TOWN COUNCIL MINUTES

NOVEMBER 24, 2008

A special meeting of the Hampden Town Council was held on Monday, November 24, 2008 for the purpose of the Town's Landfill Consultant to give a presentation updating the Town Council and public on Pine Tree Landfill. The meeting was called to order by Deputy Mayor Andrew Colford at 7:00 p.m.

Attendance: Deputy Mayor Andrew Colford, Andre Cushing, Shannon Cox, Matthew Arnett, Andrew Colford and Thomas Brann; Mayor Rick Briggs and Councilor Edward Murphy were absent;

Town Manager Susan Lessard;

Pine Tree Landfill Representative Don Meagher, Representatives from Sevee & Maher Engineers; Landfill Consultant Matt Reynolds and Interested Citizens

The Town's Landfill Consultant Matt Reynolds gave a presentation regarding water quality assessment; closure, corrective actions and on-going assessments; and review of closure construction activities. A copy of the presentation is attached hereto.

There being no further business, the meeting adjourned at 9:30 p.m.

Susan M. Lessard
Town Manager

PINE TREE LANDFILL
HAMPDEN TOWN COUNCIL MEETING

NOVEMBER 24, 2008

OVERVIEW OF PRESENTATION:

- Water Quality Assessment
  - Sources of Impact to Groundwater
  - Pathways of Migration from Landfill
  - Resulting Effect on Water Quality
  - Trends in Water Quality
- Closure, Corrective Actions & On-Going Assessments
  - Current Corrective Actions
  - Water Quality Components of Closure Order
  - On-Going Assessments & Additional Corrective Actions
- Review of Closure Construction Activities

WORKING DRAFT FOR
INFORMATIONAL REVIEW

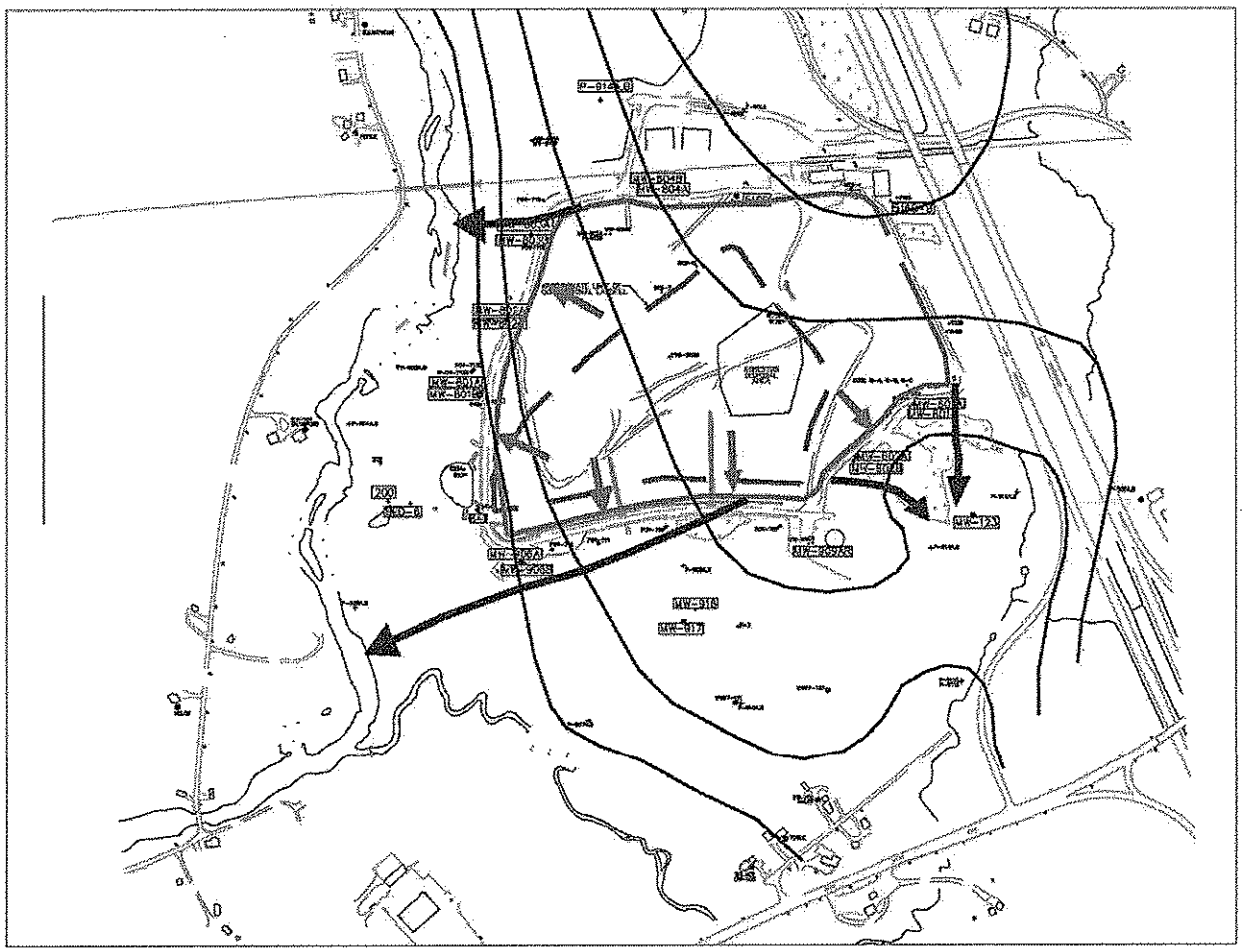
Water Quality Evaluation

"SOURCES" FROM PINE TREE LANDFILL INCLUDE:

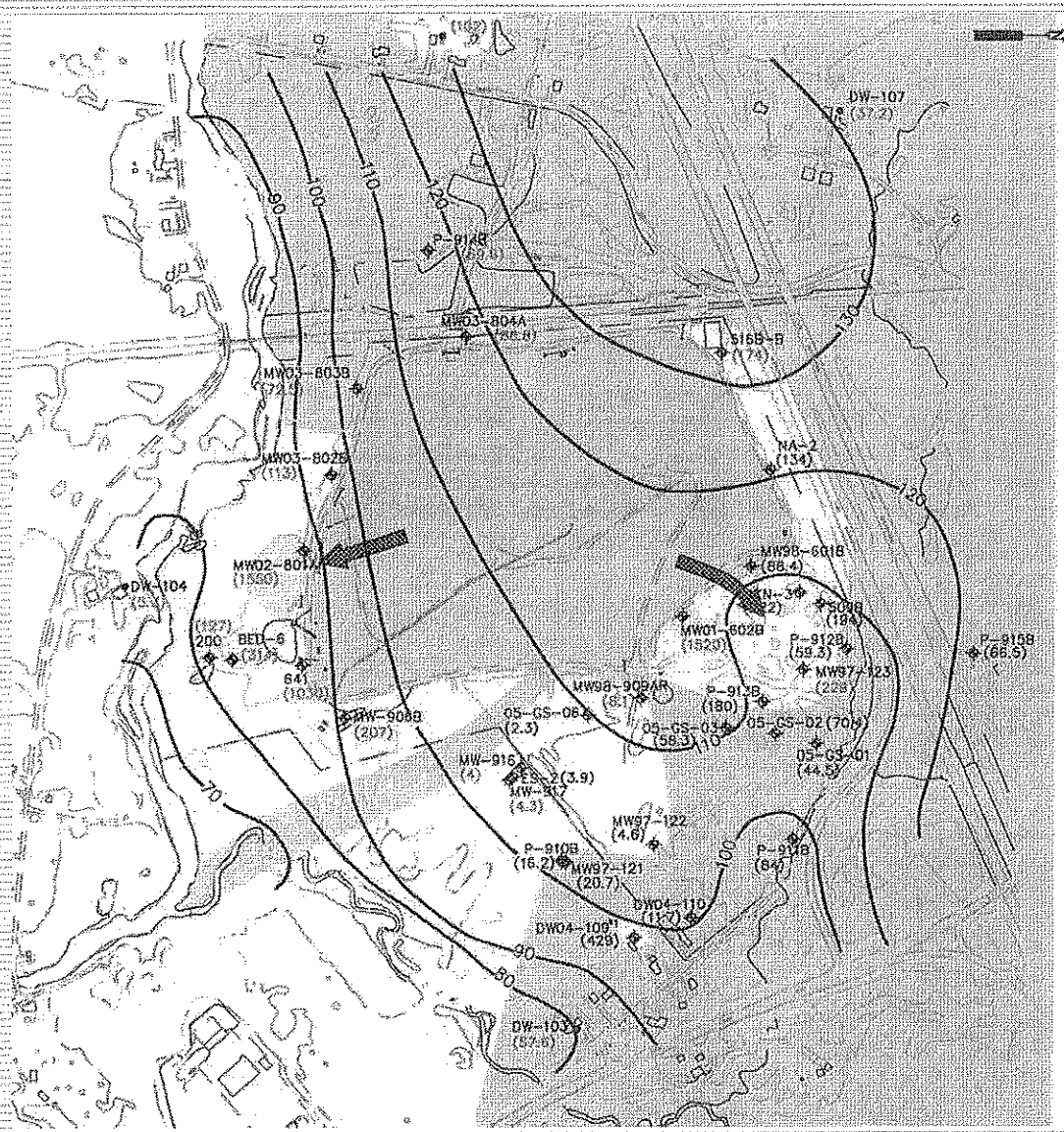
- Conventional Landfill Leachate
  - High Sodium (Na)
  - Moderate Chloride (Cl)
  - Moderate Bicarbonate (HCO_3)
- Secure Landfill(s) Leachate (*via accidental release incidents*):
  - High Chloride (Cl)
- Landfill Gas (Conventional Landfill):
  - High Methane (CH_4) {dissolved and gas}
  - High Bicarbonate (from CO_2 gas)
  - Low Chloride
  - Volatile Organic Compounds

PATHWAYS FOR MIGRATION FROM LANDFILL

(➔ = Groundwater) (➔ = Landfill Gas)



AREAS OF IMPACT FROM GROUNDWATER FLOW



NOTE:

BASE MAP PREPARED BY AERIAL SURVEY & PHOTO, INC. NORRIDGEWOCK, MAINE, PHOTO DATE NOVEMBER 1, 2006. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLAN COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

LEGEND

—130— INTERPRETED GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FEET-MSL

MW-905B MONITORING WELL
(207) MAXIMUM GROUNDWATER CHLORIDE CONCENTRATION (mg/L) DURING 2007

(4.6) GROUNDWATER CHLORIDE CONCENTRATION (mg/L) IN JULY 2007

GROUNDWATER CHLORIDE COLOR CODE

>1000 mg/L

100–1000 mg/L

10–99 mg/L

<10 mg/L

PRIMARY GROUNDWATER FLOW PATHS

RESIDENTIAL WELL

*1 WELL DW04-109 SMELLED OF CLOROX AND WE BELIEVE THAT THE HOUSE RENTER MAY HAVE BEEN ADDING CLOROX TO THIS WELL THINKING IT'S HIS WATER SUPPLY WELL. THIS REFLECTED IN THE RELATIVE CHLORIDE LEVEL IN THIS WELL.

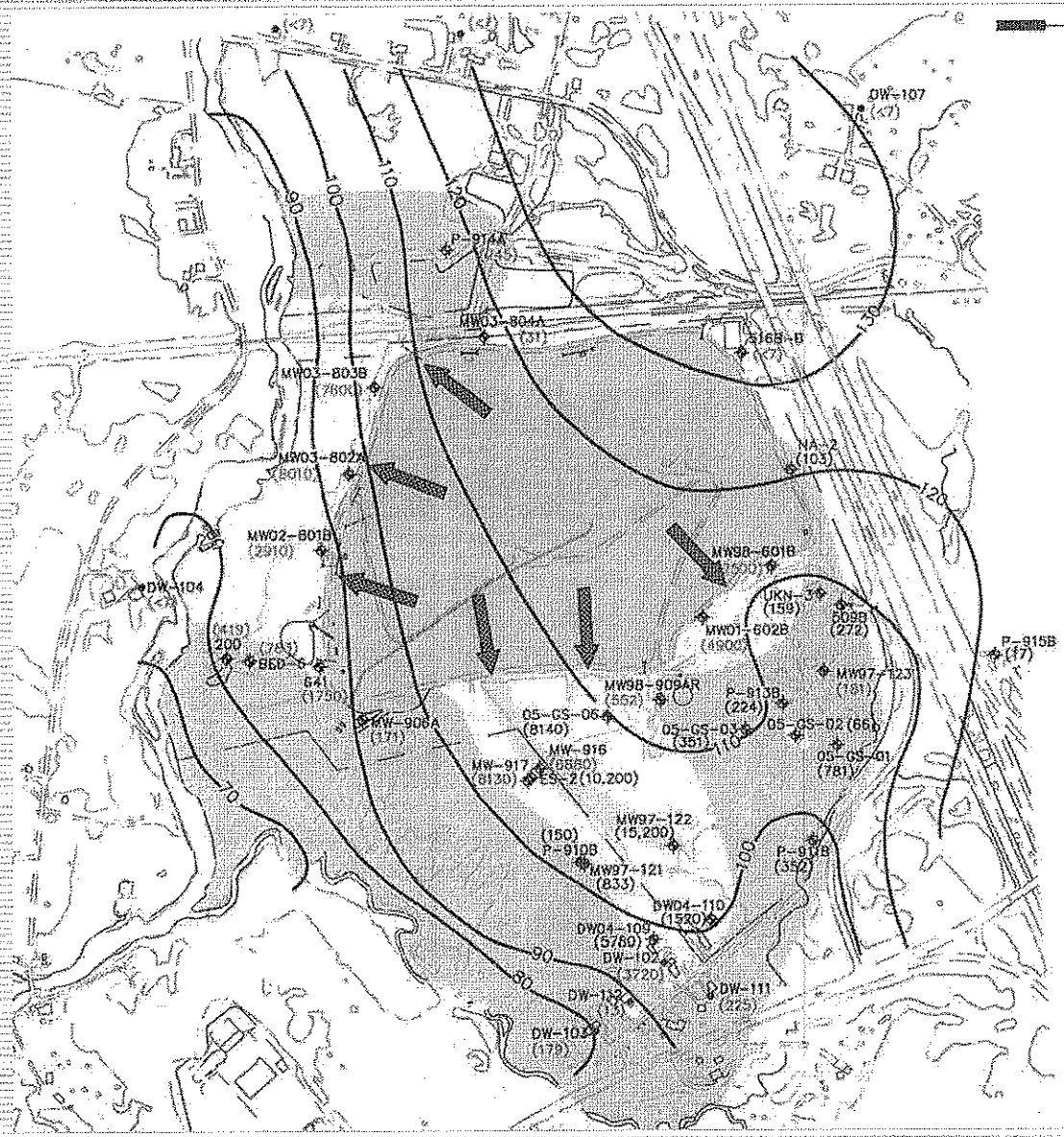
250 0 500 1000 FEET

FIGURE 2-1
GROUNDWATER CHLORIDE CONCENTRATIONS
2007 WATER QUALITY ANNUAL REPORT
PINE TREE LANDFILL
HAMPDEN, MAINE

SME
Sevee & Maher Engineers, Inc.

INFORMATIONAL REVIEW

AREAS OF IMPACT FROM GAS MIGRATION



NOTES:

* AT P-914A 310 µg/L WAS THE MAXIMUM GROUNDWATER METHANE CONCENTRATION MEASURED FROM JULY 2005 THROUGH JUNE 2006. A VALUE OF 5,050 µg/L WAS MEASURED IN OCTOBER 2006 WHICH IS INCONSISTENT WITH THE PREVIOUS SAMPLING ROUNDS AND SURROUNDING DATA. THEREFORE 310 µg/L WAS USED IN OUR INTERPRETATION.

BASE MAP PREPARED BY AERIAL SURVEY & PHOTO, INC. NORRIDGEWOCK, MAINE, PHOTO DATE NOVEMBER 1, 2006. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLAN COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

LEGEND

—130— INTERPRETED GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR IN FEET-MSL

MW-906A MONITORING WELL
(171) MAXIMUM GROUNDWATER METHANE CONCENTRATION (µg/L) DURING 2007

(352) GROUNDWATER METHANE CONCENTRATION (µg/L) IN JULY 2007

GROUNDWATER METHANE COLOR CODE

>10,000 µg/L

1000–9999 µg/L

100–999 µg/L

<100 µg/L

PRIMARY LANDFILL GAS MIGRATION PATHS

RESIDENTIAL WELL

250 0 500 1000 FEET

FIGURE 2-2
GROUNDWATER METHANE CONCENTRATIONS
2007 WATER QUALITY ANNUAL REPORT
PINE TREE LANDFILL
HAMPDEN, MAINE

SME

Groundwater Quality Evaluation - Trends

Well	Increasing	Decreasing	No Trend
	(95% - 5 yr)	(95% - 5 yr)	(95% - 5 yr)
SOUTH			
200			Na, Cl, HCO3
641		Cl	Na, HCO3
906B		Na, Cl, HCO3	
BED6		Cl, HCO3	Na
02-801A	Na, Cl, HCO3		
02-801B	Na, Cl		HCO3
03-802A	Cl		Na, HCO3
03-802B			Na, Cl, HCO3
03-803A	Na, Cl, HCO3		
03-803B	HCO3	Cl	Na
EAST			
909AR	Cl	HCO3	Na
916		Na, HCO3	Cl
917			Na, Cl, HCO3

Well	Increasing	Decreasing	No Trend
NE			
601A		Cl , HCO3	Na
601B			Na, Cl, HCO3
602A		Cl, HCO3	Na
602B			Na, Cl, HCO3
97-123		Na, HCO3	Cl

	Increasing	Decreasing	No Trend
	Na = 3	Na = 2	Na = 12
	Cl = 5	Cl = 6	Cl = 6
	HCO3 = 3	HCO3 = 7	HCO3 = 8

WORKING DRAFT FOR
INFORMATIONAL REVIEW

Groundwater Quality Evaluation - Standards

COMPARISON TO STANDARDS

Arsenic: 17 of 24 Wells > 0.01 mg/L (MCL)

Sodium: 19 of 24 Wells > 20 mg/L (MEG)

Manganese: 20 of 24 Wells > 0.5 mg/L

VOCs: 5 Wells Exceed Benzene, TCE or Vinyl Chloride STDs

Summary of Groundwater Quality

- SOURCES OF IMPACT TO GROUNDWATER ARE LEACHATE AND GAS
- LEACHATE IMPACTS ARE PRESENT TO THE SOUTH AND NORTHEAST
- GAS IMPACTS ARE PRESENT TO THE SOUTH/SOUTHWEST, EAST AND NORTHEAST (LIMITED)

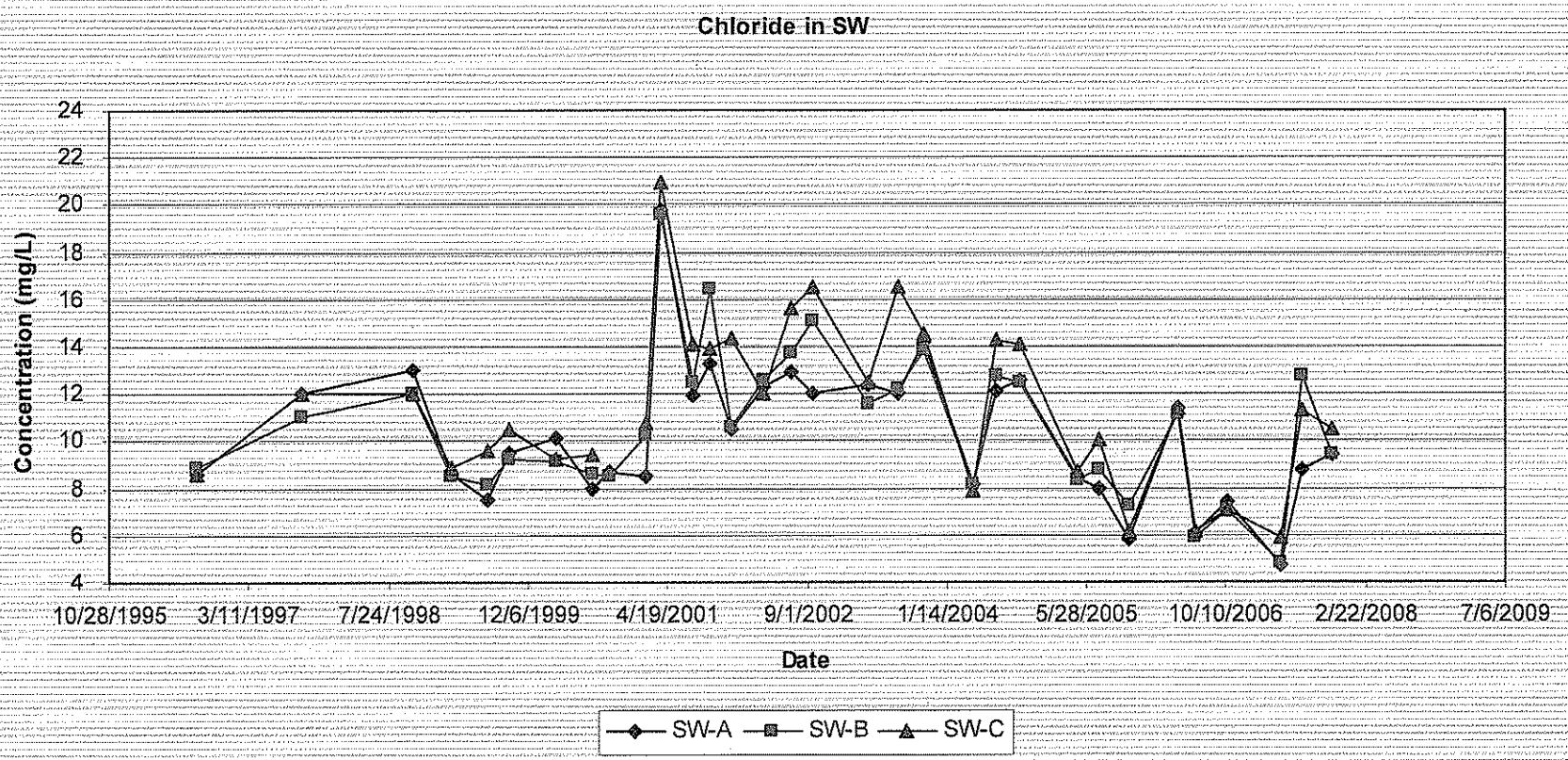
- GROUNDWATER QUALITY DATA INDICATE THAT:
  - GROUNDWATER QUALITY APPEARS TO BE STABLE IN THE MAJORITY OF WELLS
  - INCREASING NUMBER OF WELLS SHOW IMPROVING TRENDS
  - MAJORITY OF WELLS HAVE SOME EXCEEDANCE OF STANDARDs
  - THERE WERE ACCIDENTAL RELEASES OF LEACHATE IN 2007 THAT EFFECTED WATER QUALITY IN SOUTHERN WELLS
  - INCREASING TRENDS IN GROUNDWATER CONCENTRATIONS ARE MOST COMMON IN SOUTH/SOUTHWEST

Surface Water Quality Assessment

- COMPARISON TO STANDARDS (Freshwater Chronic):
  - No Exceedances
- NO VOCs
- UPSTREAM vs. DOWNSTREAM COMPARISON
  - Surface Water Quality Does Not Appear to Degrade Downstream of PTL

Surface Water Quality Assessment:

Chloride Up (SW-A), Mid (SW-B) and Downstream (SW-C)



WORKING DRAFT FOR
INFORMATIONAL REVIEW

Residential Well Assessment

- LANDFILL GAS IMPACT IN DW-102 (now DW04-109) & OTHER WELLS to EAST

- TRENDS:
  - Similar to Previous Data-No Strong Trends
  - Subtle Increases in DW-105 (Reynolds) and DW-106 (Buchanan)
  - DW04-109 had higher chloride than DW-102, which it replaced (but data limited)

- COMPARISON TO STANDARDS:

  - Sodium: DW04-109 & DW-103 > 20 mg/L
  - Manganese: DW-105 > 0.5 mg/L

- NO VOCs

Status of Corrective Actions

- ACCIDENTAL RELEASES (2002 to 2007) CONTAINED & REPAIRED

- CORRECTION ACTIONS IN PLACE
  - Secure I, II & III have Liners. Most Liners Have Leak Detection
  - Secure III Liner Capped Conventional Landfill in 2005
  - Perimeter Drain (PDPS) Adjacent to Conventional Landfill
  - EW-2 & EW-3 Extract Groundwater from SE
  - EW-5 & EW-6 Extract Groundwater from NE
  - EW's Collected 2.9 Million Gallons in 2007
  - Active Gas Collection System Operates in Conventional Landfill
  - Active Gas Collection System Is Being Installed in Secure III As It Is Closed
  - Gas to Energy Plant Brought On-Line in 2007 & 2008 to Utilize Gas
  - FINAL CLOSURE OF ENTIRE SITE IS UNDERWAY – COMPLETE BY DEC. 2010

Closure Order – Water Quality Components

-- CLOSURE ORDER WAS ISSUED BY MDEP IN JUNE 2008
-- CLOSURE ORDER DEFINES: ***SUCCESSFUL CORRECTIVE ACTION***

- SOLID WASTE RULES REQUIRE OPERATOR TO MEET 5 CRITERIA:

  1. TAKE ALL REASONABLE MEASURES TO ELIMINATE DISCHARGE OF POLLUTANTS
  2. MONITORING THAT INCLUDES ALL PARAMETERS DETECTED
  3. MAINTAIN EXISTING CLASSIFICATION OF SURFACE WATER
  4. DOCUMENT AN ACTUAL TREND OF IMPROVING WATER QUALITY AND DEMONSTRATE THAT THE TREND WILL CONTINUE
  5. CONTAMINANTS RELEASED DO NOT POSE A THREAT TO PUBLIC HEALTH

- OPERATOR MUST ACHIEVE SUCCESSFUL CORRECTIVE ACTION PRIOR TO THE END OF THE POST-CLOSURE PERIOD (30 YEARS)

Closure Order – Water Quality Components

CLOSURE ORDER ALSO INCLUDED CRITERIA SPECIFIC TO PTL.

PTL-SPECIFIC *SUCCESSFUL CORRECTIVE ACTION* CRITERIA:

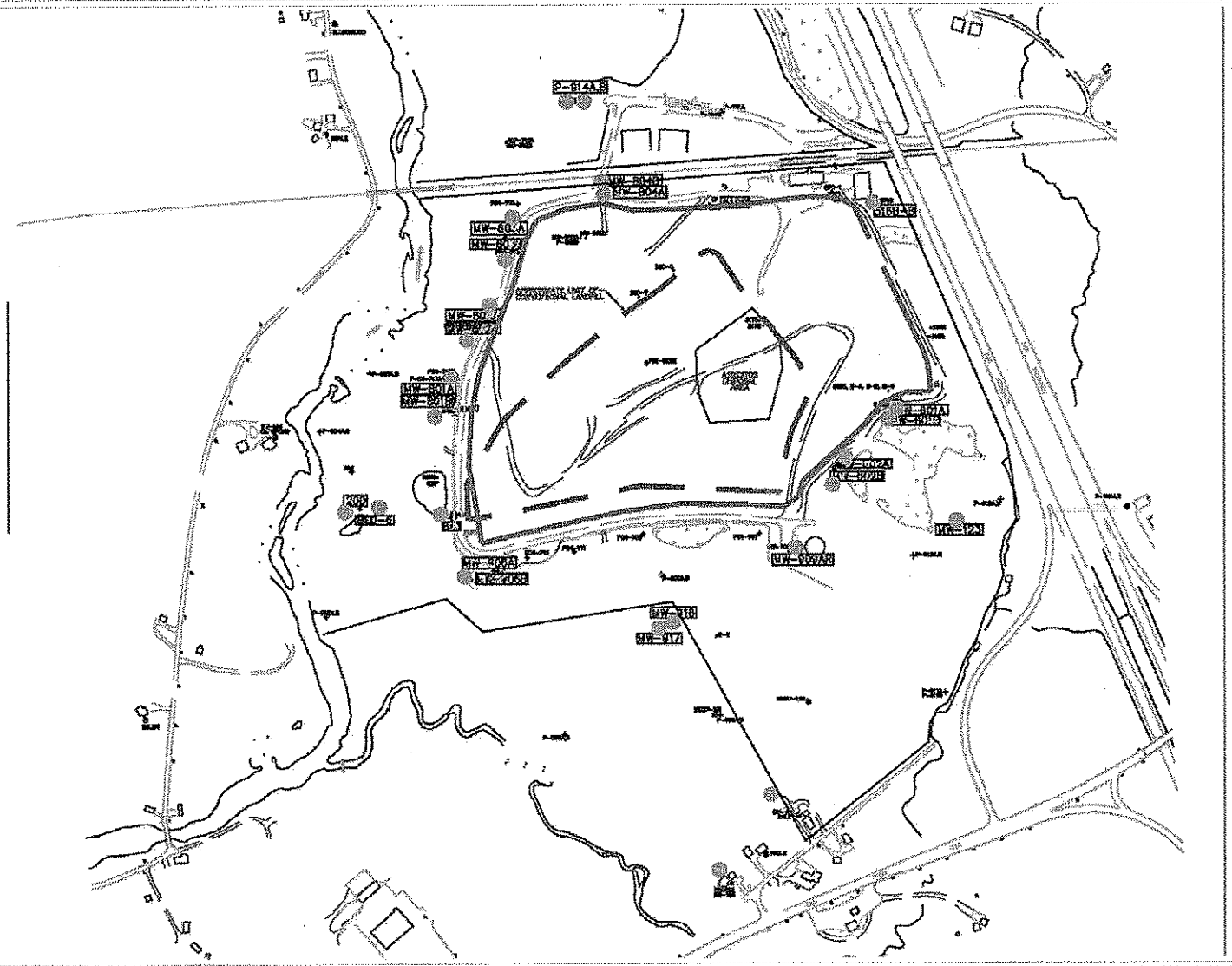
- OFF-SITE GROUNDWATER:
  1. GROUNDWATER BELOW MCL/MEG STANDARDS
  2. OFF-SITE PRIVATE WELLS HAVE CONDUCTANCE < 400 umhos/cm
  3. DISSOLVED METHANE CONCENTRATION < 700 ug/L) (this value may be adjusted)

- ON-SITE GROUNDWATER:
  1. CONDUCTANCE LESS THAN 500 umhos/cm

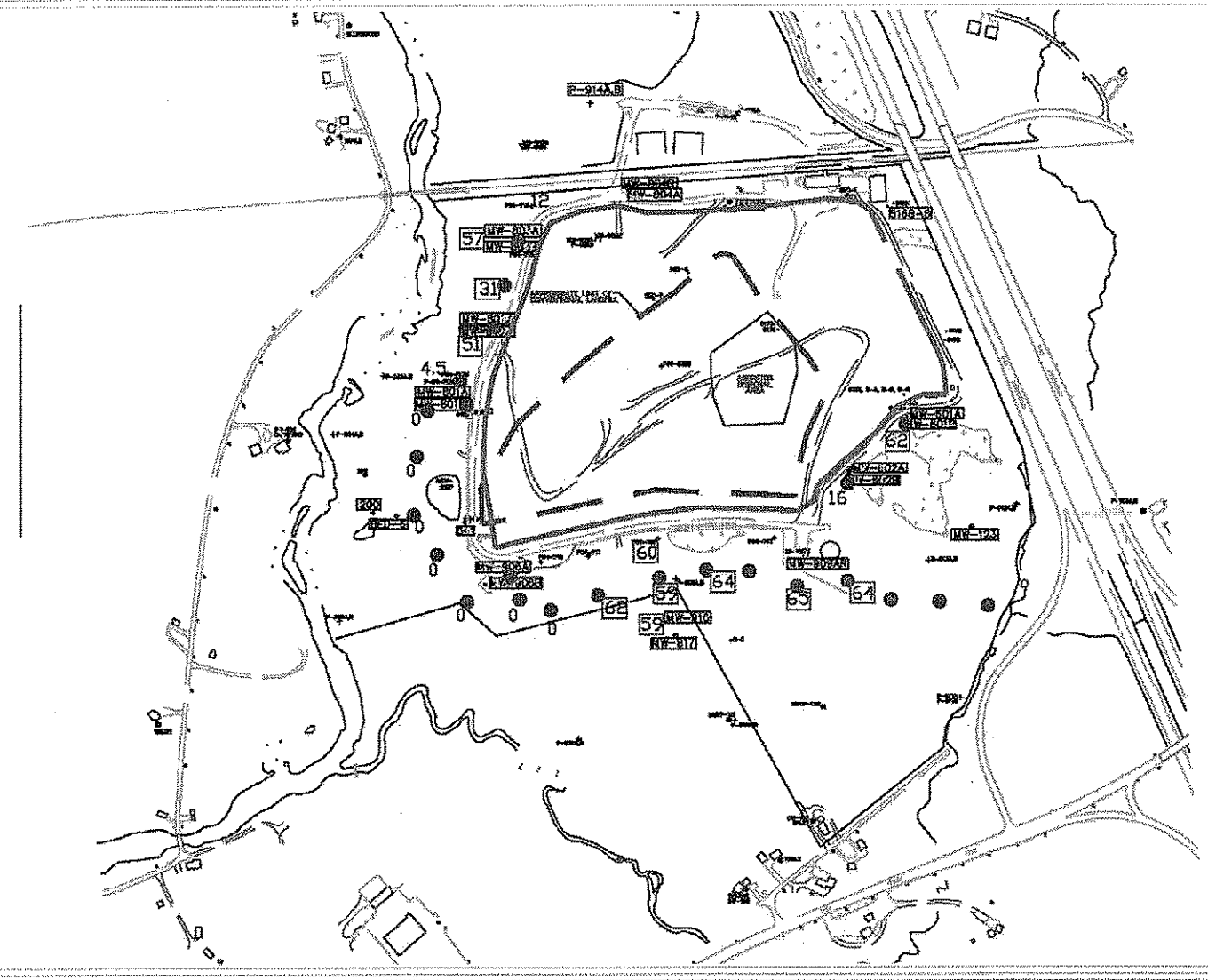
- SURFACE WATER
  1. MEET WATER QUALITY CRITERIA

- LANDFILL GASES:
  1. LESS THAN 5% METHANE AT PROPERTY BOUNDARY
  2. LESS THAN 1.25% METHANE IN ON-SITE STRUCTURES

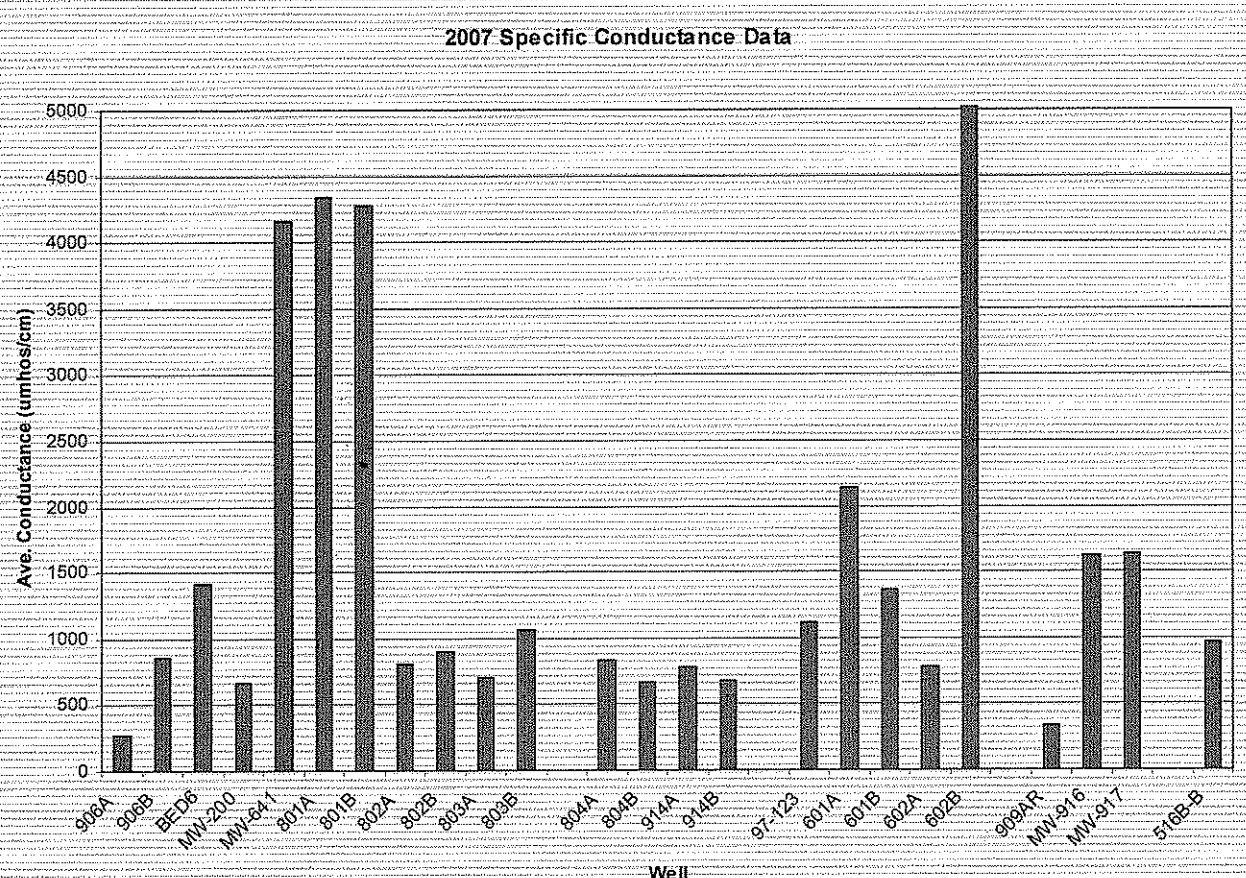
CURRENT WATER QUALITY EXCEEDING STANDARDS (●)
vs CLOSURE CRITERIA (Off-Site Groundwater <Standards)



CURRENT METHANE GAS (%)
vs CLOSURE CRITERIA (<5% at Property Line)



CURRENT CONDUCTANCE IN MONITORING WELLS vs CLOSURE CRITERIA (<500 umhos/cm)

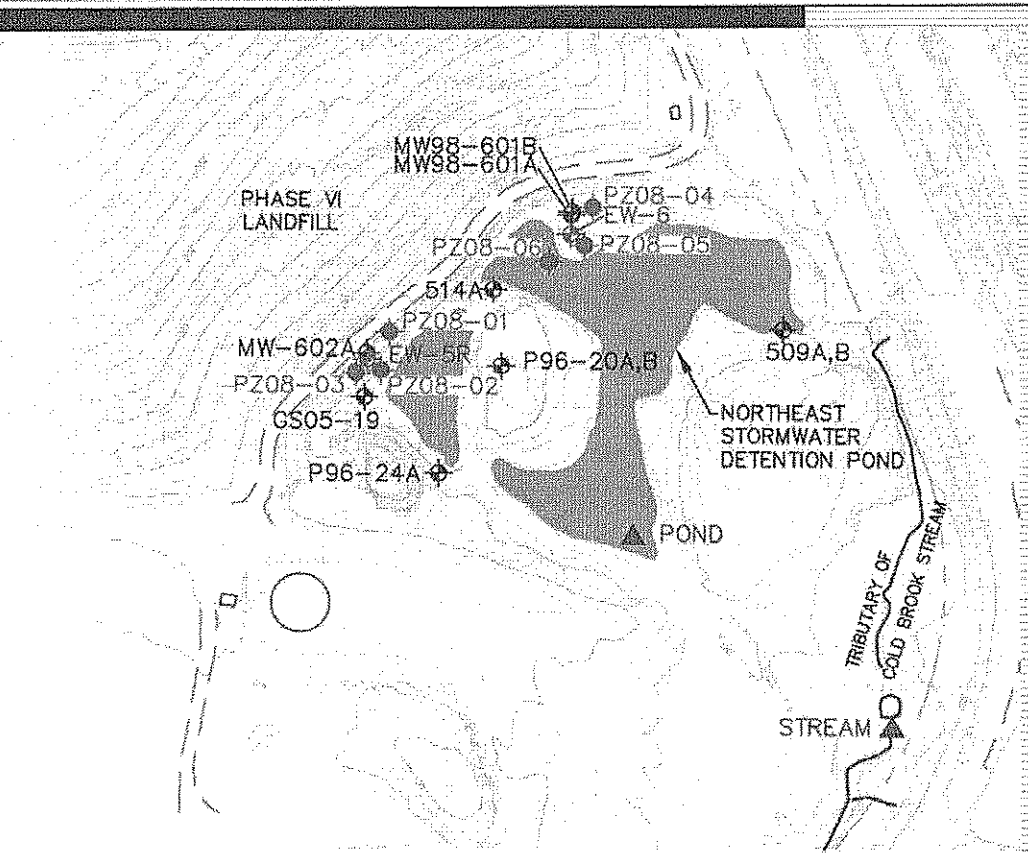


WORKING DRAFT FOR
INFORMATIONAL REVIEW

CLOSURE ORDER – ADDITIONAL ASSESSMENTS

- Closure Order Identifies 4 Pathways for Landfill Impact to Groundwater Via Leachate and Gas
- Current Corrective Actions Provide Partial Control of These Pathways
- Closure Order Requires Additional Evaluation to Assess:
  - Effectiveness of Existing Groundwater Control in the Northeast of the Landfill
  - Design of Additional Controls on Gas Migration to the East and Southwest

ADDITIONAL ASSESSMENTS:
Evaluation of Northeast Corner is Underway



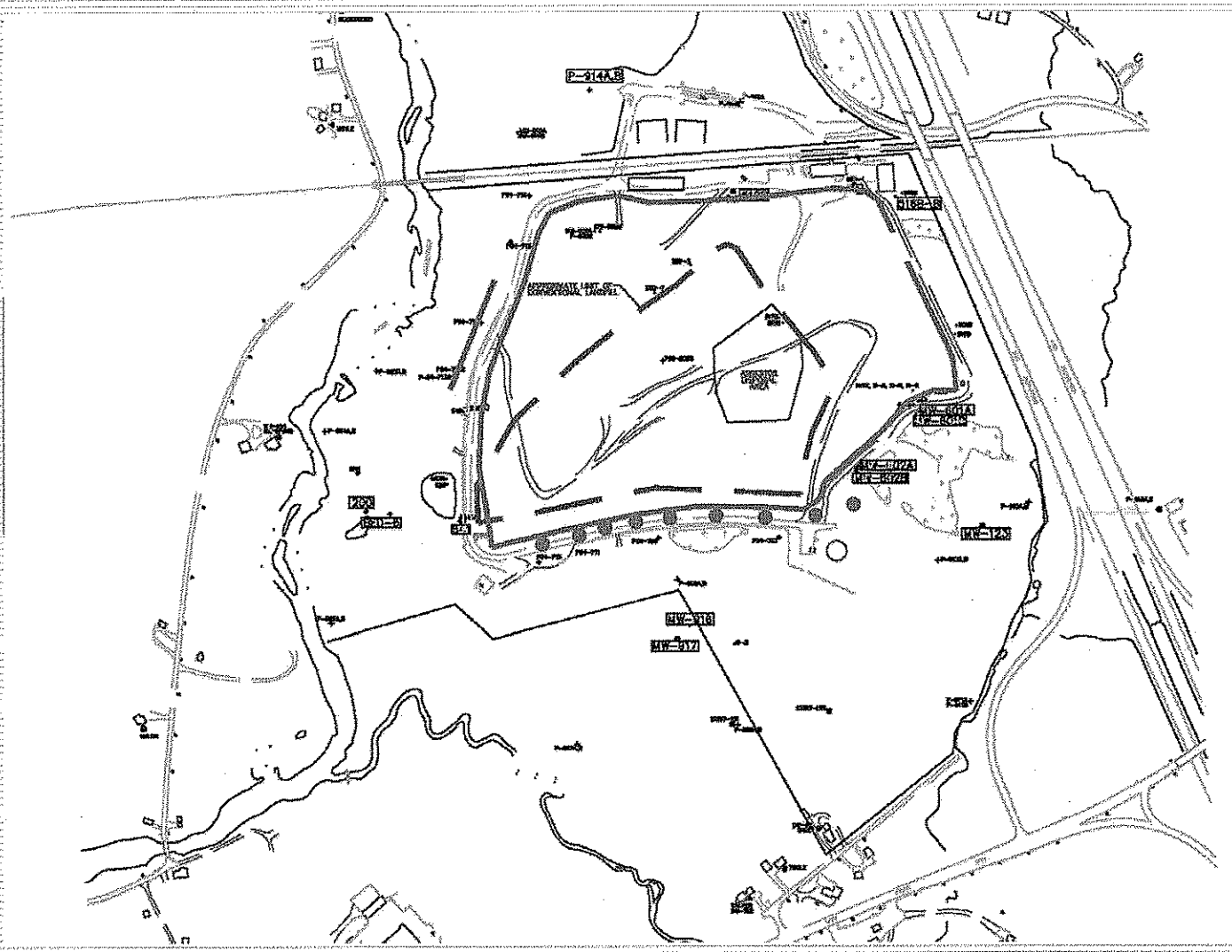
LEGEND

- 514A — MONITORING WELL OR PIEZOMETER
- EW-8 — GROUNDWATER EXTRACTION WELL
- PZ08-01 — PROPOSED PIEZOMETER
- POND — PROPOSED STAFF GAGE

100 0 200 FEET

FIGURE 3
MONITORED INSTRUMENTS
DURING PUMP TEST
PINE TREE LANDFILL

ADDITIONAL ASSESSMENTS:
Conceptual Additional Active Gas Control (●)



MOVING FORWARD:

- Resolve Need for Additional Groundwater Control in NE and Near MW-801
- Design, Install and Test Additional Gas Extraction
- Finalize Long-Term Monitoring Network & Parameters
- Continue Monitoring & Assessing Trends & Effectiveness of Corrective Actions
- Annual Report with 5-Year Review of Progress Toward Successful Correction Action

Review of Closure Construction Activities

WORKING DRAFT FOR
INFORMATIONAL REVIEW