Automatic Switch Company (ASCO) State Superfund Site

1561 Columbia Hwy, Aiken, SC

May 19, 2009

Proposed Plan Public Meeting

Angie Jones, Project Manager

ASCO Site
Proposed Plan Public Meeting

- Introduction
- The "Highlights"
  - Site History
  - Previous Investigations
- Discussion of Cleanup Alternatives
- **Preferred Cleanup Alternative/Proposed Plan**
- Comments and Questions

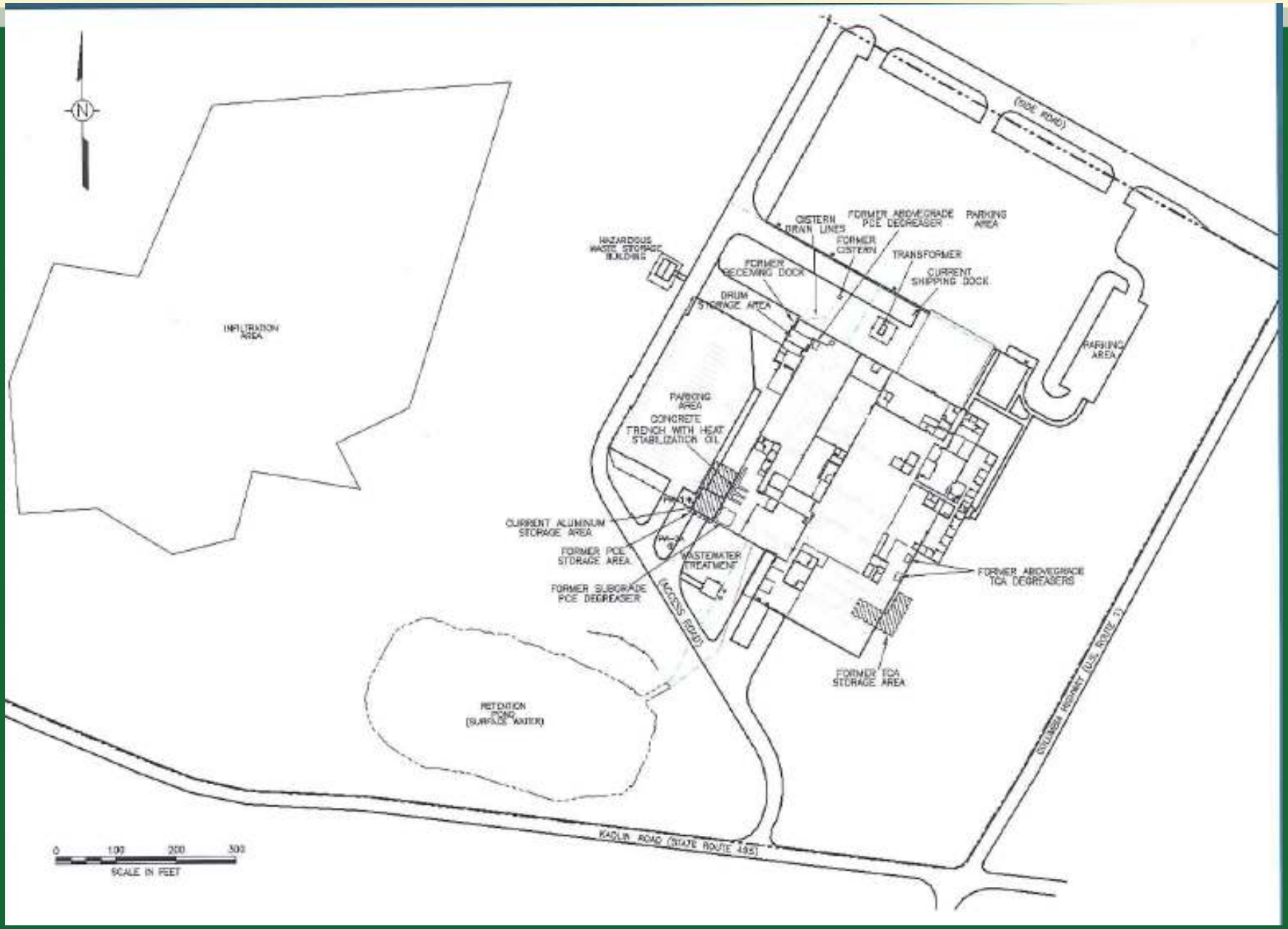
Site History

- Operations began in 1974---Therm-O-Disc
- 69-acre parcel---previously undeveloped farmland
- Single-story, 160,000 sf building, hazardous waste storage building, wastewater treatment building, man-made retention pond
- Therm-O-Disc operations related to the manufacture of thermostats for commercial appliances

Site History

Continued…

- The solvents PCE and TCA were historically used and stored in underground storage tanks
- These solvents were used for degreasing metal parts
- April 1987 – Tanks closed; degreasing units taken out of service
  - -Hole noted in waste TCA tank
  - -Samples from TCA tank area indicated PCE and TCA
- August 1987 – DHEC requests investigation


N
INFILTRATION AREA
HAZARDOUS WASTE STORAGE BUILDING
CISTERN DRAIN LINES
FORMER ABOVEGRADE PCE DEGREASER
PARKING AREA
FORMER CISTERN
TRANSFORMER
FORMER RECEIVING DOCK
CURRENT SHIPPING DOCK
DRUM STORAGE AREA
PARKING AREA
PARKING AREA
CONCRETE TRENCH WITH HEAT STABILIZATION OIL
CURRENT ALUMINUM STORAGE AREA
FORMER PCE STORAGE AREA
WASTEWATER TREATMENT
FORMER SUBGRADE PCE DEGREASER
(ACCESS ROAD)
FORMER ABOVEGRADE TCA DEGREASERS
FORMER TCA STORAGE AREA
RETENTION POND (SURFACE WATER)
KADLIK ROAD (STATE ROUTE 482)
COLUMBIA HIGHWAY (U.S. ROUTE 1)
0 100 200 300
SCALE IN FEET

Site History

Continued…

- 1987 to 1994 – Site investigations
  - -soil sampling
  - -soil vapor sampling
  - -groundwater sampling
- 1988 – Property transferred from TOD to ASCO
- 1995 to 1999 – Additional investigations and remediation
  - -PCE tank area excavation (370 cubic yards soil/debris)
  - -post-excavation soil sampling indicates some PCE remains
  - -groundwater monitoring and receptor survey

Site History

Continued…

- Jan 2001 – Groundwater sampling indicates PCE, 1,1-DCE and TCA in residential well sample along May Royal Drive
- Feb/March 2001 – Additional investigation

  -install/sample six wells, groundwater receptor survey

Voluntary Cleanup Contract

- January 2003 – Emerson Electric Co. (on behalf of Emerson, ASCO, TOD) enters the SC Voluntary Cleanup Program
  - Emerson agreed to perform an investigation (Remedial Investigation) to determine the source(s), nature, and extent of contaminants in soil and groundwater
  - Emerson agreed to evaluate alternatives (Feasibility Study) to cleanup contamination
  - Field work begins Oct 2003

Site Investigations

- **Soil investigation** of all potential source areas:
  -Former TCA storage/degreaser area
  -Former PCE storage/degreaser area
  -Wastewater treatment system
  -Drum storage area
  -Concrete sump
  -Retention pond

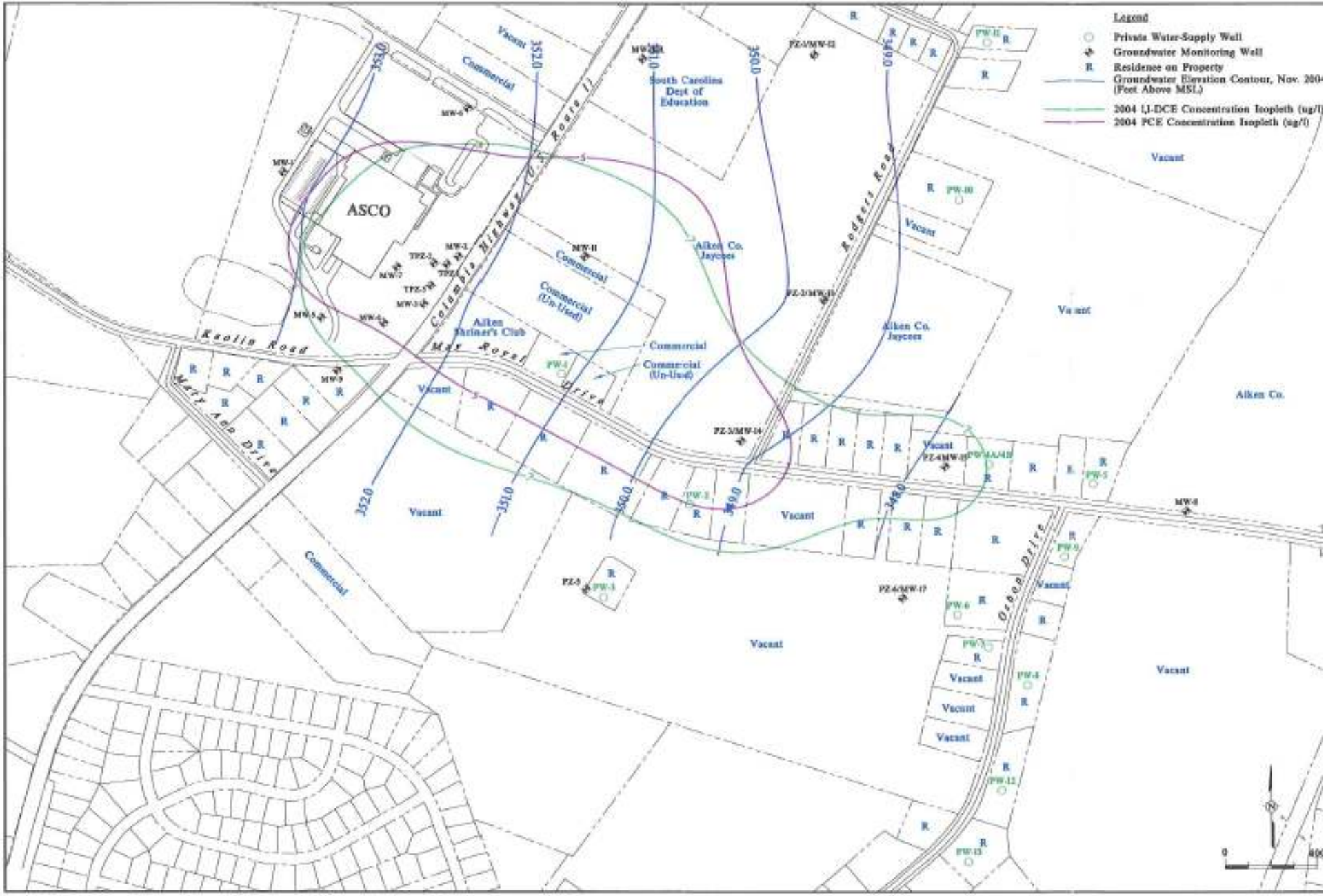
Site Investigations

- **Groundwater investigation**

  -Monitoring well installation/sampling

  -Private well sampling

  -Private water supply well inventory


Legend
Private Water-Supply Well
Groundwater Monitoring Well
Residence on Property
Groundwater Elevation Contour, Nov. 2004 (Feet Above MSL)
2004 1,1-DCE Concentration Isopleth (ug/l)
2004 PCE Concentration Isopleth (ug/l)
ASCO
Columbia Highway (U.S. Route 1)
Kaolin Road
Mary Aiken Drive
May Royal Drive
Hodgers Road
Orbon Drive
South Carolina Dept of Education
Aiken Co. Jaycees
Aiken Mariner's Club
Commercial
Commercial (Un-Used)
Vacant
Aiken Co.
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
TPZ-1
TPZ-2
TPZ-3
PZ-3/MW-12
PZ-3/MW-13
PZ-3/MW-14
PZ-4/MW-15
PZ-4/MW-16
PZ-4/MW-17
PZ-5
PW-1
PW-2
PW-3
PW-4
PW-5
PW-6
PW-7
PW-8
PW-9
PW-10
PW-11
PW-12
PW-13
352.0
351.0
350.0
349.0
348.0

Investigation Results

- The primary contaminants of concern are:

  Tetrachloroethene (PCE)

  1,1,1-Trichloroethane (TCA)

  Breakdown products:

  Trichloroethene (TCE)

  1,1-Dichloroethene (1,1-DCE)

  1,2-Dichloroethene (1,2-DCE)

Investigation Results—Soils

- Within the former PCE storage and degreaser area, soils are contaminated with PCE and breakdown products.
- Contamination extends to depth of approx 40 feet below ground surface.
- Highest PCE concentrations detected underneath the main building.

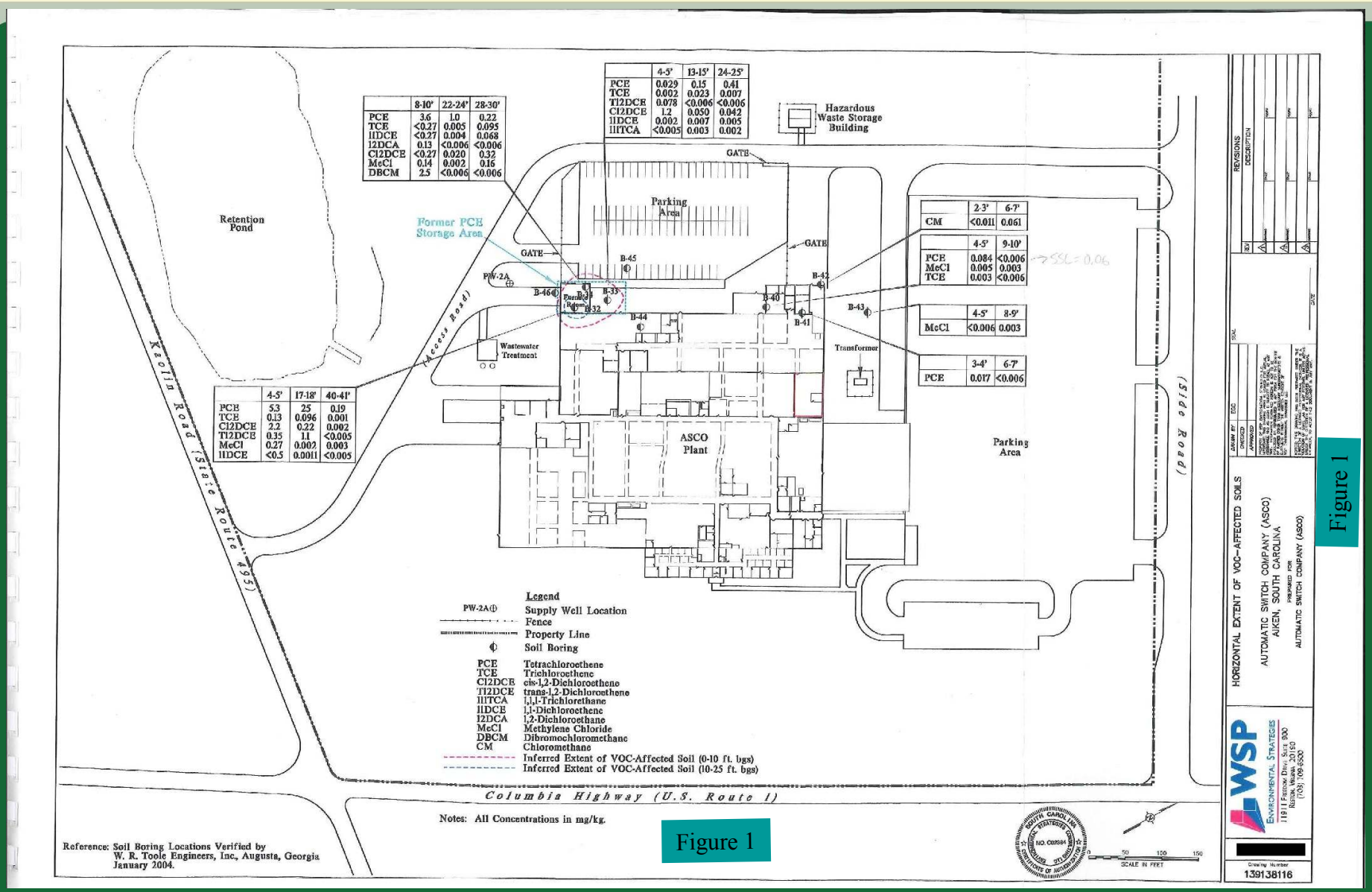

Retention Pond
Former PCE Storage Area
Parking Area
Hazardous Waste Storage Building
GATE
Wastewater Treatment
Transformer
ASCO Plant
Parking Area
Access Road
Kaolin Road (State Route 495)
Side Road
Columbia Highway (U.S. Route 1)
Legend
PW-2A Supply Well Location
Fence
Property Line
Soil Boring
PCE Tetrachloroethene
TCE Trichloroethene
Cl2DCE cis-1,2-Dichloroethene
Tl2DCE trans-1,2-Dichloroethene
1l1TCA 1,1,1-Trichloroethane
1lDCE 1,1-Dichloroethene
l2DCA 1,2-Dichloroethane
MeCl Methylene Chloride
DBCM Dibromochloromethane
CM Chloromethane
Inferred Extent of VOC-Affected Soil (0-10 ft. bgs)
Inferred Extent of VOC-Affected Soil (10-25 ft. bgs)
Notes: All Concentrations in mg/kg.
Reference: Soil Boring Locations Verified by W. R. Toole Engineers, Inc., Augusta, Georgia January 2004.
HORIZONTAL EXTENT OF VOC-AFFECTED SOILS
AUTOMATIC SWITCH COMPANY (ASCO)
AIKEN, SOUTH CAROLINA
PREPARED FOR
AUTOMATIC SWITCH COMPANY (ASCO)
WSP
ENVIRONMENTAL STRATEGIES
Drawing Number
139138116
SCALE IN FEET

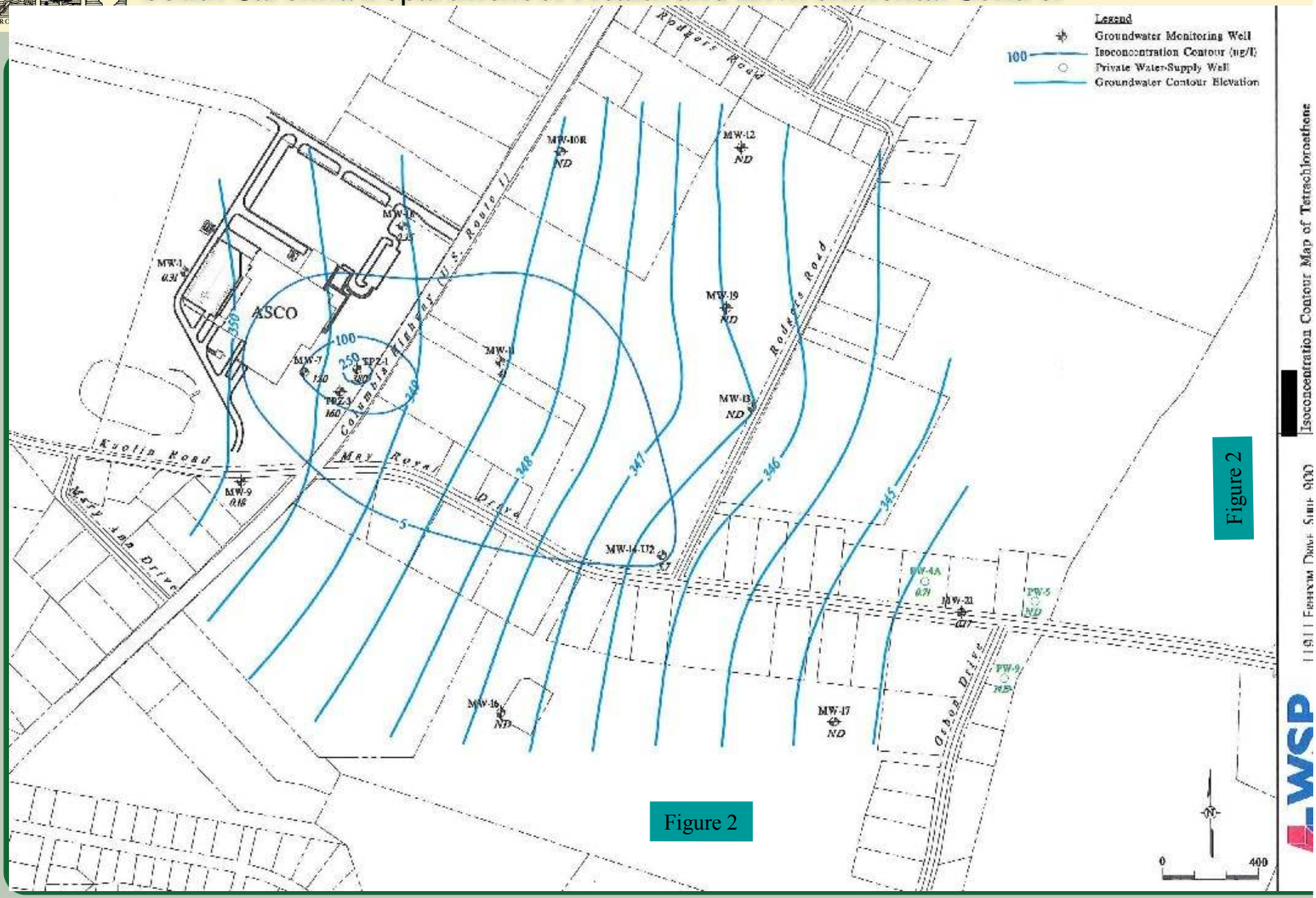
Figure 1

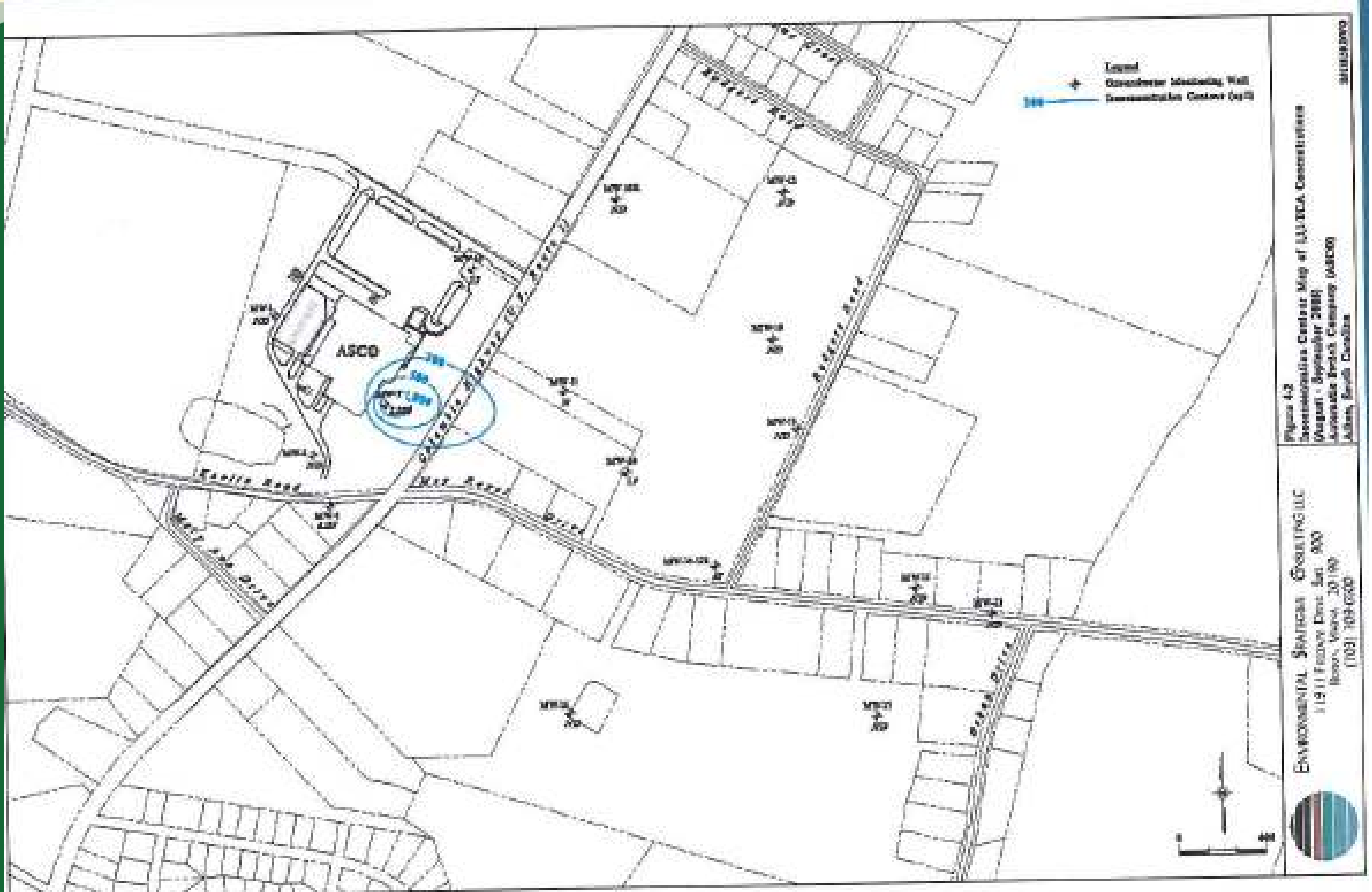
Cleanup Goals for Contaminants in Soil

Contaminant	Soil Cleanup Level
PCE	0.06 ppm
TCE	0.06 ppm
Cis-1,2-DCE	0.4 ppm
1,1-DCE	0.06 ppm

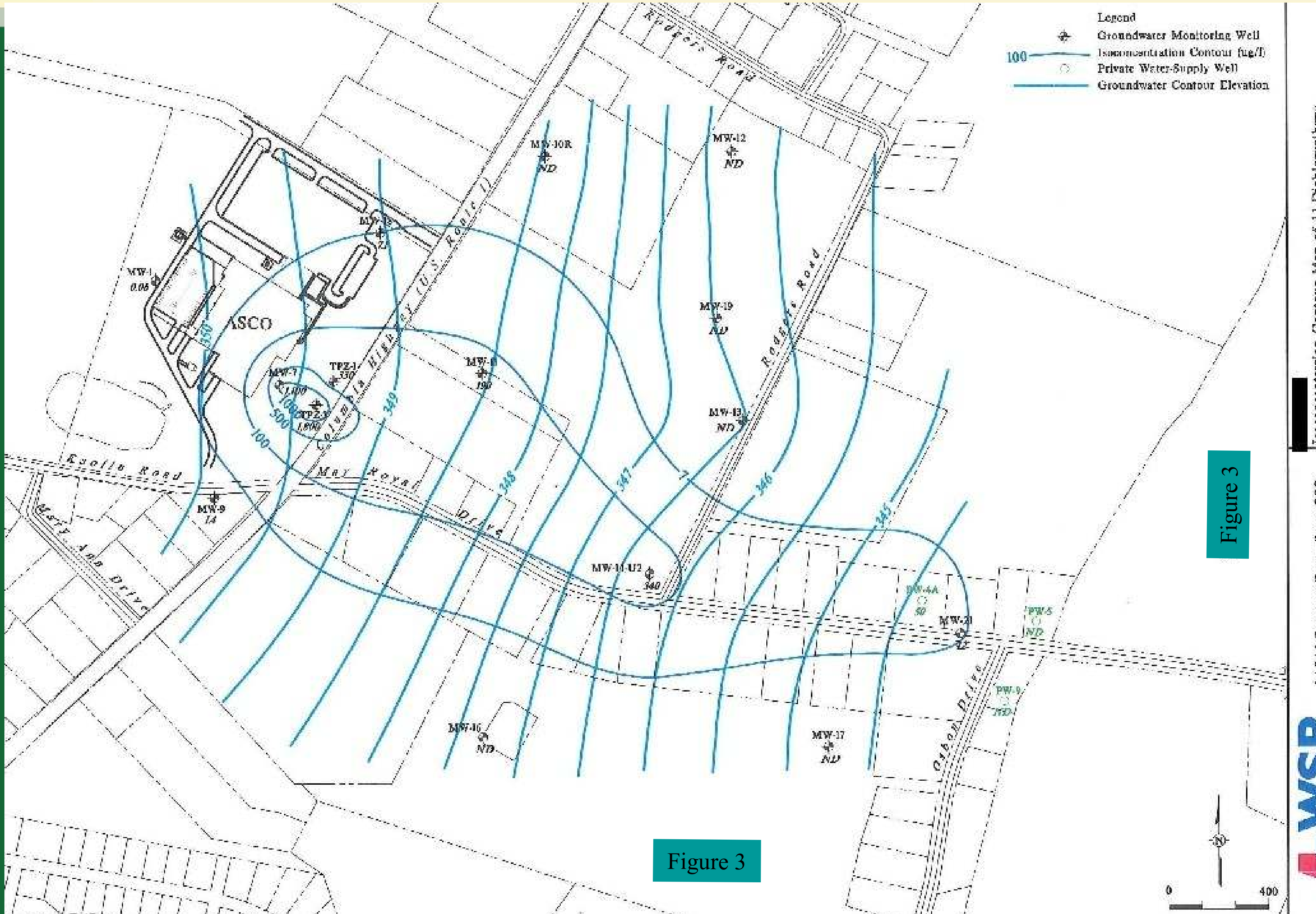
Investigation Results- Groundwater

- Groundwater is encountered at a depth of greater than 139 feet below ground surface.
- Highest concentrations of contaminants (PCE, TCA, DCE) detected directly downgradient of the former PCE storage and degreaser area.
- Contaminants have been detected beyond the ASCO property, approx 2000 feet downgradient---across Columbia Hwy and down May Royal Drive.


Legend
Groundwater Monitoring Well
Isoconcentration Contour (ug/l)
Private Water-Supply Well
Groundwater Contour Elevation
Isoconcentration Contour Map of Tetrachloroethene
Rodgers Road
U.S. Route 11
Columbia Highway
Kaolin Road
May Royal Drive
Osbon Drive
ASCO
MW-1
MW-7
MW-9
MW-10R
MW-11
MW-12
MW-13
MW-14-U2
MW-16
MW-17
MW-19
PZ-1
PZ-3
PW-4A
PW-5
PW-9
MW-21
100
250
350
348
347
346
345
5
ND
0
400
Figure 2


ASCO

South Carolina Department of Health and Environmental Control



Cleanup Goals for Contaminants in Groundwater

Contaminant	Groundwater Cleanup Level
PCE	5 ug/L
1,1-DCE	7 ug/L
TCA	200 ug/L

Submitted Reports

- **Remedial Investigation Report** – summarizes data/info from all investigations

- **Feasibility Study Report** – evaluates options for cleanup

Cleanup Options for Soil ON ASCO PROPERTY

S-1	No action
S-2	Institutional and Engineering Controls
S-3	Soil Vapor Extraction (SVE)

Soil Alternative S-1: No Action

- Required for comparison by Superfund regulations
- Baseline for comparison of other alternatives

Soil Alternative S-2: Institutional & Engineering Controls

- Legal and physical barriers restricting access to contaminated soils
- Placement of deed restriction to restrict soil disturbance
- Maintenance of fencing, concrete flooring, asphalt paving
- Estimated Cost: $30,000

Soil Alternative S-3: Soil Vapor Extraction (SVE)

- Works by inducing a “vacuum” on the affected soils, causing the contaminated vapors to be “pulled” to the surface for treatment
- Targets those contaminants which readily evaporate
- Pilot test performed with favorable results
- Estimated Cost: $500,000

Groundwater Cleanup Options ON & OFF ASCO PROPERTY

GW-1	No action
GW-2	Groundwater Monitoring
GW-3	Groundwater Extraction and Treatment
GW-4	Permeable Reactive Barrier (PRB)

Groundwater Alternative GW-1: No Action

- Required for comparison by Superfund regulations
- Baseline for comparison of other alternatives

Groundwater Alternative GW-2: Groundwater Monitoring

- Monitoring wells and private wells routinely sampled in order to monitor the plume
- Does not actively reduce volume, mobility, toxicity of contamination
- Useful supplement when used in conjunction with another technology
- Estimated cost: $340,000

Groundwater Alternative GW-3: Extraction and Treatment

- AKA “Pump and Treat”
- Recovery wells installed in areas of highest concentration
- Contaminated groundwater pumped from ground to the surface where it is treated
- Contaminated groundwater treated by air stripping and/or granular activated carbon
- Continued monitoring
- Estimated cost: $4.7M

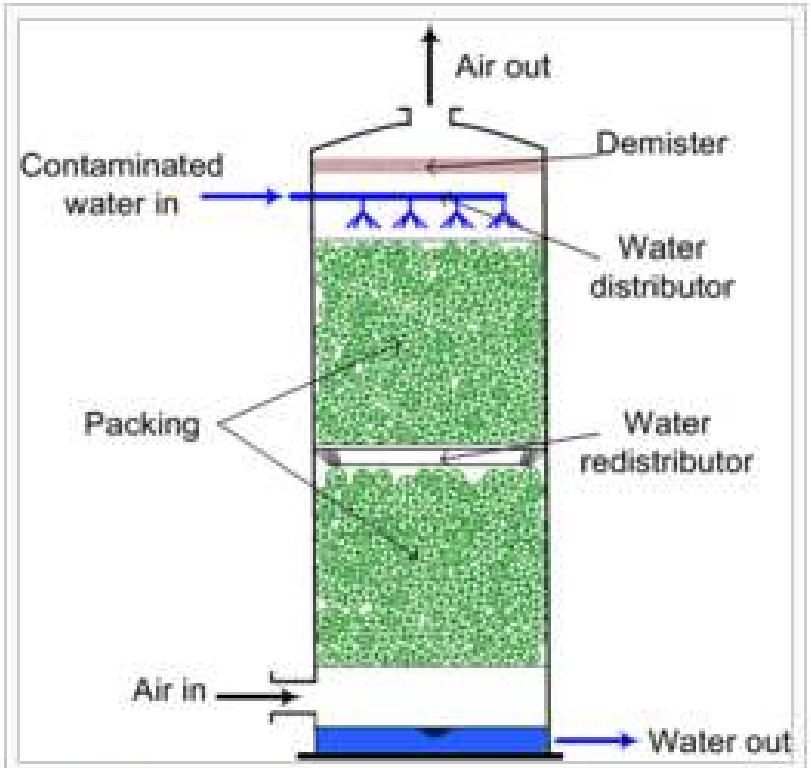


Figure 1. An air stripper

Groundwater Alternative GW-4: Permeable Reactive Barrier

- Treatment occurs “in-place”
- Treatment material injected into the area of contaminated groundwater
- Treatment material “breaks down” the contaminants
- Continued monitoring
- Estimated Cost: $12.6M

Evaluation Criteria

- Overall Protection of Human Health and the Environment
- Compliance with State and Federal Regulations
- Long-Term Effectiveness
- Reduction of Contaminant Toxicity, Mobility, and Volume
- Short-Term Effectiveness
- Implementability
- Cost
- **Community Acceptance**

Preferred Soil Cleanup

S-3: Soil Vapor Extraction

- Provides protection of human health and the environment
- Reduces contamination through treatment
- Pilot tests indicate SVE well suited in this area
- Substantially reduces long-term risk
- Prevents further migration of contaminants from soil to groundwater

Preferred Groundwater Cleanup

GW-3: Groundwater Extraction and Treatment System

- Provides protection of human health and the environment
- Reduces GW contamination through treatment
- Results from Pump Test favorable

Preferred Groundwater Cleanup Detailed Description

- Extraction wells installed:

  along eastern ASCO property line,

  in areas of highest concentration off-property,

  along downgradient edge of plume (May Royal)

- All extracted water piped to ASCO property for treatment:

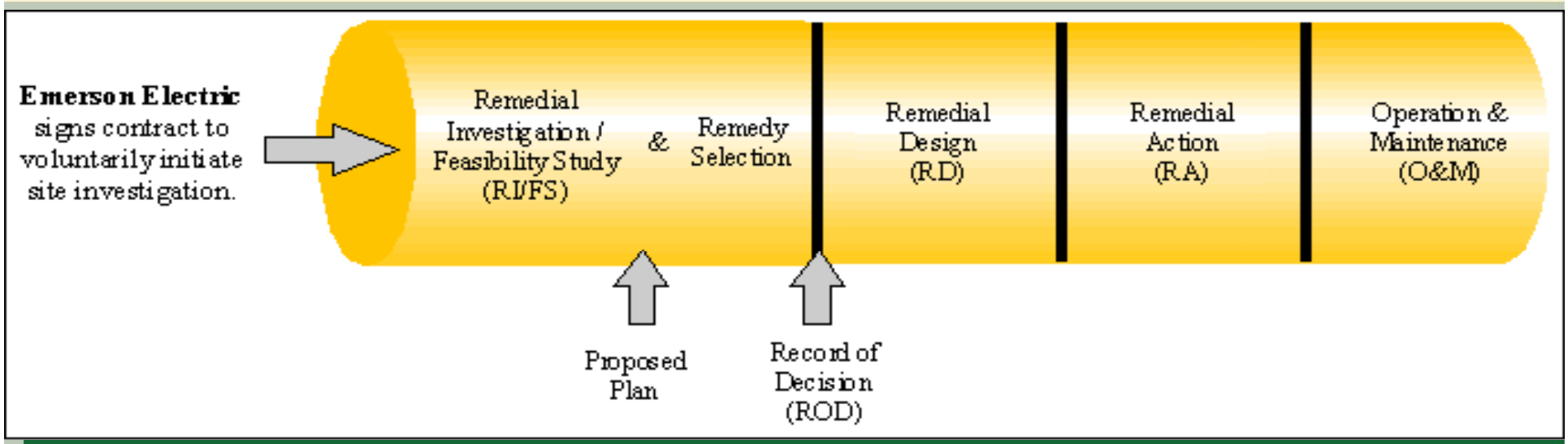
  tank, air stripper, carbon

- Disposal options:

  POTW, retention pond, surface water discharge, underground injection

Remedial Goals

- Prevent migration of contaminants from soil to groundwater
- Prevent further migration of impacted groundwater
- Prevent human consumption of contaminated groundwater that exceeds safe drinking water standards
- Restore the groundwater to drinking water standards within a reasonable time frame



- **Record of Decision (ROD)**: identifies the selected cleanup method after review and consideration of all comments
- **Remedial Design (RD):** the development of specifications and drawings necessary for the construction and implementation of the **ROD**

Public Comment Period

- Administrative Record

  Aiken County Public Library

  314 Chesterfield St SW, Aiken

- Public Comment Period
  - **May 19, 2009 through June 20, 2009**

Discussion, Questions, and Comments

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In a nutshell……

- Tanks filled with solvents
- Tanks leaked
- Soil contaminated
- Contaminated soil led to contaminated groundwater
- Data collected (Where is it? How bad? How far? How deep?)
- Options for cleanup
- **Need to decide which option is best**