW194	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW197	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW236	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW242	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW243	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Hexanone	MW262	100		ug/L	U	12/19/2007	12/27/2007	100
8260B	VOA	2-Hexanone	MW340	800		ug/L	U	12/19/2007	12/27/2007	800
8260B	VOA	2-Hexanone	MW381	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	MW66	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	2-Hexanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	2-Hexanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW125	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	4-Methyl-2-pentanone	MW168	12		ug/L	U	12/19/2007	12/27/2007	12
8260B	VOA	4-Methyl-2-pentanone	MW185	250		ug/L	U	12/19/2007	12/27/2007	250
8260B	VOA	4-Methyl-2-pentanone	MW194	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW197	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW236	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW242	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW243	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	4-Methyl-2-pentanone	MW262	100		ug/L	U	12/19/2007	12/27/2007	100
8260B	VOA	4-Methyl-2-pentanone	MW340	800		ug/L	U	12/19/2007	12/27/2007	800
8260B	VOA	4-Methyl-2-pentanone	MW381	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	MW66	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	4-Methyl-2-pentanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	4-Methyl-2-pentanone	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW125	50		ug/L	JU	12/19/2007	12/27/2007	50
8260B	VOA	Acetone	MW168	12		ug/L	JU	12/19/2007	12/27/2007	12
8260B	VOA	Acetone	MW185	250		ug/L	JU	12/19/2007	12/27/2007	250
8260B	VOA	Acetone	MW194	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW197	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW236	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW242	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW243	50		ug/L	JU	12/19/2007	12/27/2007	50
8260B	VOA	Acetone	MW262	100		ug/L	JU	12/19/2007	12/27/2007	100
8260B	VOA	Acetone	MW340	800		ug/L	JU	12/19/2007	12/27/2007	800
8260B	VOA	Acetone	MW381	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	MW66	50		ug/L	JU	12/19/2007	12/27/2007	50
8260B	VOA	Acetone	QC	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Acetone	QC	10		ug/L	JU	12/19/2007	12/27/2007	10
8260B	VOA	Benzene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Benzene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Benzene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Benzene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Benzene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Benzene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Benzene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Benzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Benzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromodichloromethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Bromodichloromethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Bromodichloromethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromodichloromethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Bromodichloromethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Bromodichloromethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromodichloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromodichloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromoform	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Bromoform	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Bromoform	MW194	5		ug/L	U	12/19/2007	12/27/2007	5

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	Bromoform	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromoform	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Bromoform	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Bromoform	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromoform	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromoform	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromomethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Bromomethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Bromomethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromomethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Bromomethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Bromomethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Bromomethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Bromomethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon disulfide	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Carbon disulfide	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Carbon disulfide	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon disulfide	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Carbon disulfide	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Carbon disulfide	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon disulfide	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon disulfide	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon tetrachloride	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Carbon tetrachloride	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Carbon tetrachloride	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon tetrachloride	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Carbon tetrachloride	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Carbon tetrachloride	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Carbon tetrachloride	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Carbon tetrachloride	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chlorobenzene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Chlorobenzene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Chlorobenzene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chlorobenzene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Chlorobenzene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Chlorobenzene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chlorobenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chlorobenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Chloroethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Chloroethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	Chloroethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Chloroethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Chloroethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroform	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Chloroform	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Chloroform	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroform	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Chloroform	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Chloroform	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloroform	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloroform	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloromethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Chloromethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Chloromethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloromethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Chloromethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Chloromethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Chloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Chloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,2-Dichloroethene	MW125	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,2-Dichloroethene	MW168	1.2		ug/L	U	12/19/2007	12/27/2007	1.2
8260B	VOA	cis-1,2-Dichloroethene	MW185	76		ug/L	D	12/19/2007	12/27/2007	25
8260B	VOA	cis-1,2-Dichloroethene	MW194	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	MW197	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	MW236	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	MW242	4.4		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	MW243	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,2-Dichloroethene	MW262	11		ug/L	D	12/19/2007	12/27/2007	10
8260B	VOA	cis-1,2-Dichloroethene	MW340	80		ug/L	U	12/19/2007	12/27/2007	80
8260B	VOA	cis-1,2-Dichloroethene	MW381	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	MW66	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,2-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,2-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	cis-1,3-Dichloropropene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	cis-1,3-Dichloropropene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	cis-1,3-Dichloropropene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	cis-1,3-Dichloropropene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	cis-1,3-Dichloropropene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	cis-1,3-Dichloropropene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	cis-1,3-Dichloropropene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	cis-1,3-Dichloropropene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	cis-1,3-Dichloropropene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Dibromochloromethane	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Dibromochloromethane	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Dibromochloromethane	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	MW236	5		ug/L	U	12/19/2007	12/27/2007	5

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	Dibromochloromethane	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Dibromochloromethane	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Dibromochloromethane	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Dibromochloromethane	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Dibromochloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dibromochloromethane	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Dimethylbenzene, Total	MW125	75		ug/L	U	12/19/2007	12/27/2007	75
8260B	VOA	Dimethylbenzene, Total	MW168	19		ug/L	U	12/19/2007	12/27/2007	19
8260B	VOA	Dimethylbenzene, Total	MW185	380		ug/L	U	12/19/2007	12/27/2007	380
8260B	VOA	Dimethylbenzene, Total	MW194	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	MW197	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	MW236	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	MW242	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	MW243	75		ug/L	U	12/19/2007	12/27/2007	75
8260B	VOA	Dimethylbenzene, Total	MW262	150		ug/L	U	12/19/2007	12/27/2007	150
8260B	VOA	Dimethylbenzene, Total	MW340	1200		ug/L	U	12/19/2007	12/27/2007	1200
8260B	VOA	Dimethylbenzene, Total	MW381	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	MW66	75		ug/L	U	12/19/2007	12/27/2007	75
8260B	VOA	Dimethylbenzene, Total	QC	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Dimethylbenzene, Total	QC	15		ug/L	U	12/19/2007	12/27/2007	15
8260B	VOA	Ethylbenzene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Ethylbenzene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Ethylbenzene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Ethylbenzene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Ethylbenzene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Ethylbenzene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Ethylbenzene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Ethylbenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Ethylbenzene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	meta/para Xylene	MW125	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	meta/para Xylene	MW168	12		ug/L	U	12/19/2007	12/27/2007	12
8260B	VOA	meta/para Xylene	MW185	250		ug/L	U	12/19/2007	12/27/2007	250
8260B	VOA	meta/para Xylene	MW194	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	MW197	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	MW236	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	MW242	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	MW243	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	meta/para Xylene	MW262	100		ug/L	U	12/19/2007	12/27/2007	100
8260B	VOA	meta/para Xylene	MW340	800		ug/L	U	12/19/2007	12/27/2007	800
8260B	VOA	meta/para Xylene	MW381	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	MW66	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	meta/para Xylene	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	meta/para Xylene	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Methylene chloride	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Methylene chloride	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Methylene chloride	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Methylene chloride	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Methylene chloride	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Methylene chloride	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Methylene chloride	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Methylene chloride	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Methylene chloride	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Styrene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Styrene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Styrene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	Styrene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Styrene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Styrene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Styrene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Styrene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Styrene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Tetrachloroethene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Tetrachloroethene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Tetrachloroethene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Tetrachloroethene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Tetrachloroethene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Tetrachloroethene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Tetrachloroethene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Tetrachloroethene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Toluene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	Toluene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	Toluene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Toluene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Toluene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	Toluene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	Toluene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Toluene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,2-Dichloroethene	MW125	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,2-Dichloroethene	MW168	1.2		ug/L	U	12/19/2007	12/27/2007	1.2
8260B	VOA	trans-1,2-Dichloroethene	MW185	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	trans-1,2-Dichloroethene	MW194	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	MW197	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	MW236	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	MW242	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	MW243	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,2-Dichloroethene	MW262	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	trans-1,2-Dichloroethene	MW340	80		ug/L	U	12/19/2007	12/27/2007	80
8260B	VOA	trans-1,2-Dichloroethene	MW381	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	MW66	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,2-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,2-Dichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	trans-1,3-Dichloropropene	MW125	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	trans-1,3-Dichloropropene	MW168	6.2		ug/L	U	12/19/2007	12/27/2007	6.2
8260B	VOA	trans-1,3-Dichloropropene	MW185	120		ug/L	U	12/19/2007	12/27/2007	120
8260B	VOA	trans-1,3-Dichloropropene	MW194	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	MW197	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	MW236	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	MW242	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	MW243	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	trans-1,3-Dichloropropene	MW262	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	trans-1,3-Dichloropropene	MW340	400		ug/L	U	12/19/2007	12/27/2007	400
8260B	VOA	trans-1,3-Dichloropropene	MW381	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	MW66	25		ug/L	U	12/19/2007	12/27/2007	25
8260B	VOA	trans-1,3-Dichloropropene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	trans-1,3-Dichloropropene	QC	5		ug/L	U	12/19/2007	12/27/2007	5
8260B	VOA	Trichloroethene	MW125	620		ug/L	D	12/19/2007	12/27/2007	5
8260B	VOA	Trichloroethene	MW168	110		ug/L	D	12/19/2007	12/27/2007	1.2
8260B	VOA	Trichloroethene	MW185	3600		ug/L	D	12/19/2007	12/27/2007	25
8260B	VOA	Trichloroethene	MW194	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	MW197	3.5		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	MW236	72		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	MW242	150		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	MW243	590		ug/L	D	12/19/2007	12/27/2007	5

Method	AnaType	Chemical Name	Station	Result	Error	Units	Qualifier	Date Collected	Date Analyzed	Detection Limit
8260B	VOA	Trichloroethene	MW262	1400		ug/L	D	12/19/2007	12/27/2007	10
8260B	VOA	Trichloroethene	MW340	9700		ug/L	D	12/19/2007	12/27/2007	80
8260B	VOA	Trichloroethene	MW381	47		ug/L		12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	MW66	930		ug/L	D	12/19/2007	12/27/2007	10
8260B	VOA	Trichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	Trichloroethene	QC	1		ug/L	U	12/19/2007	12/27/2007	1
8260B	VOA	Vinyl acetate	MW125	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Vinyl acetate	MW168	12		ug/L	U	12/19/2007	12/27/2007	12
8260B	VOA	Vinyl acetate	MW185	250		ug/L	U	12/19/2007	12/27/2007	250
8260B	VOA	Vinyl acetate	MW194	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	MW197	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	MW236	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	MW242	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	MW243	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Vinyl acetate	MW262	100		ug/L	U	12/19/2007	12/27/2007	100
8260B	VOA	Vinyl acetate	MW340	800		ug/L	U	12/19/2007	12/27/2007	800
8260B	VOA	Vinyl acetate	MW381	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	MW66	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Vinyl acetate	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl acetate	QC	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl chloride	MW125	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl chloride	MW168	2.5		ug/L	U	12/19/2007	12/27/2007	2.5
8260B	VOA	Vinyl chloride	MW185	50		ug/L	U	12/19/2007	12/27/2007	50
8260B	VOA	Vinyl chloride	MW194	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	MW197	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	MW236	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	MW242	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	MW243	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl chloride	MW262	20		ug/L	U	12/19/2007	12/27/2007	20
8260B	VOA	Vinyl chloride	MW340	160		ug/L	U	12/19/2007	12/27/2007	160
8260B	VOA	Vinyl chloride	MW381	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	MW66	10		ug/L	U	12/19/2007	12/27/2007	10
8260B	VOA	Vinyl chloride	QC	2		ug/L	U	12/19/2007	12/27/2007	2
8260B	VOA	Vinyl chloride	QC	2		ug/L	U	12/19/2007	12/27/2007	2
FS	WETCHEM	Conductivity	MW125	310		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW168	492		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW185	382		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW194	251		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW197	424		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW236	502		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW242	395		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW243	378		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW262	601		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW340	453		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW381	502		umho/cm		12/19/2007		
FS	WETCHEM	Conductivity	MW66	190		umho/cm		12/19/2007		
FS	WETCHEM	Turbidity	MW125	20.2		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW168	65.1		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW185	7.2		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW194	5.9		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW197	43.5		mV		12/19/2007		
FS	WETCHEM	Turbidity	MW236	4.3		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW242	63.3		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW243	2.3		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW262	20.7		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW340	6.5		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW381	4.3		NTU		12/19/2007		
FS	WETCHEM	Turbidity	MW66	7.1		NTU		12/19/2007		

Appendix B

TRFLP Report

Paducah Groundwater Microbial Diversity Summary

April 2008

Overview:

The objective of this project was to evaluate microbial biomass and diversity targeting the 16S rRNA gene of *Bacteria* in groundwater collected from the Paducah Gaseous Diffusion Plant (PGDP), North West plume, Kentucky using DNA extraction and Terminal Restriction Fragment Length Polymorphism (T-RFLP). Table 1 describes the sample matrix and the condition of the samples upon arrival to the analytical laboratory.

Table 1. Description of Paducah Site samples and volume filtered for DNA extraction.

Well Location	Matrix	Condition Received	Volume Filtered
1. MW 381	Groundwater	4°C / bottles intact	250 mL
2. MW 185	Groundwater	4°C / bottles intact	250 mL
3. MW 243	Groundwater	4°C / bottles intact	250 mL
4. MW 236	Groundwater	4°C / bottles intact	250 mL
5. MW 262	Groundwater	4°C / bottles intact	250 mL
6. MW 340	Groundwater	4°C / bottles intact	250 mL
7. MW 194	Groundwater	4°C / bottles intact	250 mL
8. MW 197	Groundwater	4°C / bottles intact	250 mL
9. MW 66	Groundwater	4°C / bottles intact	250 mL
10. MW 242	Groundwater	4°C / bottles intact	250 mL
11. MW 168	Groundwater	4°C / bottles intact	250 mL
12. MW 125	Groundwater	4°C / bottles intact	250 mL
13. MW 197*	Groundwater	4°C / bottles intact	250 mL
14. MW 262*	Groundwater	4°C / bottles intact	250 mL

* Samples represent the “re-sample” in January 2008.

Methods:

DNA Extraction: 200 mL of groundwater was filtered using sterile 0.2-µm Supor filters and filter apparatus. The filters were frozen at -80°C, shattered and then divided between two extraction kits: Bio 101 and MoBio. Both kits were used for DNA extraction according to the manufacturer's instructions. Community DNA was eluted in 100 µL of 0.1x Tris HCL and stored at -20°C.

Amplification of Bacteria: Following DNA extraction, the samples were first subjected to polymerase chain reaction (PCR) using universal bacterial probes in order to verify that amplifiable DNA was present in the samples. The PCR was used to amplify nearly full-length 16S rRNA genes from *Bacteria*. Each 25-µL PCR reaction included 0.4 mg mL-1 molecular-grade BSA (Sigma Chemicals), 1X PCR buffer (Promega), 1.5 mM $MgCl_2$, 0.5 µM each forward and reverse primer (Invitrogen), 1 U Taq DNA polymerase (Promega), 0.2 mM each dNTP (Invitrogen), 1 µL template DNA, and molecular-grade water (Promega). Amplification was performed on a PerkinElmer Model 9600 thermocycler using the following regime: 94°C (5 min) followed by 25 cycles of 94°C (1 min), 53.5°C (1 min), and 72°C (1 min). The reaction was finished with an additional 7 minutes at 72°C. PCR products were examined in a 1.2% agarose gel stained with ethidium bromide to confirm specificity of the amplification reactions.

T-RFLP PCR: The polymerase chain reaction (PCR) was used to amplify the 16S rRNA genes from *Bacteria* 16S rRNA gene. Each 50-µL PCR reaction included 0.4 mg mL^{-1} molecular-grade BSA (Sigma Chemicals), 1X PCR buffer (Promega), 1.5 mM $MgCl_2$, 0.5 µM each forward and reverse primer (Invitrogen), 1 U Taq DNA polymerase (Promega), 0.2 mM each dNTP (Invitrogen), 1 µL template DNA, and molecular-grade water (Promega). Universal eubacterial primer 8F (5'-AGA GTT TGA TCC TGG CTC AG-3') modified with phosphoramidite fluorochrome 5-carboxyfluorescein (Invitrogen) and 907R (5'-GGT TAC CTT GTT ACG ACT T-3') was used. The thermocycler conditions and agarose gel imaging were performed as described above.

T-RFLP Digestion/Analysis. Triplicate PCR products were generated from each DNA extraction andcombined and purified using the QIAquick PCR Purification Kits (Qiagen). PCR product concentration was estimated by measurement of absorbed UV light at λ = 260 nm. Approximately 200 ng of PCR product was digested with MspI (1 U) (New England BioLabs) at 37^{o}C for 3 h. The digested fragments were purified using ethanol precipitation as described elsewhere, and the DNA pellet was re-suspended in 10 µL DNAse-free water. Samples were denatured by heating to 95^{o}C for 3 min followed by submersion in an ice bath. The denatured DNA (2 µL), along with the internal standard Rox 1000 (Applied Biosystems), was loaded onto a model 3100 DNA sequencer (Applied Biosystems). The resulting data were analyzed using Genescan v 3.1 (Applied Biosystems).

Each PCR preparation was run in triplicate on the DNA sequencer to generate replicate T-RFLP profiles of each sample. These replicates were aligned manually and composite profiles were generated of reproducible T-RFs. T-RFs that differed by less than 0.5 bp were considered identical and assigned the average size and peak heights of the fragments making up the composite T-RF. Any T-RF averaging < 70 bp or not occurring in all of the replicate profiles was discarded. Likewise, any T-RF within a composite profile with peak height averaging < 100 fluorescence units was also discarded. The sum of all T-RF peak heights > 100 florescence units was used as an indicator of the total DNA quantity represented, and peak heights were normalized to the replicate with the lowest total fluorescence.

Results:

Table 2 summarizes the results of the PGDP project samples. The DNA extraction negative control and all PCR negative controls did not amplify any product. In addition, all calibration control checks were within acceptable values.

Table 2. Results of molecular analyses for the PGDP North West plume samples.

Well Location	PCR Bacteria[a,b]	PCR Concentration (ng/μL)	S[c]	Number of Predominant T-RFs[d]	Shannon-Weiner Index (H)	Shannon-Wiener Function (E)
MW 381	+	12.5	15	3	2.23	0.57
MW 185	+	9.1	44	5	4.82	0.88
MW 243	+	7.3	50	4	5.26	0.93
MW 236	+	6.5	41	5	4.82	0.90
MW 262	+	24.8	25	7	4.21	0.91
MW 340	+	8.7	31	4	4.05	0.82
MW 194	+	13.9	21	4	4.02	0.91
MW 197	+	33.9	39	6	4.51	0.85
MW 66	+	7.6	36	7	4.51	0.88
MW 242	+	20.4	42	5	5.01	0.93
MW 168	+	34.6	27	8	4.10	0.86
MW 125	+	24.6	46	6	5.05	0.91
MW 197*	+	46.6	29	4	4.20	0.86
MW 262*	+	16.1	42	4	4.97	0.92

Summary:

The total cell counts, DAPI can be used as an indicator of relative biomass levels for the samples in order to make relative comparisons. All DAPI counts were similar for the groundwater samples evaluated (previous report). The DNA amplified from these samples can also be used as a relative indicator of biomass. DNA extractions yielded sufficient DNA to amplify *Bacteria* in a universal PCR reaction. These products were visualized by gel electrophoresis, confirming that amplifiable DNA was obtained from each sample. Overall, however, the DNA yield was relatively low indicating low-levels of biomass present within the samples, based on readily amplifiable DNA and consequently cells.

The number of predominant terminal restriction fragments (T-RFs) generated in each T-RFLP community profile was used as an indicator of the number of microbial bacterial populations present, or the species richness (S), and the relative fluorescence percentage (see T-RFLP profiles below) was used as an indicator of the relative abundance of a species within the microbial community (Table 2). These assumptions allow the calculation of similarity and diversity indices between the different T-RFLP profiles. The Shannon-Weiner diversity index (H) (also referred to as the Shannon-Weaver index) was used to estimate the diversity (i.e., richness and evenness) of T-RFs within the T-RFLP profiles. The Shannon-Weiner index evaluates the diversity while accounting for species richness and proportion, or evenness, of the community with higher H values indicate greater diversity in the microbial community. However, communities that have a higher number of T-RFs, but have a T-RF that is very abundant, will have a lower Shannon-Weiner index than a community with a lower number of fragments where the fragments are all similar in proportion. The Shannon-Weiner Function (E) is an indicator for evenness, or similarity between relative proportions, of T-RFs within the community profiles. T-RFLP profiles with similar, or equal, proportions of all T-RFs have an E value of one, but when the abundance is very dissimilar or one species dominates then the value decreases.

Of the Paducah samples, MW 194 and MW 381 had the lowest biomass, based on the evaluation of DNA concentration. However, all of the samples successfully amplified *Bacteria*, and T-RFLP profiles generated. In general T-RFLP indicates that all of the samples were relatively diverse, with the exception of MW 381, which was substantially less diverse than the other samples as indicated by a lower, number of observed T-RFs, the prevalence of 3 dominant T-RFs that comprised >77% of the total T-RFLP community, resulting in significantly lower Shannon-Weiner index and function.

In looking at similarity between the profiles, the majority of the profiles were statistically, significantly different (see T-RFLP profiles below). Of the predominant T-RFs evaluated, only T-RF 134 was found in 5 of the MWs (125, 242, 262*, 168, and 185). T-RF 491 was dominant in only three MWs: 168, 236, and 242. T-RF 79 was dominant in replicate samples 197, 197* and only on other MW, 262. T-RF 203 was dominant, again in replicate samples: 197, 197*, and one other MW, 262. T-RF 137 was dominant only in replicate samples 197 and 197*. T-RF 492 was dominant in MW 168, 340 and 194.

Based on the requirements set forth, prior to the analysis of groundwater from the PGDP North West plume for T-RFLP: community profiling, the following should be true:

1. Community profiles will differ based on TCE concentrations,
2. Community profiles will differ based on geochemical or biogeochemical parameters,
3. Community profiles of the wells that were cleaned in the same time frame should look more similar to one another than those that were cleaned more recently or never,
4. All of the profiles should have similarities that "outweigh" the differences, i.e. if biofilm is present in all, should show similarities (e.g. anaerobic contribution).

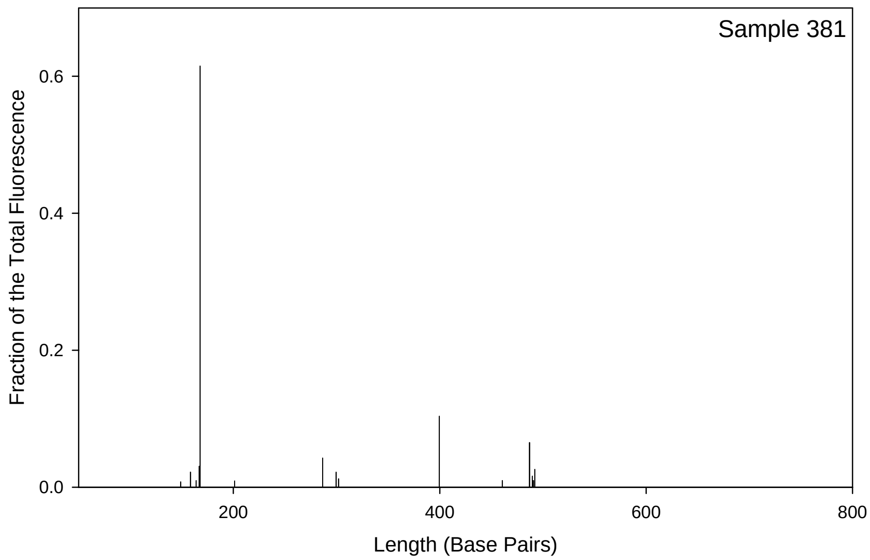
In general, the diversity profiles/fingerprints of each monitoring well evaluated were greater than expected. Each well produced a clearly distinct profile, detailing the micro-niches and diversity of genetic and physiological activities of microbial populations in situ.

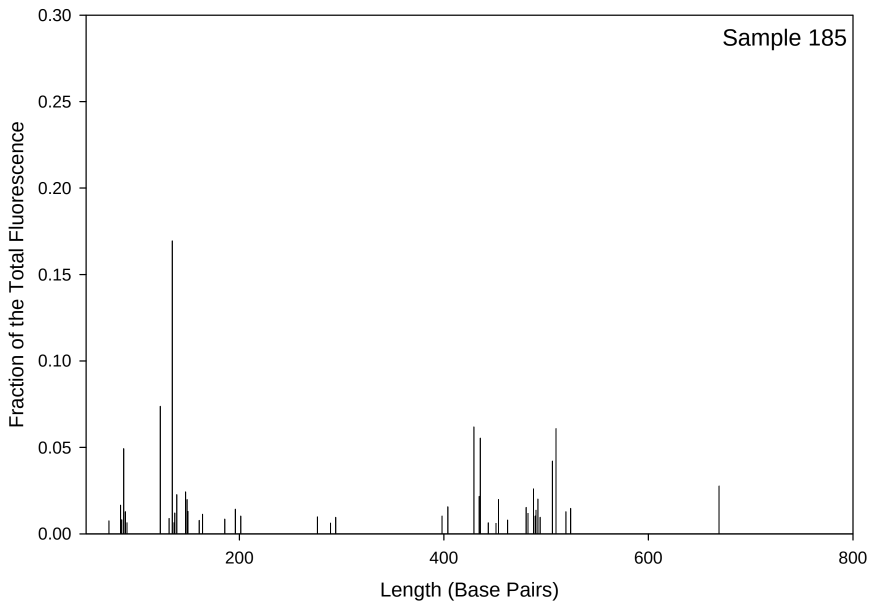
Based on this overall diversity and the distinct differences of each of the fingerprints generated, is it *clear* that:

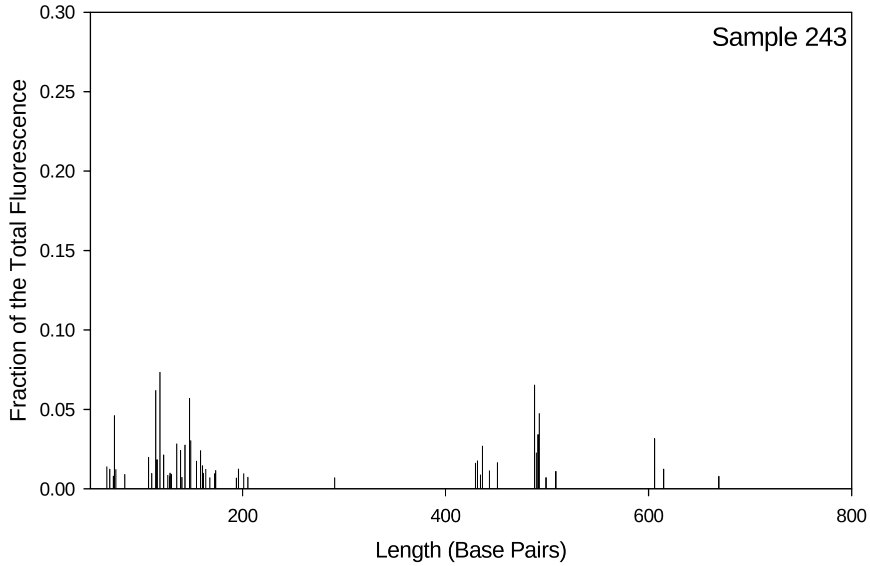
a. There is no dominance of any one organism or even group of organisms in the groundwater plume evaluated (based on DNA amplification).
b. Dominant organisms from any given monitoring well are different than other monitoring wells, even those with similar geochemical or contaminant concentrations.
c. The groundwater evaluated for enzyme activity probe analysis was not biased by biofouling in the well heads/casings, and
d. *Most importantly*, the groundwater sampled represented distinct micro-communities present within the PDGP North West plume (as would be expected if the plume, rather than the well casings and associated biofilms, were being sampled and analyzed).

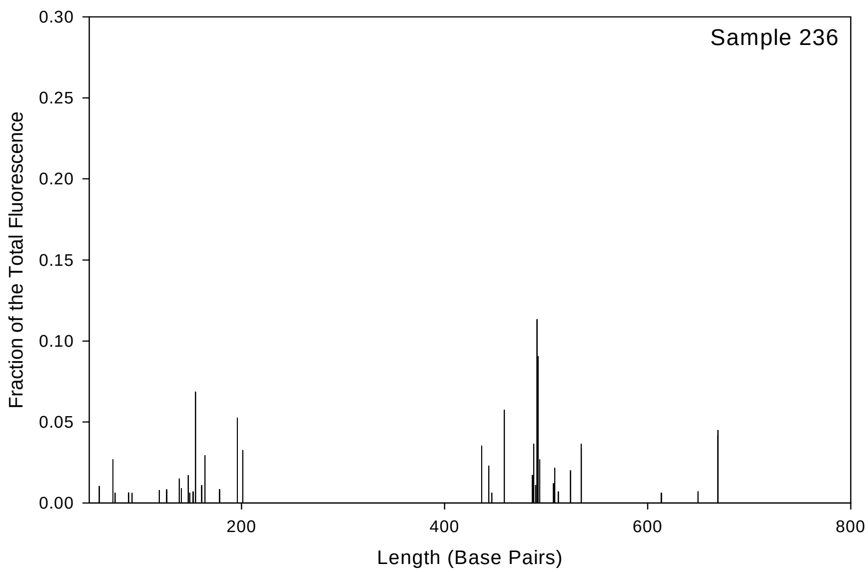
These data provide scientifically and statistically defensible results that the groundwater sampled and analyzed for enzyme probe activity was the result of sampling the groundwater plume (i.e. formation water), rather than sampling the micro-communities present in specific and/or individual well casings, or biofilms present therein.

T-RFLP Profiles:






Sample 243
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Fraction of the Total Fluorescence
200
400
600
800
Length (Base Pairs)


Sample 236
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0.20
0.15
0.10
0.05
0.00
Fraction of the Total Fluorescence
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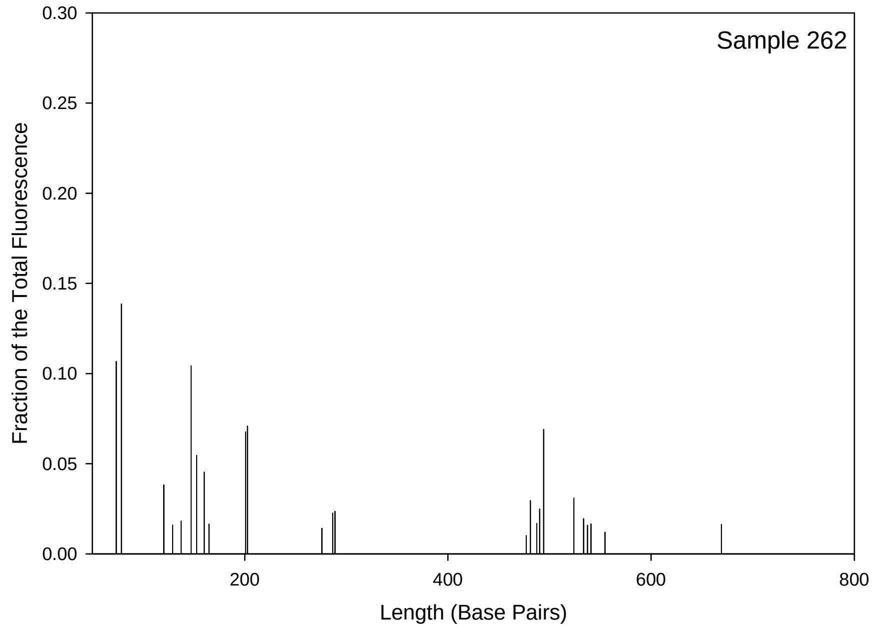
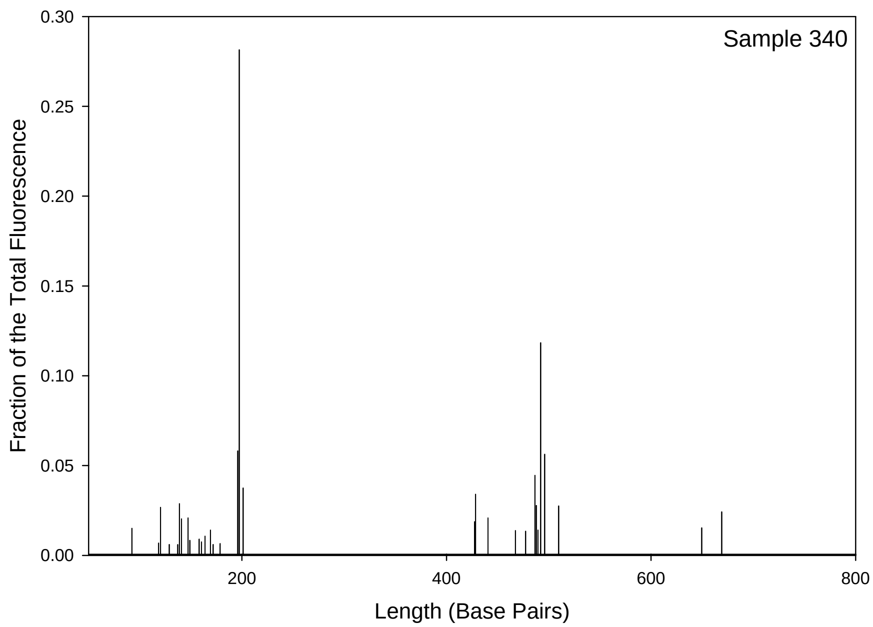
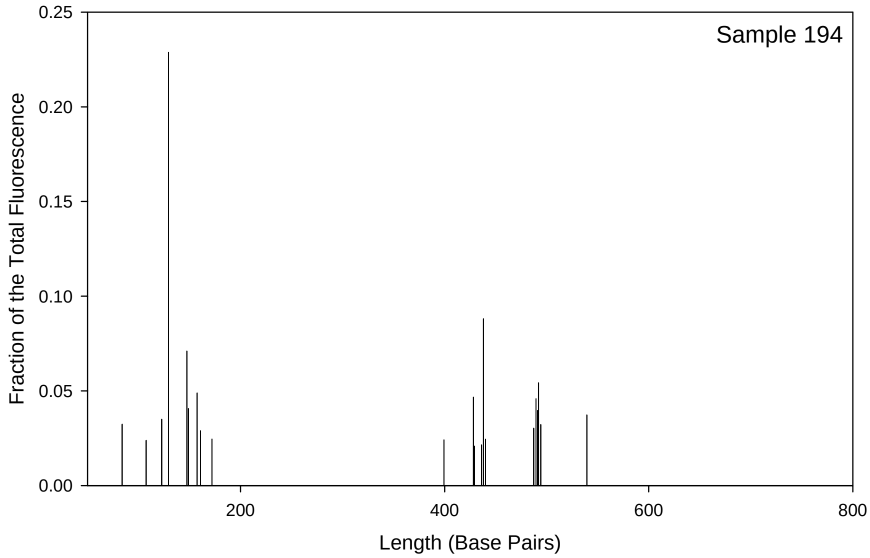
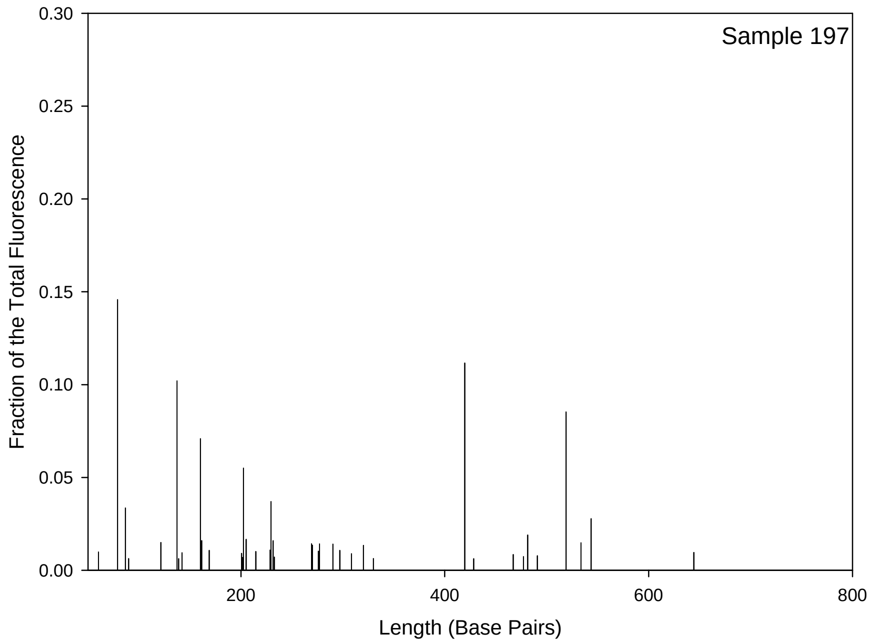
400
600
800
Length (Base Pairs)


Sample 262
Fraction of the Total Fluorescence
0.30
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)

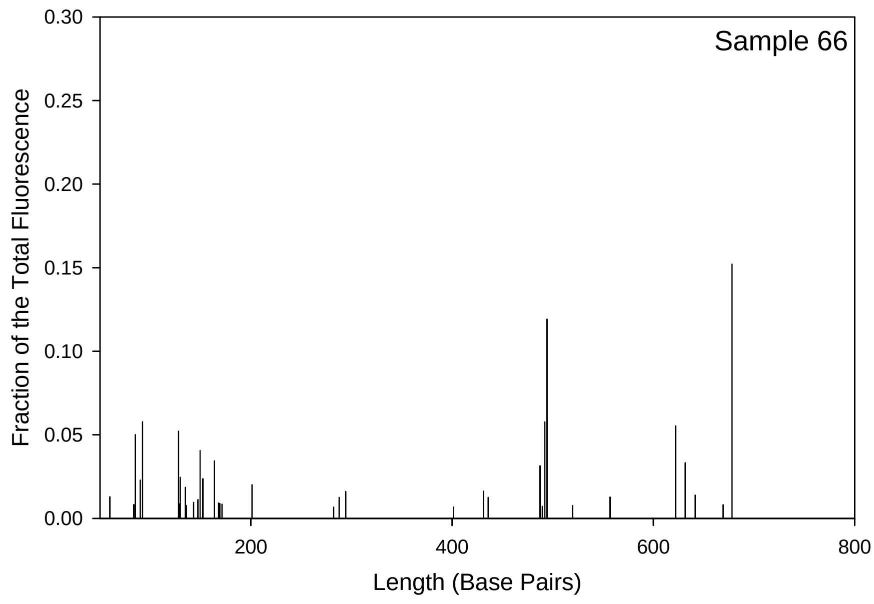

Sample 340
Fraction of the Total Fluorescence
0.30
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)



Sample 194
Fraction of the Total Fluorescence
Length (Base Pairs)
0.00
0.05
0.10
0.15
0.20
0.25
200
400
600
800



Sample 197
Fraction of the Total Fluorescence
Length (Base Pairs)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
200
400
600
800


Sample 66
Fraction of the Total Fluorescence
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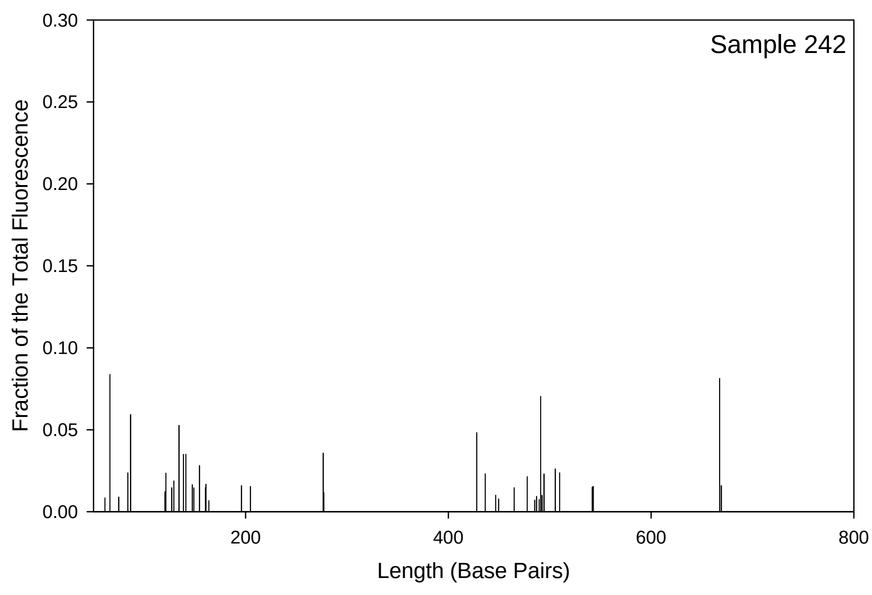
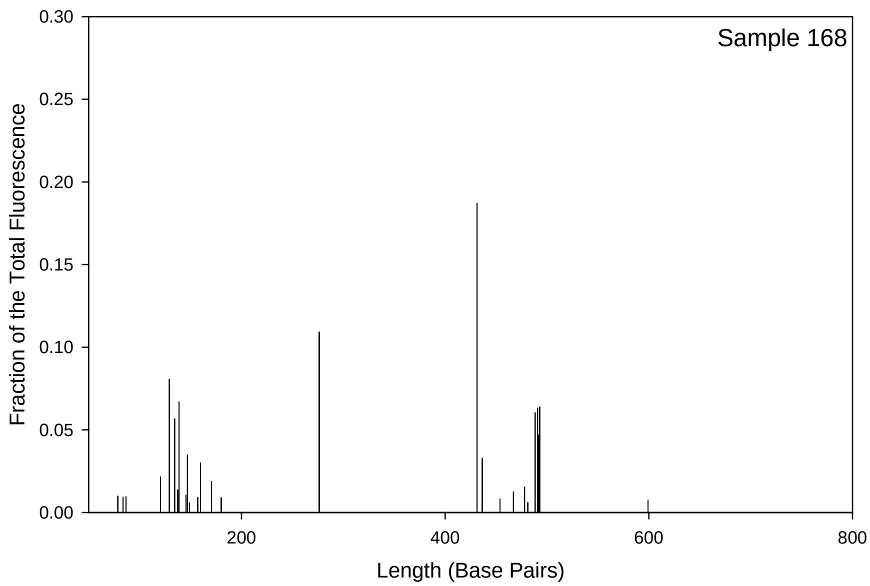
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)


Sample 242
Fraction of the Total Fluorescence
0.30
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)


Sample 168
Fraction of the Total Fluorescence
Length (Base Pairs)
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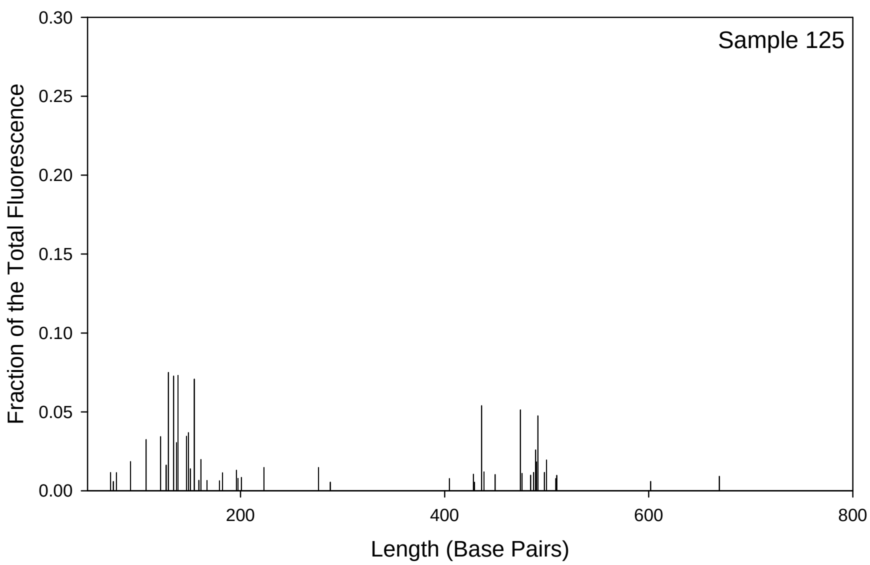
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800


Sample 125
Fraction of the Total Fluorescence
Length (Base Pairs)
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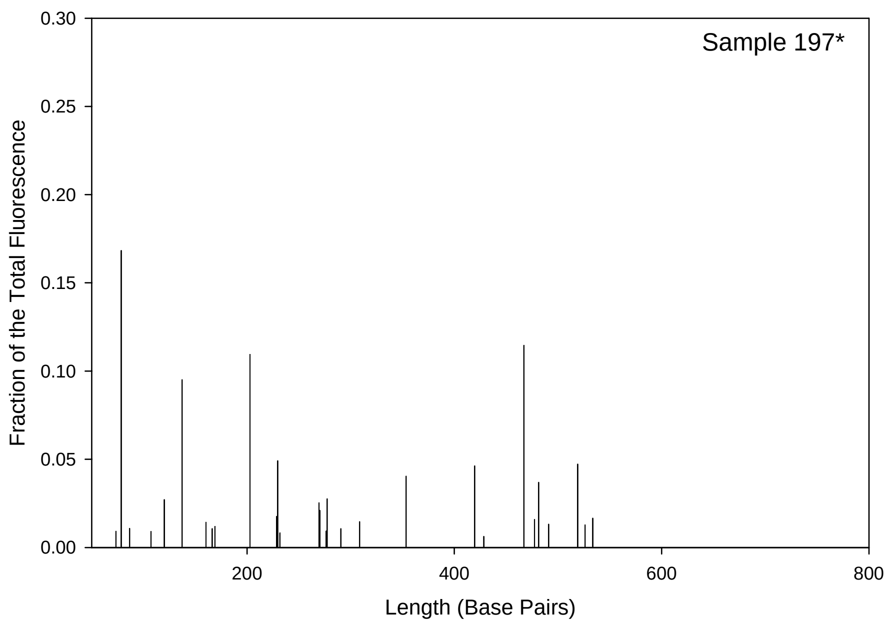
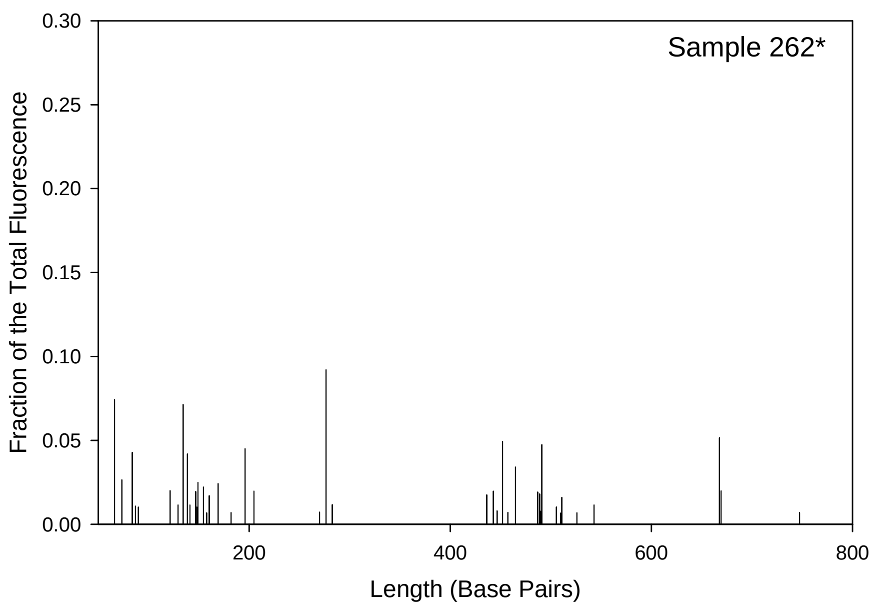
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800


Sample 197*
Fraction of the Total Fluorescence
0.30
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)


Sample 262*
Fraction of the Total Fluorescence
0.30
0.25
0.20
0.15
0.10
0.05
0.00
200
400
600
800
Length (Base Pairs)