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Attachment 2

Operations and Maintenance Plan

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Compressor Station 229 (Site No. 9-15-140)
Soil and Sediment Remediation
Eden, Erie County, New York

Tennessee Gas Pipeline Company (an El Paso Energy Company)
Houston, Texas

Revised - November 1999

ATTACHMENT 2 - Operations and Maintenance Plan

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Section 1 - Introduction

Over the past several years, Tennessee Gas Pipeline Company (TGPL) has performed site remediation activities at Compressor Station 229 in Eden, Erie County, New York. Such remediation activities consisted of cleaning of air compressors and air receiver tanks, as well as cleanup of on-site soils and drainline sediments. Specifically, between 1991 and 1993, as interim remedial measures (IRMs), TGPL performed cleaning of air compressors and air receiver tanks. Another IRM was performed between July and September 1995 to address certain on-site soils and drainline sediments containing polychlorinated biphenyls (PCBs). During August through November 1997, and between June and September 1998, TGPL conducted remediation activities that addressed site-wide soil and sediment remediation issues related to PCBs and satisfied the requirements of the Order on Consent (A9-0357-9706, dated September 2, 1997) between TGPL and the New York State Department of Environmental Conservation (NYSDEC). Remediation activities performed at the site during this time period were discussed in the *Final Documentation Report for Soil and Sediment Remediation Activities* (*Final Documentation Report*; BBL February 1999) and are also briefly summarized in Section 2 of this Operations and Maintenance (O&M) Plan. The O&M of specific abandoned drainlines (and associated appurtenances), long-term station and tributary maintenance activities, groundwater monitoring, and downstream tributary monitoring are addressed by this O&M Plan. In addition to the various O&M activities that are discussed in the following sections, deed restrictions were filed with the Erie County Property Records on September 27, 1995, November 5, 1997, and June 5, 1999 for station and TGPL-owned tributary properties, as appropriate. Please note, in addition to activities described herein, the NYSDEC may perform surface water sampling as part of the O&M Plan (further discussed in Section 4.6).

Section 2 of this O&M Plan provides a summary of remediation activities performed at the site (with an emphasis on areas that require post-remediation O&M activities). Subsequent sections of this document discuss the required post-remediation O&M activities. In addition, a checklist for documenting the performance of these O&M activities is presented as Attachment A to this O&M Plan. The information contained herein supplements existing protocols, procedures, and documentation that are currently utilized by station personnel, including station mapping, maintenance procedures, health and safety requirements, etc. However, given the general nature of this plan, the TGPL Northern Division Environmental Coordinator (Mr. John Roth, Tennessee Gas Pipeline Company, 2001 Archer Road, Clifton Springs, New York 14432-9349) will be consulted as needed when implementing this plan. In addition, reference should be made to the *Final Documentation Report* (BBL, February 1999) for additional detail regarding the extent of remediation activities conducted in each remediation area.

This plan additionally requires documentation of O&M activities. Documentation shall be submitted to the NYSDEC by March 1 in the year following the year in which inspections, maintenance, and/or monitoring activities have occurred. The report shall contain the following:

- A list of all structures and restored areas, that are part of the remedial action and to be inspected, as well as a description of condition, type of maintenance required (if any), and maintenance performed (if any); and
- The results, on NYSDEC approved forms (provided as Attachments A through C), of any monitoring performed.

In addition to the above-mentioned documentation activities, for monitoring activities that require laboratory analysis, TGPL shall provide the NYSDEC with the laboratory results within 90 days of the collection of samples.

Copies of such documentation will be maintained in the Station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC. The NYSDEC contacts are:

Mr. Martin Doster
Regional Hazardous Waste Engineer
NYSDEC Region 9
270 Michigan Avenue
Buffalo, New York 14203

Ms. Christina Dowd
Division of Fish & Wildlife
50 Wolf Road, Room 576
Albany, New York 12233-4756

Mr. Gerald J. Rider, Jr., P.E.
Chief, Operations & Maintenance Section
Division of Environmental Remediation
50 Wolf Road, Room 260
Albany, New York 12233-7010

The specific protocols and areas addressed by this plan include:

- Protocols for future excavation of the remediated drainline (Drainline D) or drainline components addressed by the remediation program (Section 3);

- Protocols for future excavation in the Air Receiver Tank (ART) area (Section 3);

- Protocols for site inspection and maintenance in the Upper Tributary, Bog Area, and Sedimentation Basin and Sediment Trap Areas, as well as the collection of sediment and fish samples for analysis of PCBs (Section 4);

- Protocols for observation of soil covers on the North Boston Road properties (Section 4); and

- Protocols for groundwater sampling and analysis of monitoring well MW-9 and newly installed MW-12 for PCBs and monitoring wells MW-2, MW-4, MW-6S, MW-6D, MW-8S, MW-8D, MW-9, MW-10, and MW-11 for volatile organic compounds (VOCs) (Section 5).

The remediation activities performed in these areas are discussed in Section 2; implementation of the O&M activities are addressed in subsequent sections, as noted above. In addition, Section 6 summarizes the reporting requirements associated with the O&M activities. TGPL will notify the NYSDEC Project Manager, except with respect to unscheduled inspections or sampling necessitated by circumstances such as storm events, at least one week prior to conducting field inspections or collecting samples. This assumes that notice will not require TGPL to delay or otherwise alter its schedule for performing the inspections or obtaining samples.

Section 2 - Summary of Remediation Activities

2.1 Summary of IRM Activities

Over the past several years, TGPL has performed site remediation activities, such as cleaning of air compressors and air receiver tanks, as well as cleanup of on-site soils and drainline sediments. Cleaning of air compressors and air receiver tanks occurred between 1991 and 1993 as interim remedial measures (IRMs). Another IRM was performed between July and September 1995 to address certain on-site soils and drainline sediments containing PCBs. The remediation was conducted in accordance with the NYSDEC-approved *Interim Remedial Measure Work Plan, Tennessee Gas Pipeline Company Compressor Station 229 at Eden, New York*, (ENVIRON and BBL, April 1995). The implementation of the remedial activities is summarized in the *Interim Remedial Measure Report Soil/Drainline Remediation Activities* (BBL, February 1996). This IRM is considered a component of the overall remediation program at the station. The major elements of the IRM included:

- Excavation and off-site disposal of on-site soils and drainline sediments (in oil/water separators and manholes) containing PCBs in excess of the cleanup goal; and
- *In-situ* abandonment of subsurface drainlines by grouting.

The IRM cleanup goal was developed based on a site-specific risk assessment, evaluation of promulgated regulatory levels, and site-specific conditions (e.g., restricted access to the site, deed restrictions, no groundwater impact) as described in the IRM Work Plan and Record of Decision (ROD). Based on these factors, a cleanup goal of 25 parts per million [ppm or milligrams/kilogram (mg/kg)] for on-site soils and drainlines was found to be protective of human health and the environment.

Seven areas were identified for soil remediation based on RI and pre-remediation sampling:

- ART Area;
- Pipe Rack Area;
- Scrap Yard Area;
- Compressor Building Area;
- Shop Building Area;
- Auxiliary Building Area; and
- Drainage Ditch B Area.

These areas were delineated and excavated to address soils exceeding the cleanup goals. A total of 414 cubic yards (cy) of soil were excavated and disposed. Because of subsurface limitations, a low-permeability cap was installed over the excavation area west of the ART Area following the excavation of accessible soils. The areas were restored following remediation with the placement of backfill to within 6 inches of the initial grade, and were covered with topsoil or gravel, depending on the original cover prior to excavation. Areas restored with topsoil were revegetated, fertilized and mulched. Rip-rap was used as backfill for the drainage channel portion of Drainage Ditch B area to limit potential future erosion.

Approximately 4,620 feet of Drainline D were addressed in the IRM. Of that length, approximately 42 feet were considered inaccessible due to the proximity of utilities. As a result of the IRM, all impacted drainlines have been closed.

All on-site soils and drainlines exceeding the cleanup goal were addressed by the 1995 IRM activities and achieved the standards developed and presented in the IRM Report. A letter dated March 28, 1996 from the NYSDEC confirms that the IRM was acceptable.

Additional information regarding the remediation activities performed in the areas subject to O&M activities are discussed in Section 3.

2.2 Summary of Tributary Soil/Sediment Remediation

Six primary remediation components were performed at this site during August/November 1997 and June/September 1998, which include: 1) excavation and off-site disposal of certain PCB-containing soils and sediments (followed by erosion control stabilization in certain areas); 2) construction of a sedimentation basin and trap; 3) placement of several discrete soil covers; 4) abandonment of five and installation of one groundwater monitoring well; 5) removal of fish from Station Lake located within the main facility perimeter fenceline; and 6) installation of perimeter fencing.

Soil/sediment excavation and/or remediation was performed in the following four areas of the site during the 1997 and 1998 remediation activities for the tributary area:

- Upper Tributary;
- Bog Area;
- Sedimentation Basin and Sediment Trap Areas; and
- North Boston Road Properties.

The estimated total volume of soils and sediments removed from the site and disposed of is estimated to be approximately 2,485 in-place cy. Of this total volume, approximately 901 in-place cy were disposed at the CWM Chemical Services, Inc. (CWM) disposal facility in Model City, New York as Toxic Substance Control Act- (TSCA-) Regulated materials, and the remaining approximately 1,584 in-place cy were disposed at the High Acres Landfill in Fairport, New York as non-TSCA material.

Excavation areas were subsequently backfilled, regraded, restored similar to original conditions, and supplemented with permanent erosion control measures. In addition, remediation activities included the installation of one monitoring well (MW-12) and the abandonment of five existing monitoring wells (MW-1, MW-3, MW-5, MW-7S, and MW-7D), leaving nine on-site monitoring wells (MW-2, MW-4, MW-6S, MW-6D, MW-8S, MW-8D, MW-9, MW-10, and MW-11). Groundwater monitoring is further discussed in Section 5.

Additional information regarding the remediation activities performed in the areas subject to O&M activities are discussed in Sections 4 and 5.

Section 3 - Station Areas

3.1 Drainline D

Drainline D was addressed as part of remediation activities conducted as an IRM between July and September 1995. A brief summary of the remediation of Drainline D is provided below.

Components of Drainline D consist of the Auxiliary Building roof, floor and foundation drains, Compressor Building floor drains, drainage piping, an oil/water separator, drainline clean-outs, manholes MH 1 through MH 10, and two 100-gallon sumps. In total, approximately 4,620 feet of Drainline D were addressed in the IRM. Of that length, approximately 42 feet were considered inaccessible due to the proximity of utilities. As a result of the IRM, all impacted drainlines have been closed. Further details regarding the remediation of Drainline D are provided in the IRM Report. Additionally, Figure 1 identifies the location of the drainline and appurtenances that were subject to remediation. The general guidelines for excavation and disposal of drainline components will include the following procedures.

Prior to performing future excavation activities in the vicinity of Drainline D, Figure 1 (and any other available information) will be reviewed by station personnel to determine if the subject drainline or drainline components may be encountered. In the event that excavation in the immediate vicinity of Drainline D is necessary, the NYSDEC and TGPL Northern Division Environmental Coordinator will be notified prior to excavation (unless there is an emergency). Notification will include the scope, nature, status, and location of the proposed work.

To the extent possible, excavation in the immediate vicinity of Drainline D components will be avoided. However, in the event that excavation is necessary, TGPL personnel will take into account and address any impacts on the remedy. For example, if a section of drainline is removed, the ends of the drainline that remain in place will be inspected to verify that the integrity of the grout remains intact. If necessary, the station personnel will place additional grout (e.g., Sakrete) in the end of the drainline. Additionally, if it becomes necessary to remove a drainline component as part of excavation activities, the drainline component will be removed and will conservatively be disposed off site at a facility permitted in accordance with TSCA and other applicable regulations. In addition, water that may have accumulated in the ungrouted portions of Drainline D, will be collected and placed in suitable containers (e.g., 55-gallon drums). The containers will be properly secured, labeled (contents and date), and subsequently characterized for appropriate disposal.

Should excavation of the drainline occur, documentation of the excavation and disposal method will be provided in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which drainline excavation activities have occurred. In addition, copies of such documentation will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of any excavation activities in the vicinity of Drainline D.

3.2 ART Area

The ART Area is located on the west side of the Auxiliary Building as shown on Figure 1. This area was subject to remediation consisting of delineation and excavation of soils containing PCBs above the cleanup goal during the IRM conducted between July and September 1995. However, in one area, due to subsurface limitations and the presence of PCBs above the action level (25 ppm), a low permeability cap was installed.

Specific details regarding the remediation of the ART Area are provided in the IRM Report. The general guidelines for performing excavation activities in the vicinity of the subsurface low-permeability cap will include the following procedures.

Prior to performing excavation activities in the ART Area, Figure 1 of the O&M Plan and any other available information will be reviewed by station personnel to determine if the low-permeability cap area west of the ARTs may be encountered. Due to the presence of PCBs above the action level (25 ppm) below the geotextile fabric layer of the cap, future excavation in this area will be performed only after consultation with the NYSDEC and TGPL Northern Division Environmental Coordinator [except in an emergency situation (e.g., rupture of high pressure air or gas lines, or any other unplanned activity that warrants immediate response)].

To the extent possible, excavation in the immediate vicinity of the low-permeability cap will be avoided. However, in the event that excavation is necessary, TGPL personnel will take into account and address any impacts on the remedy. If excavation is performed in the materials above the geotextile fabric, then the area will be restored to match original conditions (including reinstallation of the HDPE geomembrane liner) to maintain the integrity of the cap. Any soil removed from below the geotextile fabric layer of the low-permeability cap will be disposed off site at a facility permitted in accordance with TSCA and other applicable regulations.

Any excavation activities performed in the vicinity of the capped area west of the ART Area, and disposal method for any soils removed will be documented and provided in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which ART Area excavation activities have occurred. In addition, copies of such documentation will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of any excavation activities in the vicinity of the capped area west of the ART Area.

3.3 Station Lake

Station Lake was addressed as part of remediation activities conducted the site. Specifically, two orifice holes 3-inches in diameter were drilled (one hole approximately 1 foot below the weir, and the second hole approximately 2 feet below the weir) into the existing overflow pipes at Station Lake. The purpose of this modification was to equalize flows to the tributary. Additional details regarding activities performed at Station Lake are provided in Section 2.6 of the *Final Documentation Report* (BBL, February 1999). The protocols for future inspection and maintenance are presented below.

A visual inspection of the outlet structure at Station Lake will be performed to confirm the integrity and to verify the effectiveness of the structure to equalize flow to the tributary. Documentation of the inspections will be provided in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which inspection activities have occurred. In addition, copies of such documentation will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of inspection activities.

The monitoring frequency for the first two years will be quarterly with potential modification to that frequency for subsequent years based on the observations made during the first two years of inspection (with a minimum frequency of annually). Unscheduled inspections of the Station Lake outlet structure will be performed if a storm event occurs which could potentially have impacted the function of the outlet structure. In addition,

inspections will also be made following autumn leaf fall or other natural events that could potentially impact the function of the outlet structure. Repairs and/or maintenance will be performed as needed. If repairs cannot be made due to weather conditions, the NYSDEC will be notified and repairs will be made once conditions improve.

Section 4 - Tributary Areas

4.1 Access Roads

As shown on Figure 2, access roads to the tributary area were installed to facilitate construction activities. With the exception of the temporary stream crossing, these roads will provide permanent access to the tributary for the performance of O&M activities, and will be maintained so that access to the tributary may be achieved. Details regarding access road construction are provided in Section 2.4 of the *Final Documentation Report* (BBL, February 1999).

The roads will be inspected on a quarterly basis for the first two years and annually thereafter. The roads will be kept clear of obstructions, such as fallen trees, and growth from emerging vegetation.

4.2 Access Restriction Fencing

Access to the tributary is controlled on TGPL-owned property, including station property and the tributary extending from the Station Lake to the existing farm road. Access is controlled by two types of fences (chain-link and barbed wire), as well as posted signage. Additional details regarding access restriction fencing are provided in Section 2.5 of the *Final Documentation Report* (BBL, February 1999).

The fences and signs will be visually inspected on a quarterly basis for the first two years, and annually thereafter, to assure their adequacy as a deterrent against trespassing. If fences or signs have been cut or removed, or are worn, they will be replaced.

4.3 Tributary Remediation Areas

As part of remediation activities along the Upper Tributary, Bog Area, and Sedimentation Basin and Sediment Trap Areas, permanent erosion control measures were installed (Figure 2). The erosion control measures were installed within the stream bank at the base of the soil/sediment excavation (as well as with some areas that were not excavated) and constructed of non-woven geotextile and approximately 12 inches of rip rap. The permanent erosion control measure areas are presented on Figure 2. In addition, as part of remediation activities in the Upper Tributary, soils were covered in one location adjacent to Stations 8 and 9 based on the presence of low levels of PCBs and the low potential for scour. Additional details regarding activities performed along this segment of the tributary are provided in Sections 2.7, 2.8, and 2.9 of the *Final Documentation Report* (BBL, February 1999). The protocols for future inspection and monitoring of the tributary areas are presented below.

A visual inspection of the permanent erosion control measures (i.e., cable concrete, rip rap, etc.) along the Upper Tributary, Bog Area, and Sedimentation Basin and Sediment Trap Areas will be performed to confirm the integrity and verify the effectiveness of the geotextile and rip rap stabilization. In addition to permanent erosion control measure inspections, the soil cover area in the Upper Tributary will also be inspected for signs of erosion or wear. Also, soil covers at the Fiery, Skura, and Zulawski properties will be observed, to the extent possible, from public rights-of-way (e.g., North Boston Road). Documentation of the inspection of the permanent erosion controls, and the soil cover in the Upper Tributary, as well as observations of the Fiery, Skura, and Zulawski properties will be provided in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which inspection/observation activities have occurred. Copies of such documentation will also be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of inspection/observation activities.

Additionally, any tributary areas that were cleared to facilitate remediation activities and subsequently seeded and mulched to promote vegetative growth will also be inspected and maintained along with the permanent erosion control measures. If inspection activities result in the identification of a deficient condition, documentation of any repairs and/or changes will be similarly reported and maintained.

For permanent erosion controls measures (including the sedimentation basin and sediment trap), the monitoring frequency for the first two years will be quarterly with potential modification to that frequency for subsequent years based on observations made during the first two years of inspection (with a minimum frequency of annually). Unscheduled inspections of the permanent erosion controls (including the Sedimentation Basin and Sediment Trap Areas) will be performed if a storm event occurs which could potentially have impacted this component of the remedy. If repairs to the permanent erosion control measures become necessary, they will be made immediately if the impacts significantly compromise the function of the restored area (e.g., loss of rip rap, undercutting of the bank) or on an annual basis if the impact does not significantly compromise the function of the restored area (e.g., minimal movement of rip rap). If repairs cannot be made immediately due to weather conditions (e.g., frozen ground surface), the NYSDEC will be notified and repairs will be made once conditions improve.

The outlet structures for the sedimentation basin and sediment trap will also be inspected on a quarterly basis for the first two years and then annually thereafter. These inspections will also be made following autumn leaf fall or other natural events that could potentially impact the function of the two structures. The inspection of the outlet structures will be to determine that the structures are operating properly. Repairs and/or maintenance will be performed as needed. In addition, accumulated sediment of 6 inches or greater will be removed from the area impounded by the outlet structures of the sedimentation basin and sediment trap. The reference points for measuring sediment thickness (to determine if it exceeds 6 inches) will be from the base of the concrete sediment trap at farm road and the 2-inch filter stone apron around the primary riser spillway will be used at the sedimentation basin (this will be performed annually during the summer when the creek and basin will likely be dry). The sediments will be collected and analyzed for PCBs, following the procedures specified in the *Quality Assurance Project Plan (QAPP) for TGPL's New York State Compressor Stations* (QAPP; TGPL, February 1996). The samples will be analyzed using USEPA SW-846 Method 8082 or a modified USEPA SW-846 Method 8081 or equivalent (i.e., the RECRA Environmental, Inc. REI-111-01-04 Method). Based on the sample results, the sediment will be appropriately disposed of. Sediments that are found to be non-detect for PCBs (detection limit of 0.1 mg/kg) will be placed on-site or in an appropriate upland area, as shown on Figure 2.

4.4 Sediment Monitoring

Sediment monitoring will be conducted in addition to the specific O&M activities identified in previous sections. For a period of six years, sediment samples will be collected and analyzed for the first two consecutive years following remediation activities, then every other year for two more years (i.e., 1998, 1999, 2001, and 2003) from three locations between farm road and North Boston Road (whenever possible, from a calm/pooled area where finer sediments are likely to accumulate) as shown on Figure 3. One sediment sample will be collected from each of the three locations representing the 0- to 6-inch depth interval (provided sufficient sediment depth exists). Sediment sample locations will be biased towards areas of more significant sediment accumulations. The sample location will be staked and logged in the field book so that it may be relocated for subsequent sampling events. The sediment samples will be collected and analyzed for PCBs following the procedures specified in the QAPP (TGPL, February 1996). The samples will be analyzed using USEPA SW-846 Method 8082 or a modified USEPA SW-846 Method 8081 or equivalent (i.e., the RECRA

Environmental, Inc. REI-111-01-04 Method). Following the initial six year sampling period, the frequency of further sediment sampling, if any, will be re-evaluated by TGPL in consultation with the NYSDEC.

For sediment monitoring, the trend in PCB data from sediment sampling and analysis will be determined following a minimum of the first two sampling events. If PCB data from the first two events (or subsequent events) shows an increasing trend, TGPL and the NYSDEC will discuss the need for further evaluation.

Each sampling event shall be documented, including a brief description of activities and sample results, in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which monitoring activities have occurred. In addition, copies of such documentation will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of monitoring activities.

4.5 Fish Monitoring and Contingency Measures

Fish monitoring will be conducted in addition to the specific O&M activities identified in previous sections. Fish tissue monitoring for PCBs was performed in fall 1998 following completion of construction activities. Sampling shall occur every other year (during the period of August through December) for a period of up to 30 years, except that if any two consecutive sampling periods show decreases in fish tissue PCB concentrations, or a value of 0.1 ppm PCB in the fish flesh is achieved, then sampling will occur (during the period of August through December) in a geometric progression where each successive sampling interval is increased by one year (for example, if two consecutive decreases are recorded by year 5, successive sampling will be in years 8, 12, 17, 23, and 30). If thereafter, in any two consecutive sampling periods, an increase in fish tissue concentration occurs, sampling reverts to every other year and a new sampling progression will be developed by TGPL in conjunction with the NYSDEC.

Fish tissue samples will be collected from breached pond and the tributary near Hickman Road. Sampling efforts in breached pond will include the collection of 11 whole-body composite samples of each of these target species, including bluegill (*Lepomis macrochirus*), creek chub and largemouth bass (*Micropterus salmoides*), if available, for a maximum of 33 samples. All bluegill and largemouth bass collected from breached pond will include young-of-year (YOY) individuals ranging from 60 to 90 millimeters (mm) (bluegills) and less than 120 mm (largemouth bass) total length. Creek chubs collected will include juvenile and young adult fish ranging from 90 to 120 mm in total length. Each composite sample will include a sufficient number of individuals (minimum of five) to provide at least 20 grams of tissue for analysis. Sampling efforts will not be gender specific. In addition, appropriate modifications will be determined based on field conditions and sample collection results at the time of sampling, and may include the collection of alternative species and/or substitution of individuals outside the specified size range. Sampling efforts in the tributary near Hickman Road will include the collection of 8 whole-body composite samples of both creek chub (*Semotilus atromacultus*) and blacknose dace (*Rhinichthys atratulus*) for a maximum of 16 samples. Tributary collections will focus on juvenile/young adult creek chub from 60 to 130 mm total length, and blacknose dace collections targeting fish ranging from 60 to 100 mm total length. As indicated above, appropriate modifications will be determined based on field conditions and sample collection results at the time of sampling, and may include the collection of alternative species and/or substitution of individuals outside the specified size range. Samples will be collected and analyzed in accordance with applicable sections of a document entitled *Fish and Sediment Sampling Results from a Tributary and a Breached Pond Near Tennessee Gas Compressor Station 229 Near Eden, New York July 1994* (Woodward, February 1995). The samples will be analyzed for PCBs

using USEPA Method 8081 and lipids using standard gravimetric analyses. A copy of the appropriate collection and analytical procedures are provided as Appendix A. In addition, a resident fish sampling log sheet for recording field parameters during fish monitoring has been provided as Attachment B.

Each monitoring event shall be documented, including a brief description of activities and sample results, in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which monitoring activities have occurred. The report shall contain the following:

- Field collection sheets and notes;
- The specifics on method of compositing;
- Date and time of capture of fish;
- Stream conditions (e.g., bank flow, low flow, isolated pools, etc.);
- Collection data;
- A copy of the NYSDEC *License to Collect, Possess or Sell for Propagation, Scientific for Exhibition Purposes* under which collections are made; and
- A completed copy of the form provided as Attachment B.

In addition, copies of such documentation will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of monitoring activities.

4.6 Surface Water Sampling

The NYSDEC may elect to obtain and analyze surface water samples from the tributary. NYSDEC shall provide TGPL with reasonable advance notice of such sampling activity, and TGPL may elect to split or otherwise obtain its own samples at the same time. TGPL will append NYSDEC's surface water sampling results to the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which monitoring activities have occurred; however, since the results will be developed independently by the NYSDEC, TGPL will make no judgement or representation regarding the accuracy or significance of the results.

Section 5 - Groundwater Monitoring and Contingency Measures

As discussed in Section 3 of the *Final Documentation Report* (BBL, February 1999), one groundwater monitoring well (MW-12) was installed downgradient of the tributary construction area and five existing on-site monitoring wells (MW-1, MW-3, MW-5, MW-7S and MW-7D) were abandoned. Monitoring well MW-12 was installed to a depth of 14 feet below ground surface (bgs). This monitoring well was constructed using 2-inch inside diameter stainless steel screen and riser with the screened interval between 4 and 14 feet bgs. A monitoring well construction log for MW-12 is provided as Attachment 11 of the *Final Documentation Report* (BBL, February 1999). The approximate locations of monitoring wells MW-2, MW-4, MW-6S, MW-6D, MW-8S, MW-8D, MW-9, MW-10, and MW-11 are identified on Figure 1. These monitoring wells will be monitored as discussed below.

Groundwater monitoring will be conducted in addition to the specific O&M activities identified in the previous sections. In accordance with the requirements of the NYSDEC, for a period of five years, groundwater from an existing downgradient station monitoring well MW-9 and the newly installed monitoring well (MW-12) will be sampled on an annual basis and analyzed for PCBs. The groundwater samples will be collected and analyzed for PCBs following the procedures specified in the QAPP (TGPL, February 1996). In the event that turbidity of the groundwater samples exceeds 50 NTUs, the samples will be subject to both filtered (laboratory-based) and unfiltered analyses. Samples exhibiting turbidity levels less than 50 NTUs will be analyzed unfiltered. The samples will be analyzed using USEPA Method 608 at a reporting limit of 0.5 micrograms per liter (ug/L). Following the fifth year of sampling, the frequency for further groundwater sampling, if any, will be re-evaluated by TGPL in consultation with the NYSDEC.

For a period of five years, groundwater samples will also be collected from monitoring wells MW-2, MW-4, MW-6D, MW-6S, MW-8S, MW-8D, MW-9, MW-10, and MW-11 on an annual basis to monitor natural attenuation of volatile organic compounds (VOCs). The groundwater samples will be collected and analyzed for Target Compound List (TCL) VOCs following the procedures specified in the QAPP (TGPL, February 1996). The samples will be analyzed using USEPA Method 524.2 with a NYSDEC ASP B deliverable package. Following the fifth year of sampling, the frequency of further groundwater sampling, if any, will be re-evaluated by TGPL in consultation with the NYSDEC.

Based on the results of future groundwater sampling and analysis, potential contingency measures may be initiated. In the event future groundwater monitoring indicates the detection of PCBs in monitoring wells MW-9 and/or MW-12, the well will be immediately resampled and analyzed both filtered and unfiltered. The results will subsequently be discussed with the NYSDEC to determine the need for any additional sampling and/or further evaluation. Potential contingency measures associated with monitoring for VOCs could also be implemented in the event future groundwater monitoring indicates natural attenuation was <u>not</u> continuing to cause a decrease in VOC levels in groundwater or if monitoring indicates migration away from the site at potential levels of concern. In general, the procedure for implementing VOC contingency measures may include the following steps: 1) in the event a perimeter monitoring well indicates elevated VOC levels, the same well will be immediately resampled to confirm the initial results; 2) the analytical results will be discussed with the NYSDEC; and 3) as part of these discussions, TGPL and the NYSDEC will determine the need for additional sampling and/or further evaluations.

Each sampling event will also include the collection of water level measurements from each well. A groundwater sampling log sheet for recording field parameters during groundwater sampling has been provided as Attachment C. A brief description of sampling activities and results, as well as boring logs and historical analytical data for wells included in monitoring program, will be provided in the annual O&M Report to be submitted by March 1 to the NYSDEC in the year following the year in which monitoring activities have

occurred. In addition, copies of such documentation will be maintained in the Station records as an attachment to the *Final Documentation Report* (BBL, February 1999), and will be provided to the TGPL Northern Division Environmental Coordinator and the NYSDEC upon completion of monitoring activities.

Section 6 - Reporting Requirements

This O&M Plan requires documentation of O&M activities conducted at the site. As previously stated, the documentation generated during implementation of this O&M Plan will be maintained in the station records as an attachment to the *Final Documentation Report* (BBL, February 1999), as well as provided to appropriate TGPL and the NYSDEC personnel (NYSDEC contacts are presented in Section 1 of this O&M Plan). O&M documentation will be submitted upon completion of the O&M activity. In addition, an annual O&M Report will also be prepared and submitted to appropriate NYSDEC personnel by March 1 in the year following the year in which inspection/observation, maintenance, and/or monitoring activities have occurred. The O&M Report shall contain the following:

- A list of all structures and restored areas, that are part of the remedial action and to be inspected, as well as a description of condition, type of maintenance required (if any), and maintenance performed (if any); and
- The results, on NYSDEC approved forms (provided as Attachments A through C), of any monitoring performed.

In addition to above-mentioned documentation activities, for monitoring activities that require laboratory analysis, TGPL shall provide the NYSDEC with the laboratory results within 90 days of the collection of samples.

A summary of the O&M documentation required for potential future excavation, inspections, observation, and monitoring for specific areas of the site is presented below.

- **Future Excavation from Drainline D or ART Area** - A notification of the appropriate personnel/agencies of proposed excavation in the immediate vicinity of Drainline D or ART low-permeability cap area is required prior to excavation (unless there is an emergency); following excavation, documentation of the excavation activities, extent, and disposal method (if required) utilized will also be required.

- **Tributary Area Inspection** - The inspection of permanent erosion control measures (including the sedimentation basin and sediment trap) and the soil cover area near Stations 8 and 9 will be documented. In the event maintenance on TGPL-owned property is necessary, the maintenance work will also be summarized. In addition, the soil covers located at the Fiery, Skura, and Zulawski properties will be observed from public rights-of-way and documented.

- **Sediment Monitoring** - A brief description of sediment sampling activities and analytical results is to be prepared following each sediment sampling event. Sediment monitoring activities are to be performed for the first two consecutive years following remediation activities, then every other year for two more years (i.e., 1998, 1999, 2001, and 2003) for a period of six years. Following the sixth year, the frequency of further monitoring is subject to potential modification.

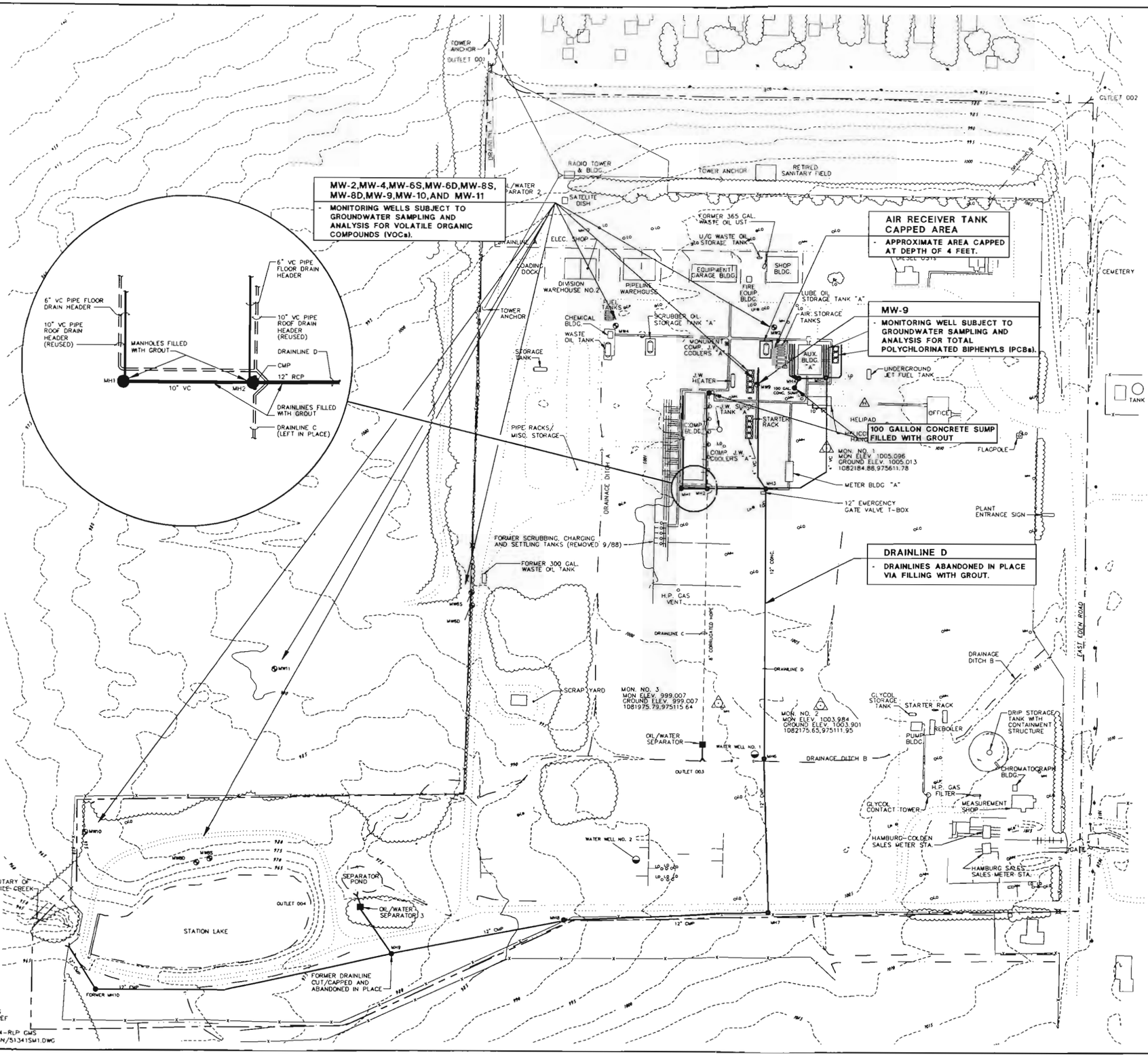
- **Fish Monitoring** - A brief description of fish sampling activities and analytical results is to be prepared following each sampling event. Fish monitoring activities are to be performed at a frequency of every other year (during the period of August through December) for a period of up to 30 years, except that if any two consecutive sampling periods show decreases in fish tissue PCB concentrations, or a value of 0.1 ppm PCB in the fish flesh is achieved, then sampling will occur (during the period of August through December) in a geometric progression where each successive sampling interval is

increased by one year (for example, if two consecutive decreases are recorded by year 5, successive sampling will be in years 8, 12, 17, 23, and 30). If thereafter, in any two consecutive sampling periods, an increase in fish tissue concentration occurs, sampling reverts to every other year and a new sampling progression will be developed by TGPL in conjunction with the NYSDEC.

- **Groundwater Monitoring** - A brief description of the groundwater monitoring activities and results will be prepared following each sampling event (annually for first five years, frequency subject to potential modification thereafter).

To assist in preparing O&M documentation, an O&M activity log form (check list) is included as Attachment A. Refer to Section 3 through 6 for additional information regarding inspection/observation/monitoring frequencies and durations. TGPL will notify the NYSDEC Project Manager, except with respect to unscheduled inspections or sampling necessitated by circumstances such as storm events, at least one week prior to conducting field inspections or collecting samples. This assumes that notice will not require TGPL to delay or otherwise alter its schedule for performing the inspections or obtaining samples. Furthermore, any remedial structure or restoration that fails to perform according to design will be reported to the NYSDEC immediately along with any corrective action taken.

As noted above, sediment and fish data will be reported annually (for years in which data are developed) and reviewed periodically with the NYSDEC to determine the need for continued or additional sampling. In this regard, however, it should be noted that TGPL does not anticipate that PCB levels in sediments and fish will decrease in the short term. Ecological assessments based on scientific studies submitted by TGPL as part of the Remedial Investigation (RI) concluded that "whether PCBs are removed from the stream and adjacent soils or not, downstream sediments and fish tissues will contain low levels of PCBs for years to come."



TENNESSEE GAS PIPELINE COMPANY • AN EL PASO ENERGY COMPANY
HOUSTON, TEXAS

COMPRESSOR STATION 229
EDEN, NEW YORK

OPERATIONS AND MAINTENANCE PLAN - STATION AREAS

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 1

EXISTING FARM ROAD

SEDIMENT TRAP

SEDIMENT TRAP AREA

SEDIMENT BASIN AREA

BOG AREA

MONITORING WELL MW-12 TO BE SAMPLED AND ANALYZED FOR TOTAL PCBs

BY-PASS CHANNEL

FISHWAY CROSS-OVER DITCH

SEDIMENT IN CHANNEL BACKFILLED AND STABILIZED WITH RIPRAP

UPPER TRIBUTARY AREA

REROUTED PORTION OF DITCH "A"

ENHANCED AND STABILIZED DITCH "A" AROUND COVER AREA

EXTENT OF GEOTEXTILE MATERIAL MATERIAL AND COVER AREA

SOILS ON STREAM BANK, BACKFILLED AND STABILIZED WITH RIPRAP

SEDIMENT BAR BACKFILLED

SEDIMENT BAR BACKFILLED AND STABILIZED WITH RIPRAP

SEDIMENTS IN STREAM CHANNEL BACKFILLED AND STABILIZED WITH RIPRAP

RIPRAP STABILIZATION IN EXISTING SECTION OF CHANNEL

SOILS IN FORMER STREAM CHANNEL BACKFILLED

SOILS IN FORMER CHANNEL BACKFILLED

STATION LAKE

LEGEND

- CHAIN-LINK FENCE
- BARBED WIRE FENCE
- ACCESS ROAD LOCATION
- APPROXIMATE EXTENT OF SOIL COVER/BACKFILL
- APPROXIMATE EXTENT OF CONCRETE MAT
- APPROXIMATE EXTENT OF STONE RIPRAP AREAS

GENERAL NOTES

1. BASE MAP INFORMATION DEPICTED ON THIS PLAN OBTAINED FROM AUTOCAD DRAWING PREPARED BY ERDMAN ANTHONY CONSULTING ENGINEERS (DRAWING FILE NUMBERS CREKS1.DWG, CREKS2.DWG, CREKS3.DWG, AND S2291996.DWG) AND FROM AUTOCAD DRAWING PREPARED BY LaBELLA ASSOCIATES (DRAWING FILE NUMBER S2291996.DWG).
2. MAP INFORMATION WAS PRODUCED USING A COMBINATION OF FIELD SURVEY AND PHOTOGRAMMETRIC METHODS (PHOTOGRAPHY TAKEN ON APRIL 27, 1993). THE USER OF THIS MAP IS CAUTIONED THAT CERTAIN AREAS OBSCURED BY SHADOWS AND HEAVY VEGETATION MAY REQUIRE FIELD VERIFICATION. THE OUTLINE OF ALL BUILDINGS REPRESENT ROOF LINES.

0 100' 200'
GRAPHIC SCALE

X: 51341X03, 51341X04.DWG
L: ON=*; OFF=*REF*,*CONT*,*50*,40,*V-BD*,
IN,SPOT,OBINTR,*X04FILL*,*X04FILL*
P: DJ-3-D
2/19/99 SYR-54-GMS
51341001/OMPLAN/51341SM2.DWG

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OPERATIONS AND MAINTENANCE PLAN - TRIBUTARY AREAS

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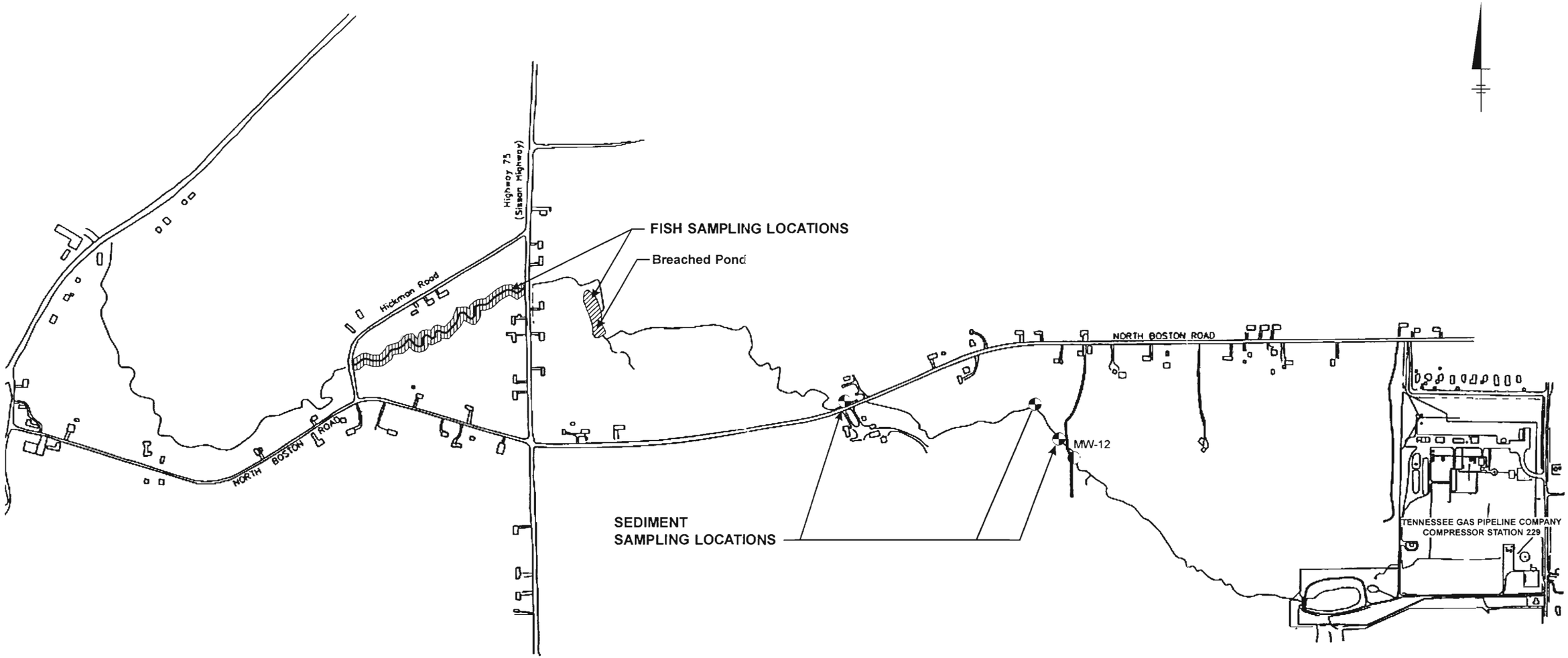
FIGURE 2



800 0 800

APPROXIMATE SCALE

REFERENCES:
BASE MAP REFERENCE STATION 229 TRIBUTARY MAP,
DATED 9/16/96, DRAFTED BY HFZ, FROM ENVIRON.

LEGEND:

- SEDIMENT SAMPLING LOCATION
- MW-12 GROUNDWATER SAMPLING LOCATION
- FISH SAMPLING LOCATION

STATION 229 TRIBUTARY
TENNESSEE GAS PIPELINE COMPANY
COMPRESSOR STATION 229
EDEN, NEW YORK

SEDIMENT AND FISH SAMPLING LOCATIONS

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FIGURE 3

7/98 SYR D54-LBR
51341001/51341N01.cdr