ALASKA RAILROAD CORPORATION

Corporate P.O. Box 107500, Anchorage, AK 99510• 327 Ship Creek Avenue, Anchorage, AK 99501 www.alaskarailroad.com

February 1, 2005

Jacques Gusmano, Project Coordinator
Alaska Operations Office
U.S. Environmental Protection Agency
222 West 7th Avenue, #19
Anchorage, Alaska 99513-7588

Re: Alaska Railroad Corporation, Anchorage Terminal Reserve RI/FS
Administrative Order on Consent EPA Docket No. CERCLA-10-2004-0065
Site Background Report Addendum

Dear Mr. Gusmano:

The Alaska Railroad Corporation (ARRC) submitted the Site Background Report (SBR) on October 18, 2004 as specified in Section 2.2 of the Statement of Work (SOW) under the subject consent order. The SBR compiled existing data for the Anchorage Terminal Reserve as required in Subtask 2a of the SOW. EPA provided comments to the SBR on December 2, 2004. In the December 15, 2004 meeting between EPA, ADEC and ARRC it was agreed that ARRC would prepare an Addendum to the SBR to include 1) figures showing the hydrogeologic cross sections and concentrations of select constituents, 2) responses to EPA comments, and 3) an electronic copy of the revised database of existing site data. ARRC also agreed in that meeting to update Appendix D and F of the SBR and provide the update as replacement pages.

Please find attached replacement pages for Appendix D and F and the Addendum to the SBR. It is ARRC's understanding that submittal of this information will complete the SBR requirements under the SOW. EPA's approval of the SBR will initiate the 90 day period specified in the consent order for submittal of the Remedial Investigation Work Plan.

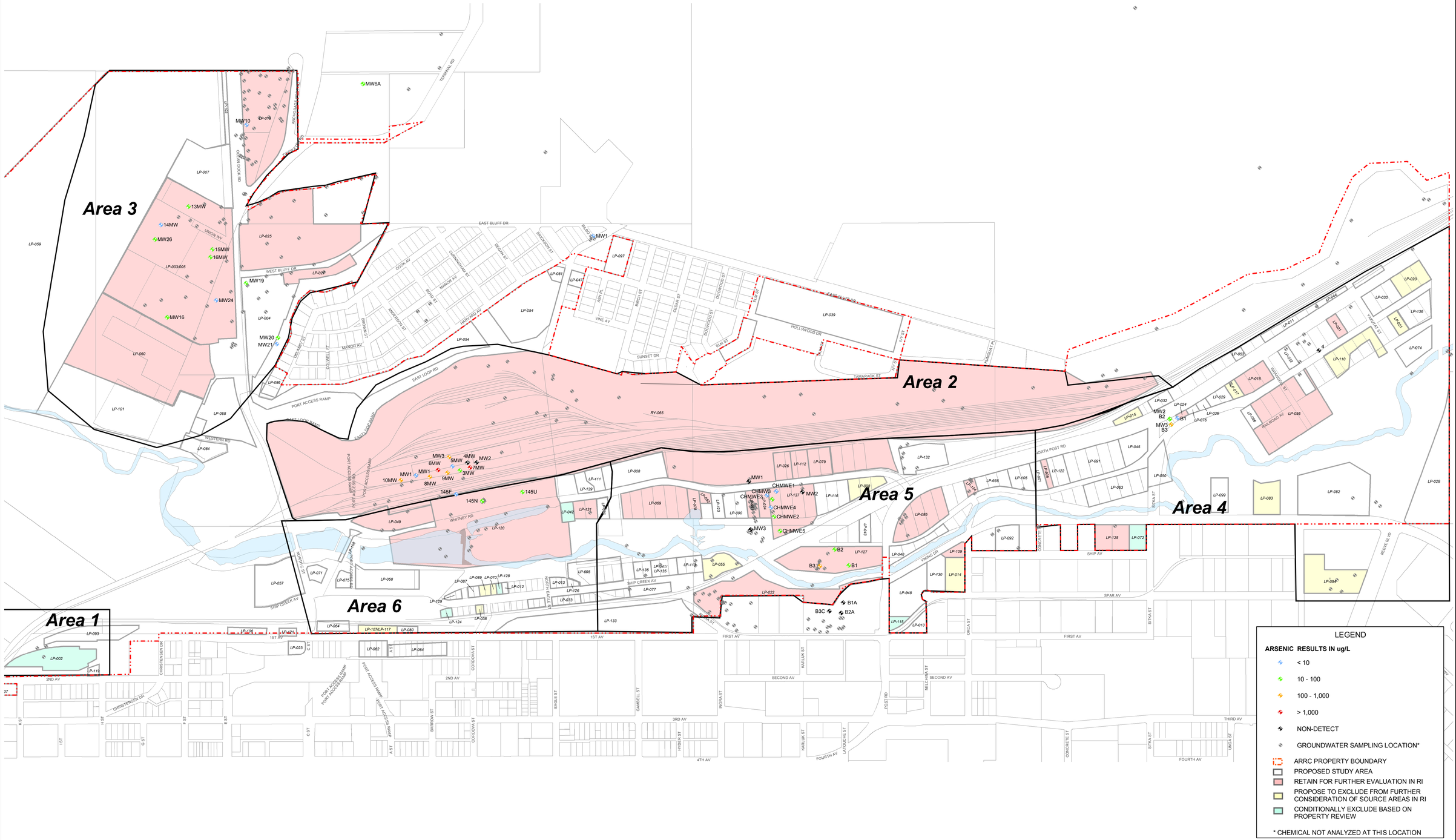
We look forward to EPA review and approval of the SBR as supplemented by this Addendum. ARRC looks forward to the opportunity to discuss the scope of the RI during the meeting now scheduled for March 2, 2005. Please do not hesitate to contact me if you have any questions. My telephone number is (907) 265-2410.

Sincerely,

Chris Cosentino /for

Ernest W. Piper
Project Coordinator

cc: H. Orlean/EPA
W. Westerfelt/CH2M HILL – 2 copies
B. Duncan/EPA
J. Frechione/ADEC



RETEC

NOTES:
1. Basemap provided by Municipality of Anchorage, August, 2004.
2. Lot ID # referenced from MOA parcel file, provided as part of the basemap dataset.
3. Property boundary digitized from ARRC CADD basemap August 12, 2004.
4. ADEC Groundwater clean up screening level used for symbol range.

0 200 400 800 Feet

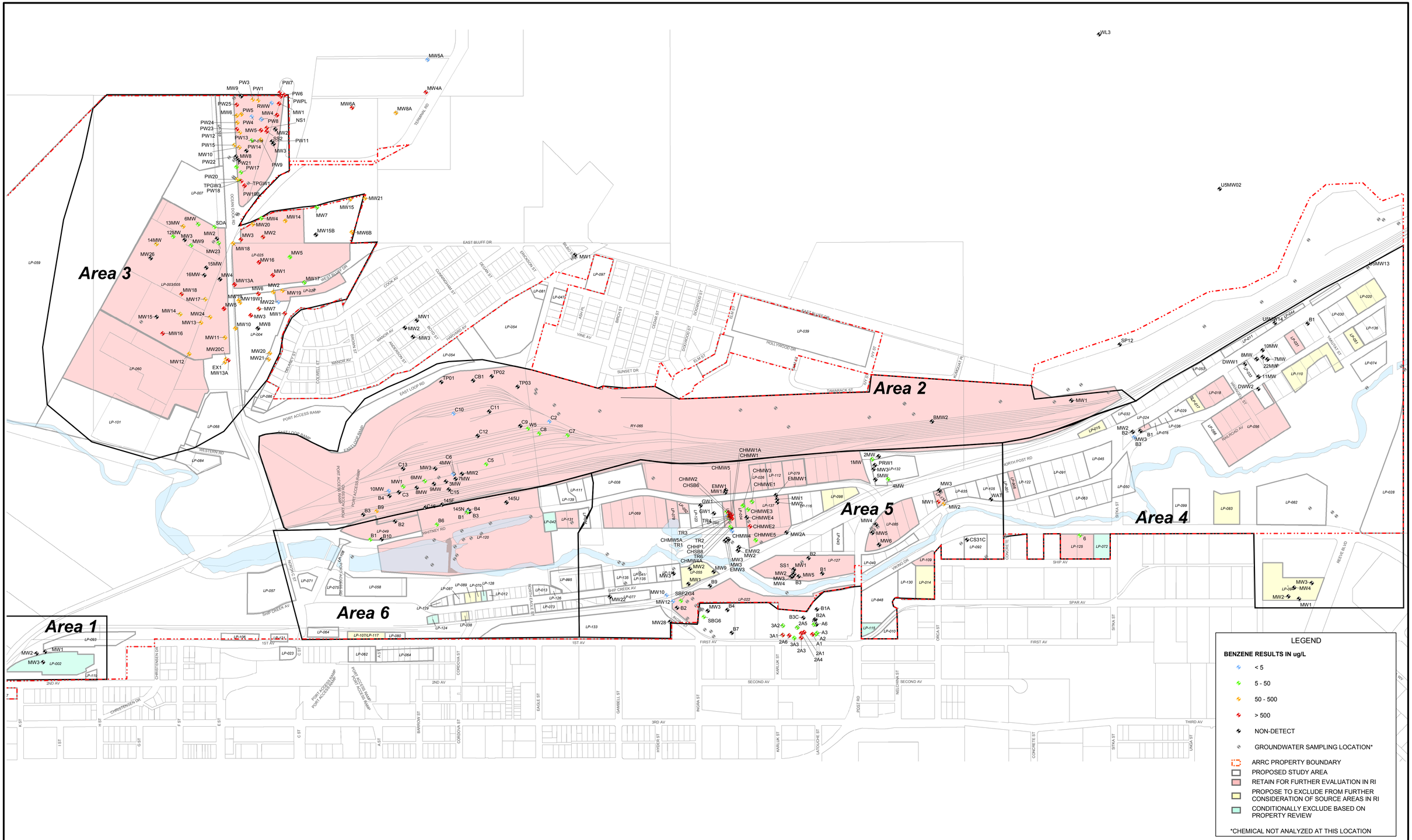
N

SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

ARSENIC IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-1**



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0 200 400 800 Feet

N

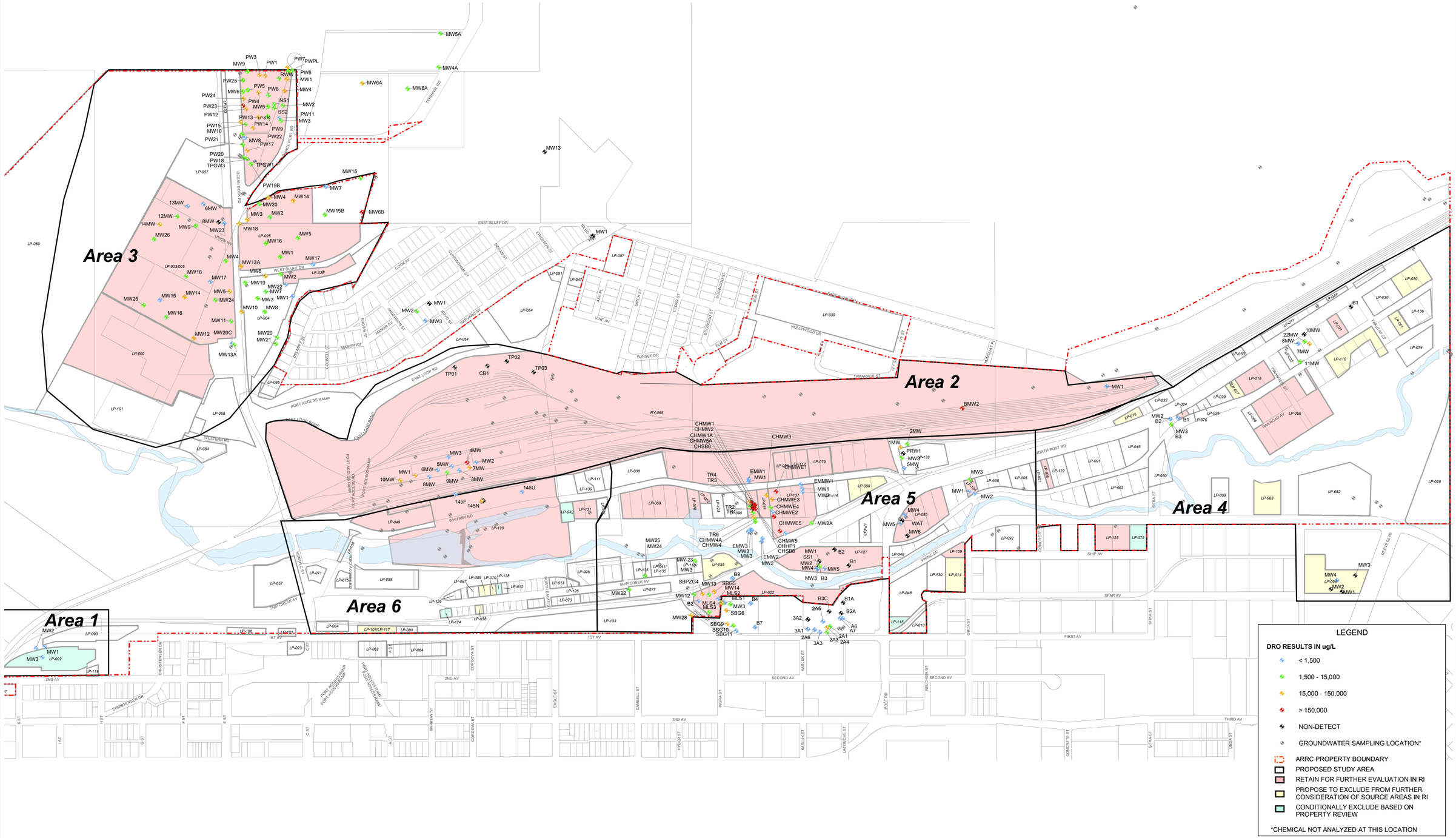
RETEC

SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

BENZENE IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-2**



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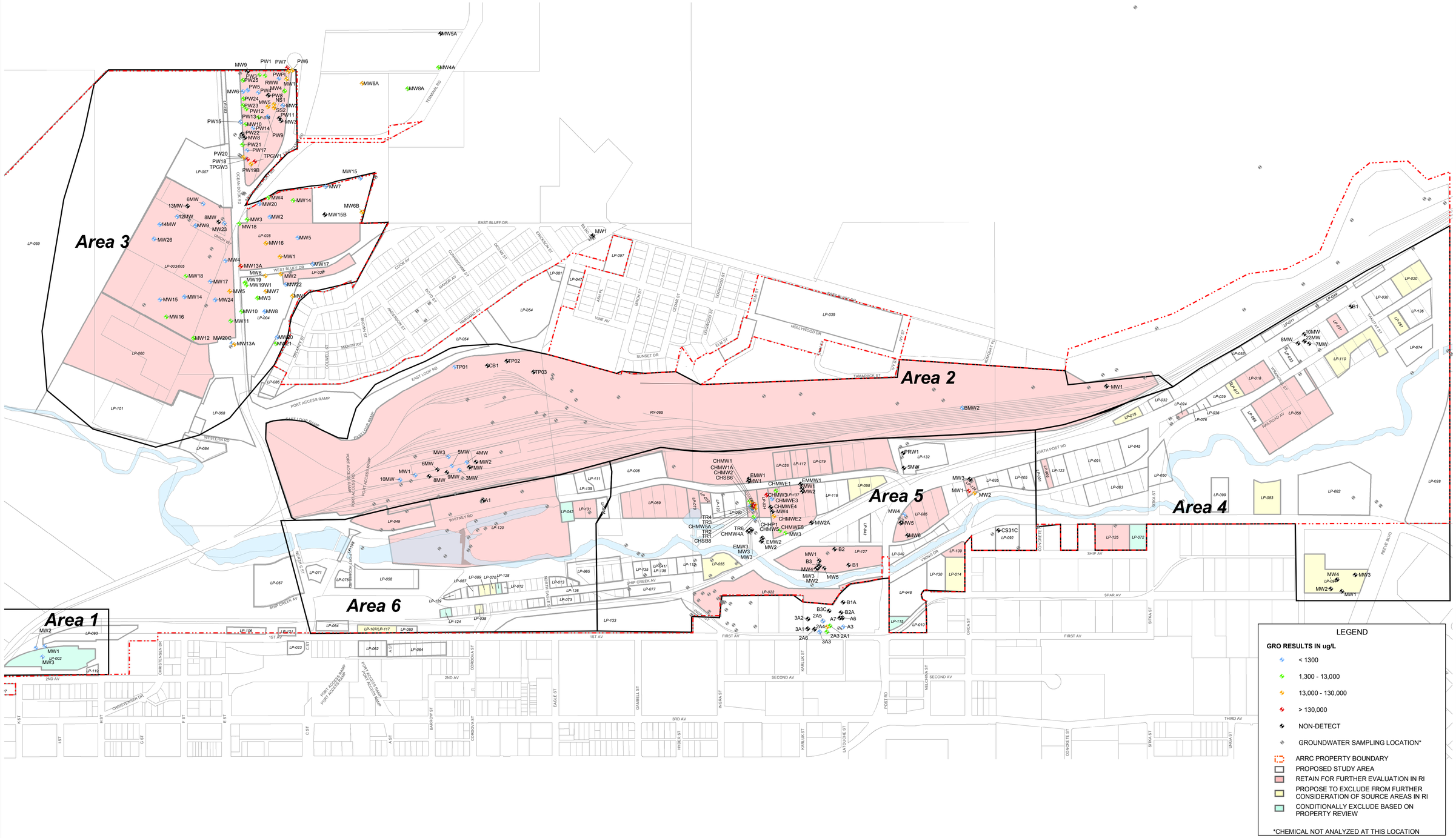
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

DIESEL RANGE ORGANICS IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-3**



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0 200 400 800 Feet

N

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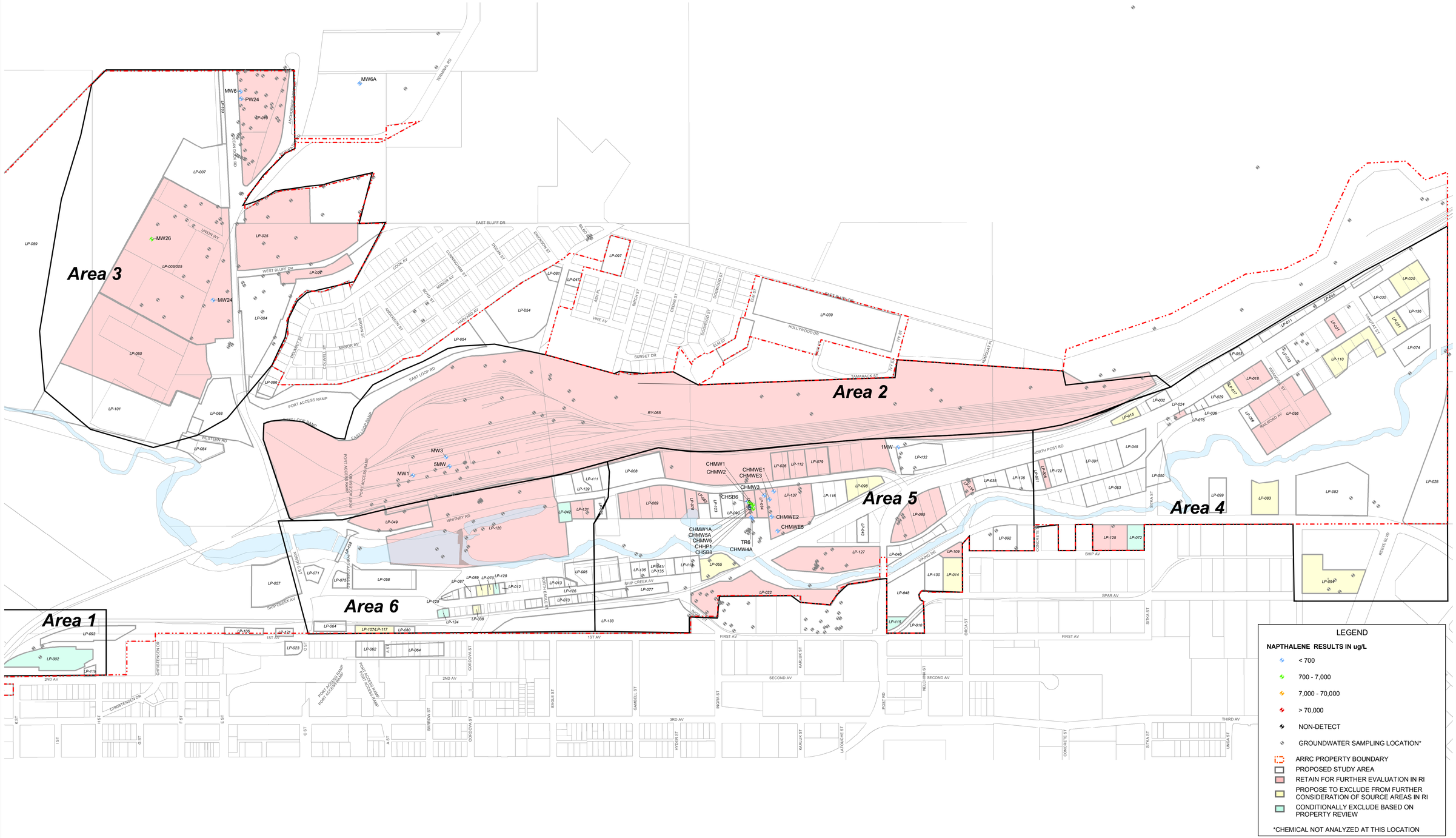
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

GASOLINE RANGE ORGANICS IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-4



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0 200 400 800 Feet

N

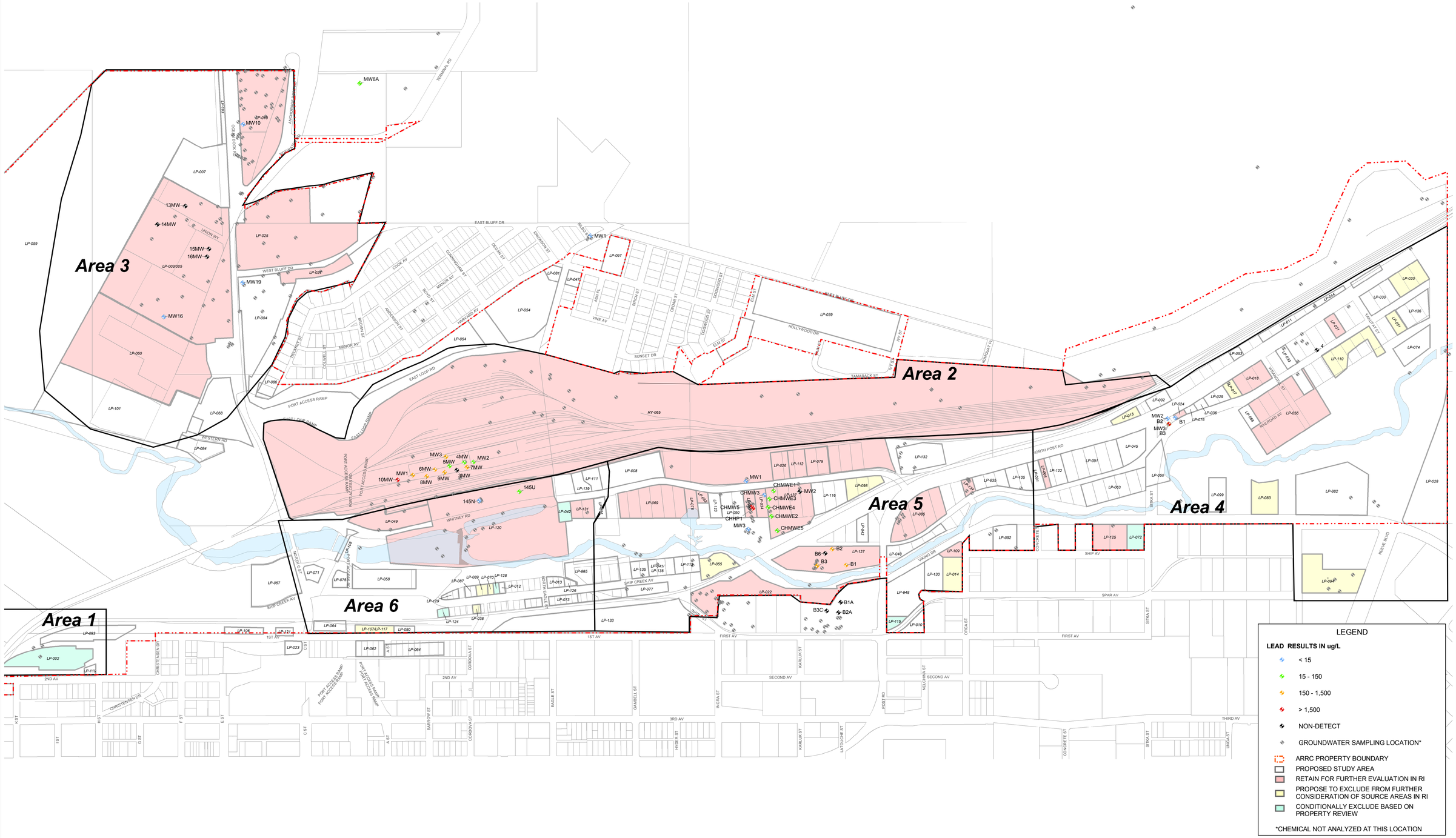
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

NAPTHALENE IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-5



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0 200 400 800 Feet

N

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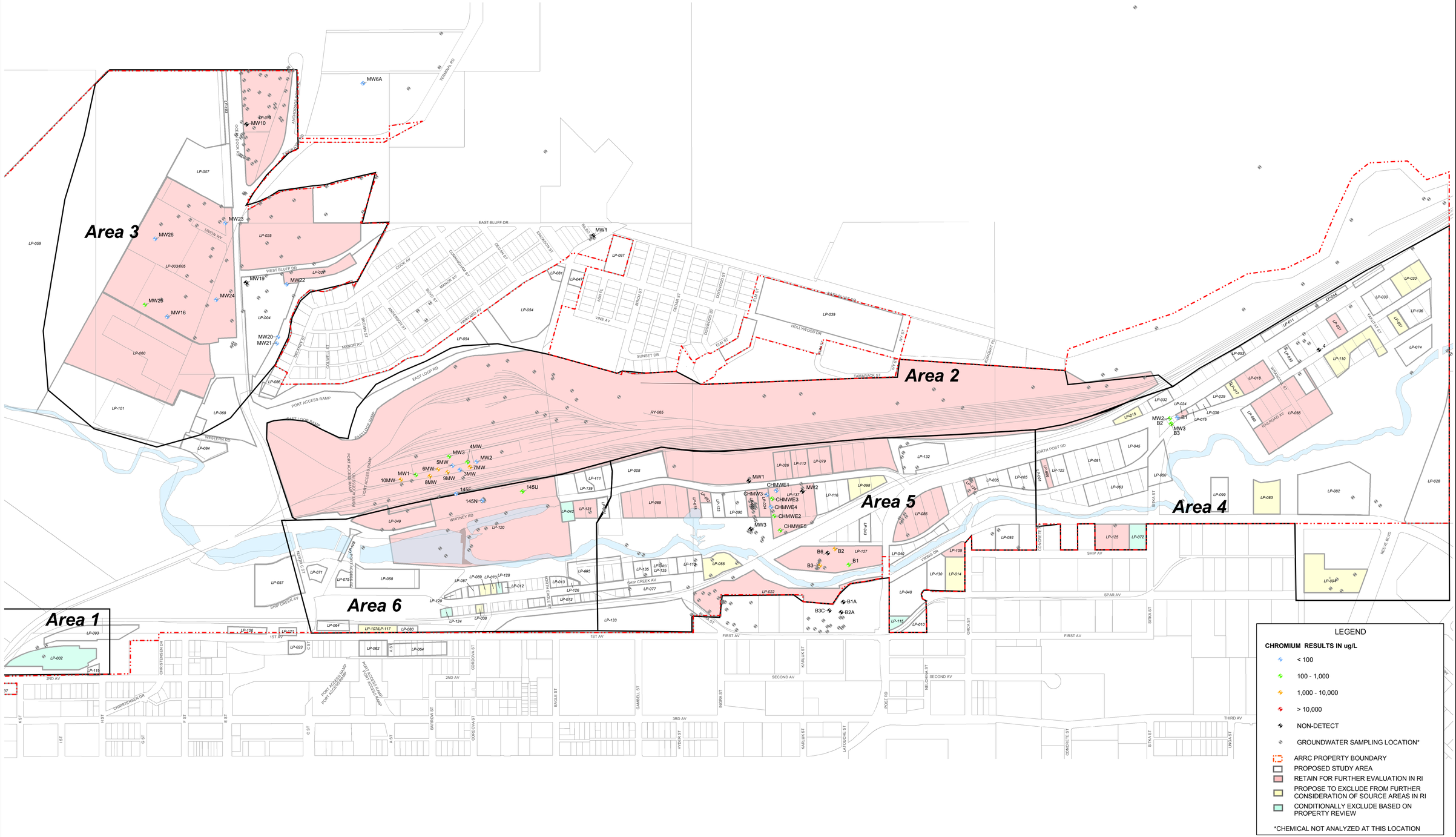
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

LEAD IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-6



RETEC

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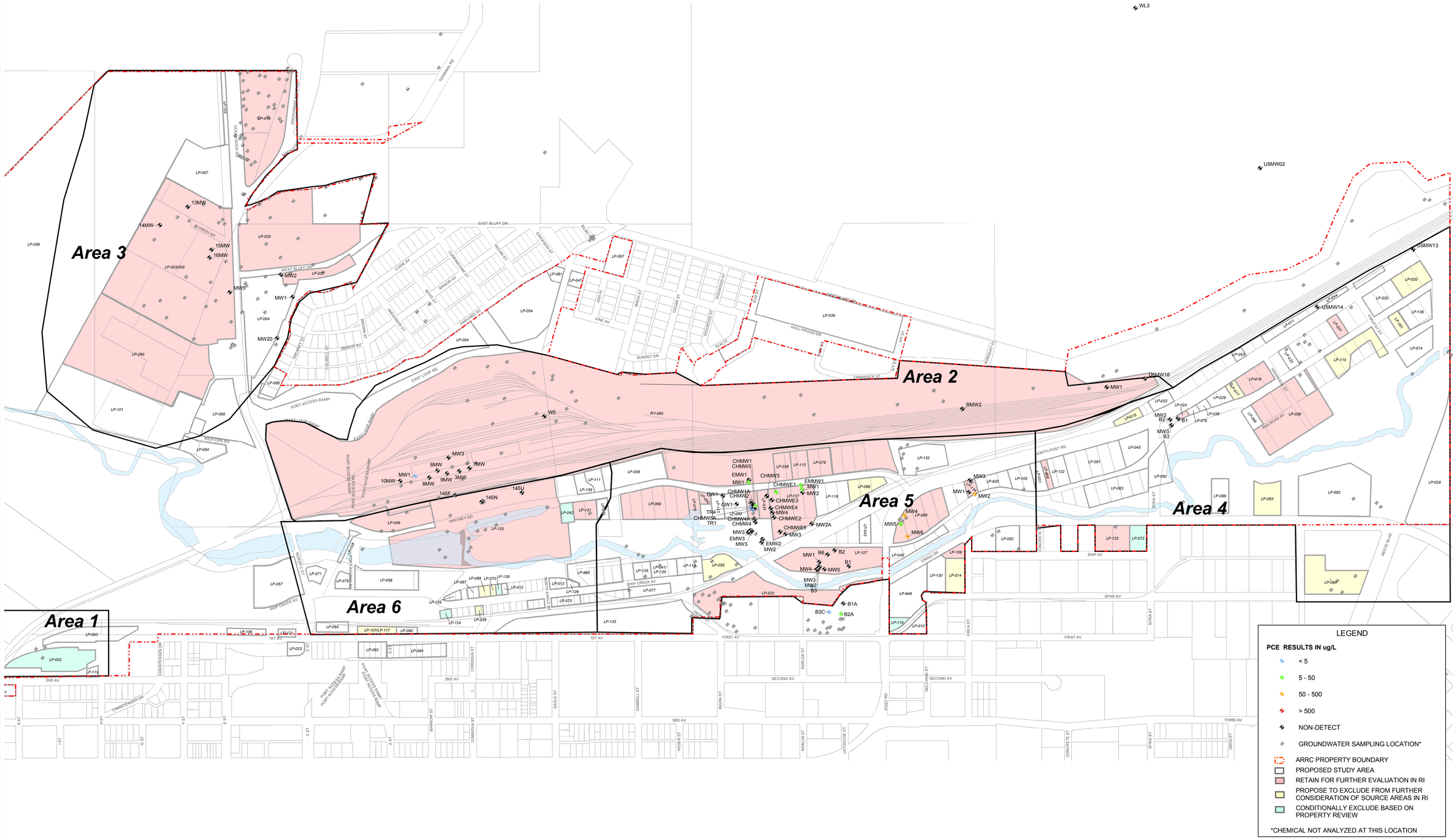
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

CHROMIUM IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-7**



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0 200 400 800 Feet

N

RETEC

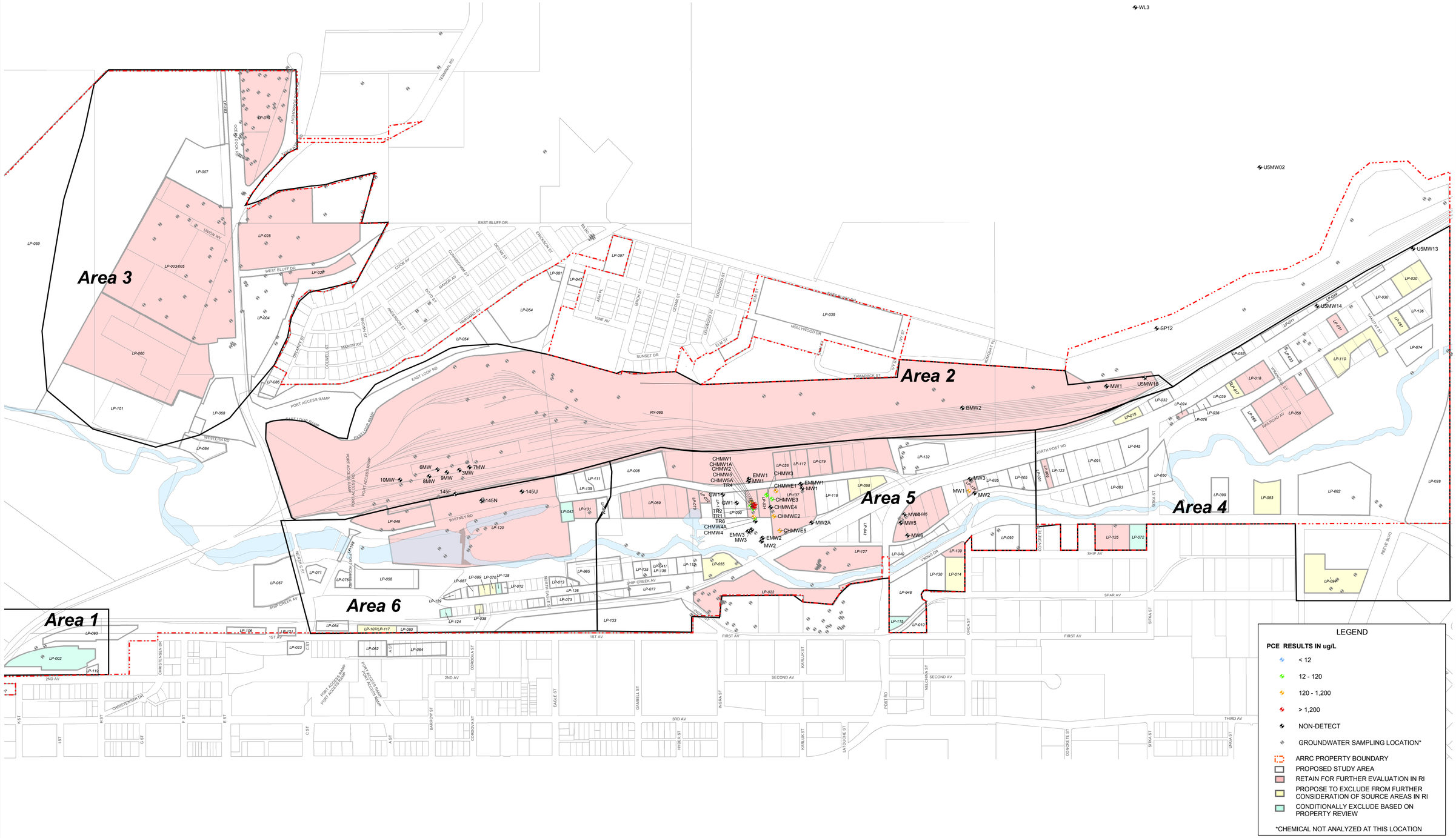
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

TETRACHLOROETHENE IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-8



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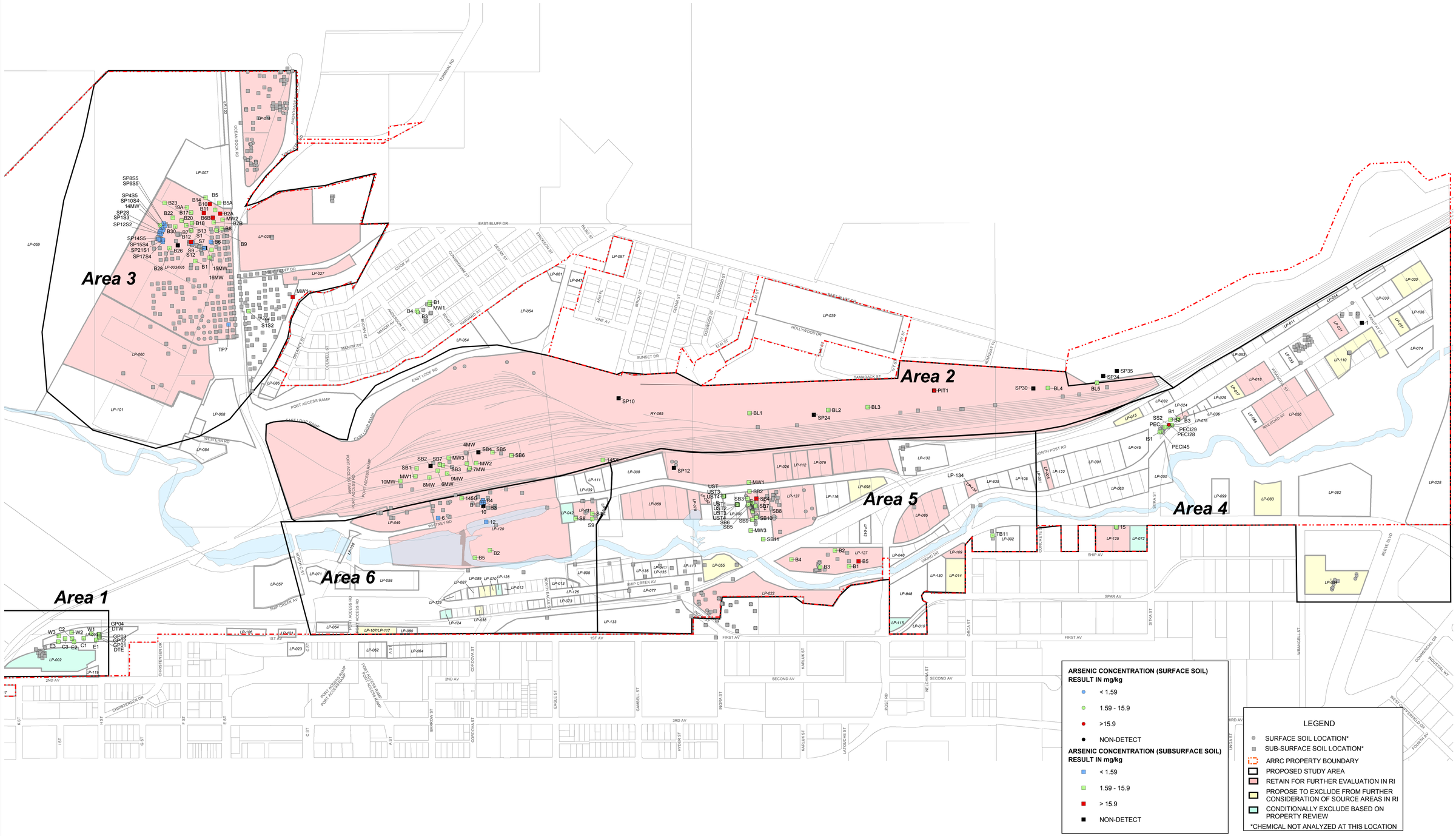
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

1,2,4 TRIMETHYLBENZENE IN GROUNDWATER

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-9



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0 200 400 800 Feet

N

RETEC

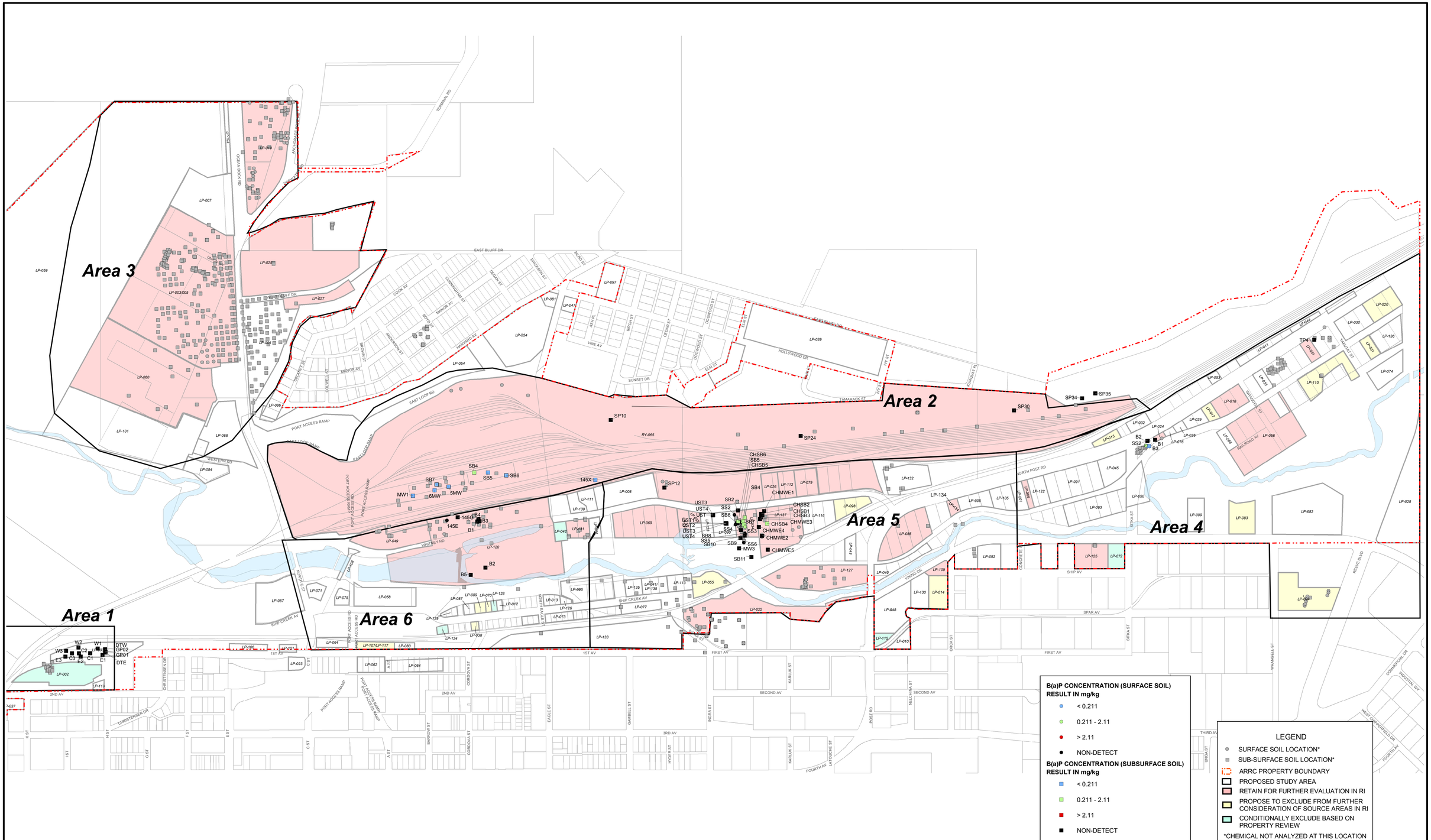
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

ARSENIC CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-10



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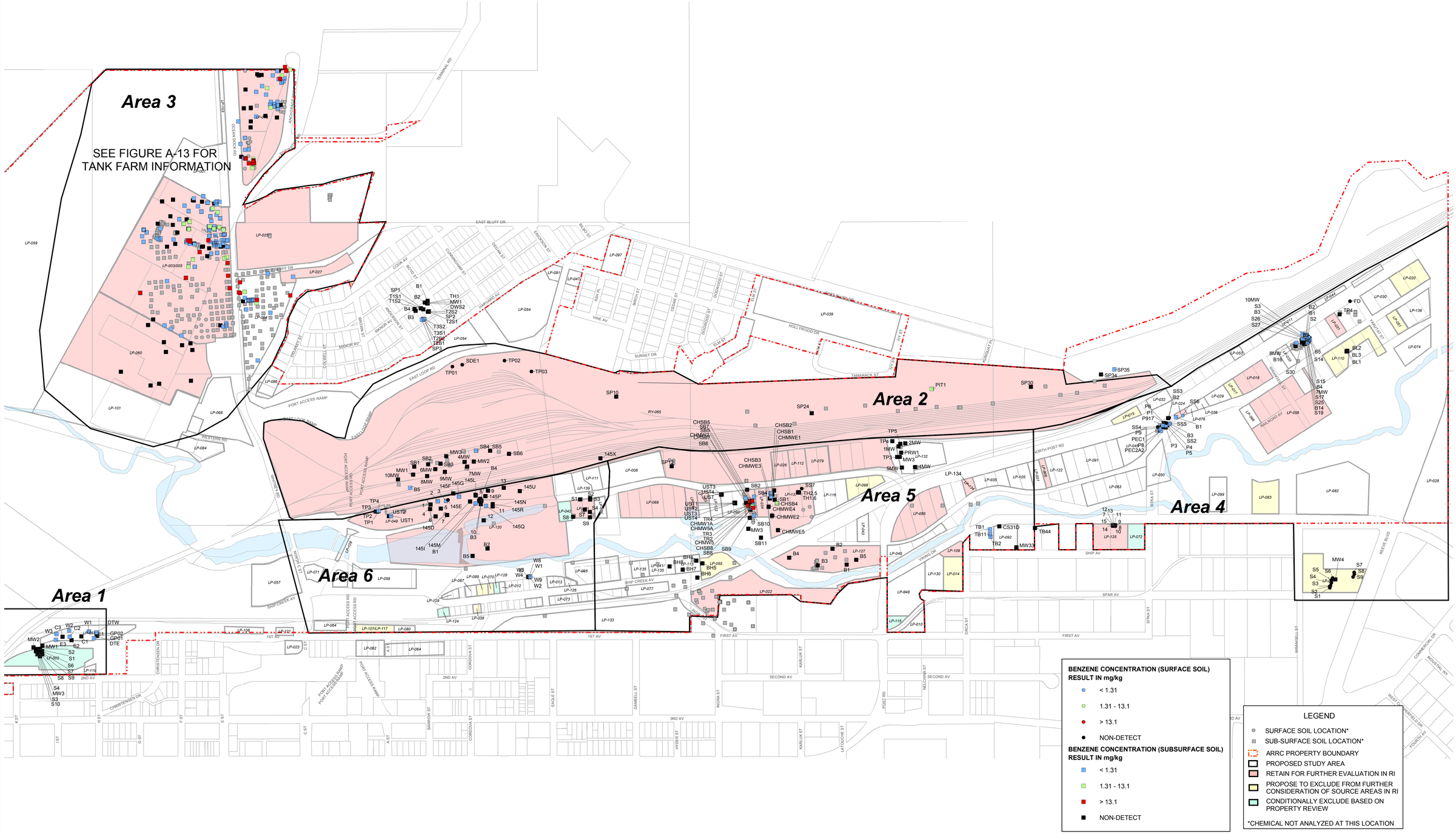
RETEC

SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

BENZO(a)PYRENE CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-11**



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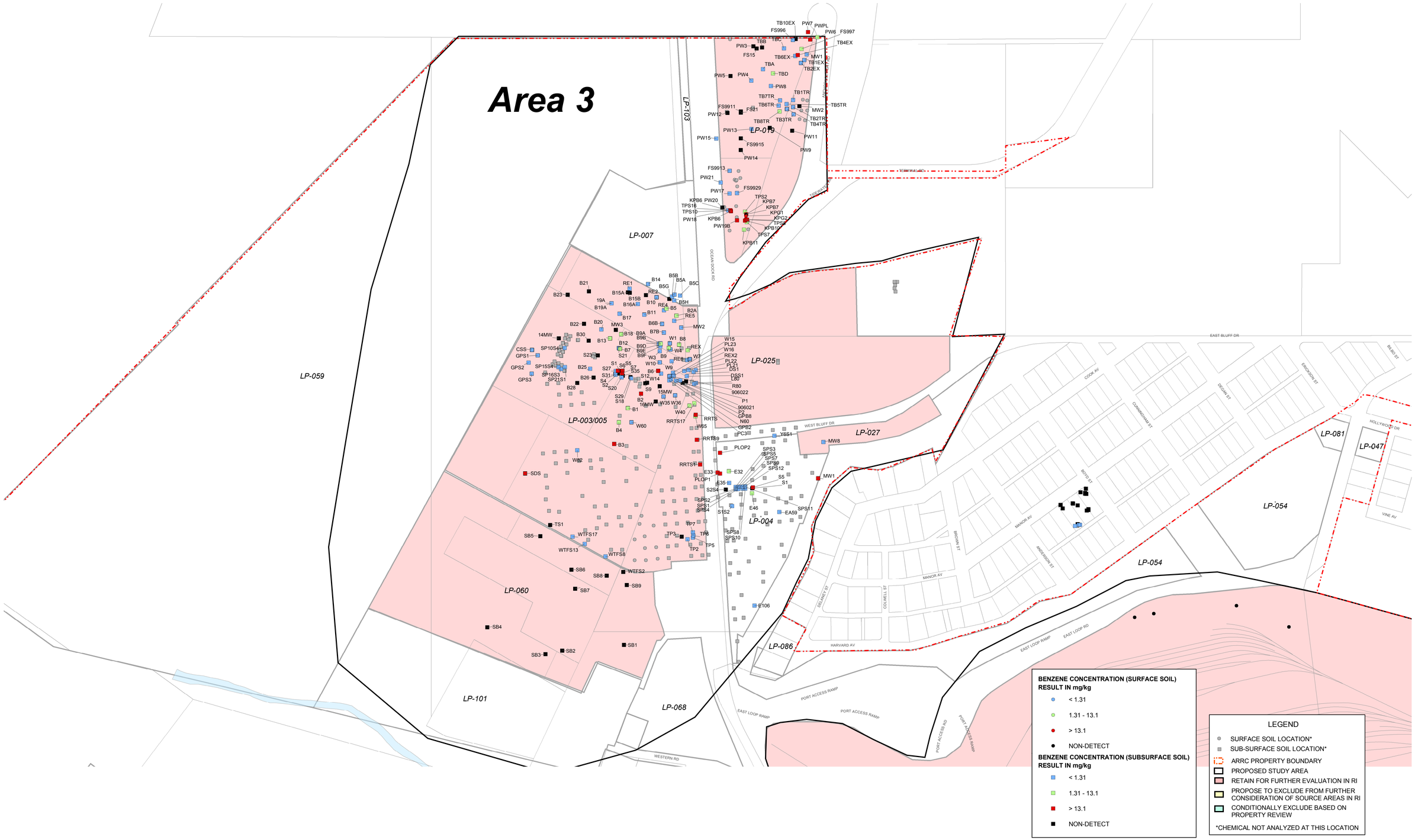
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

BENZENE CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-12



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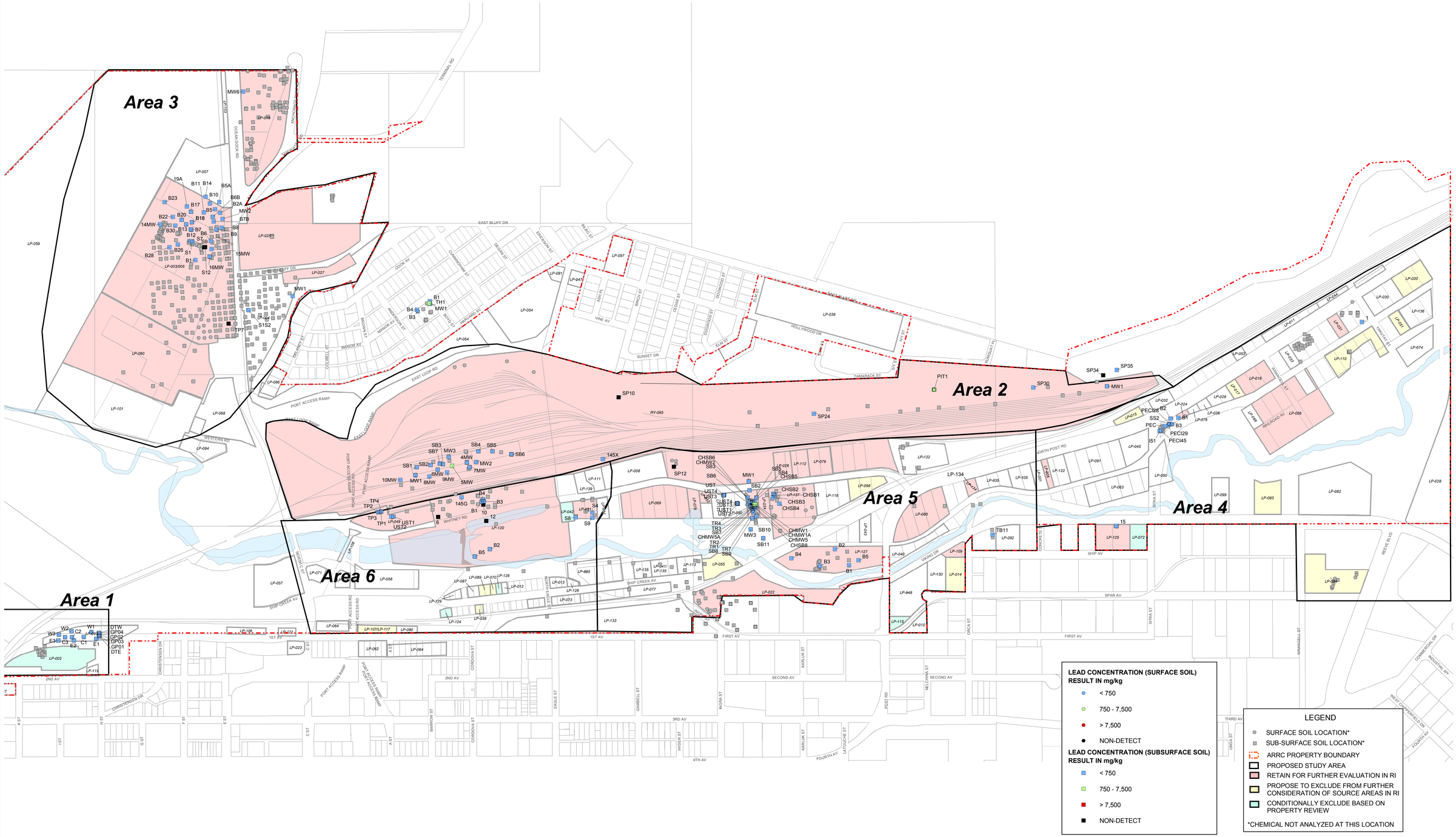
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

BENZENE CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-13**



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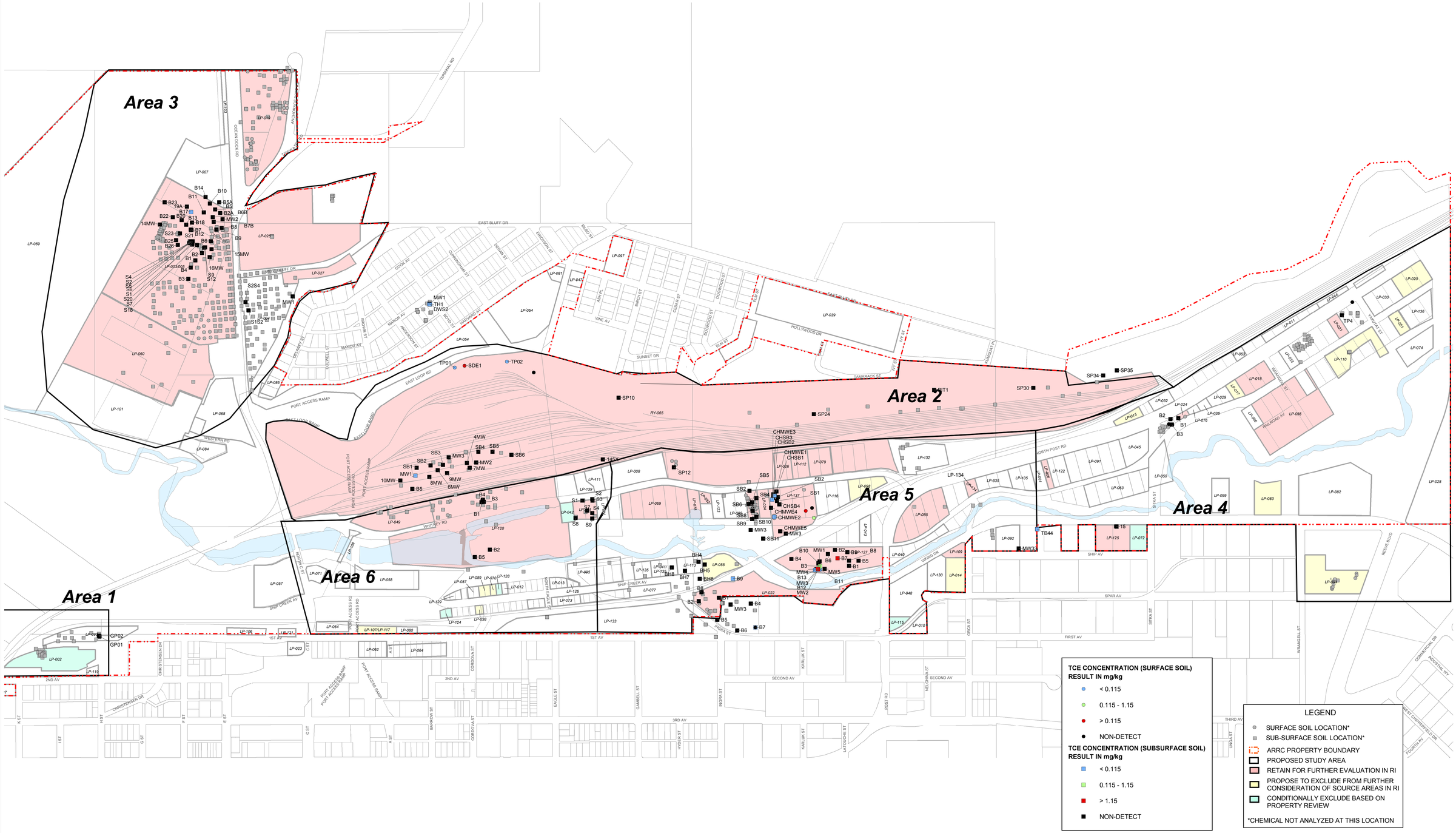
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

LEAD CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-14**



RETEC

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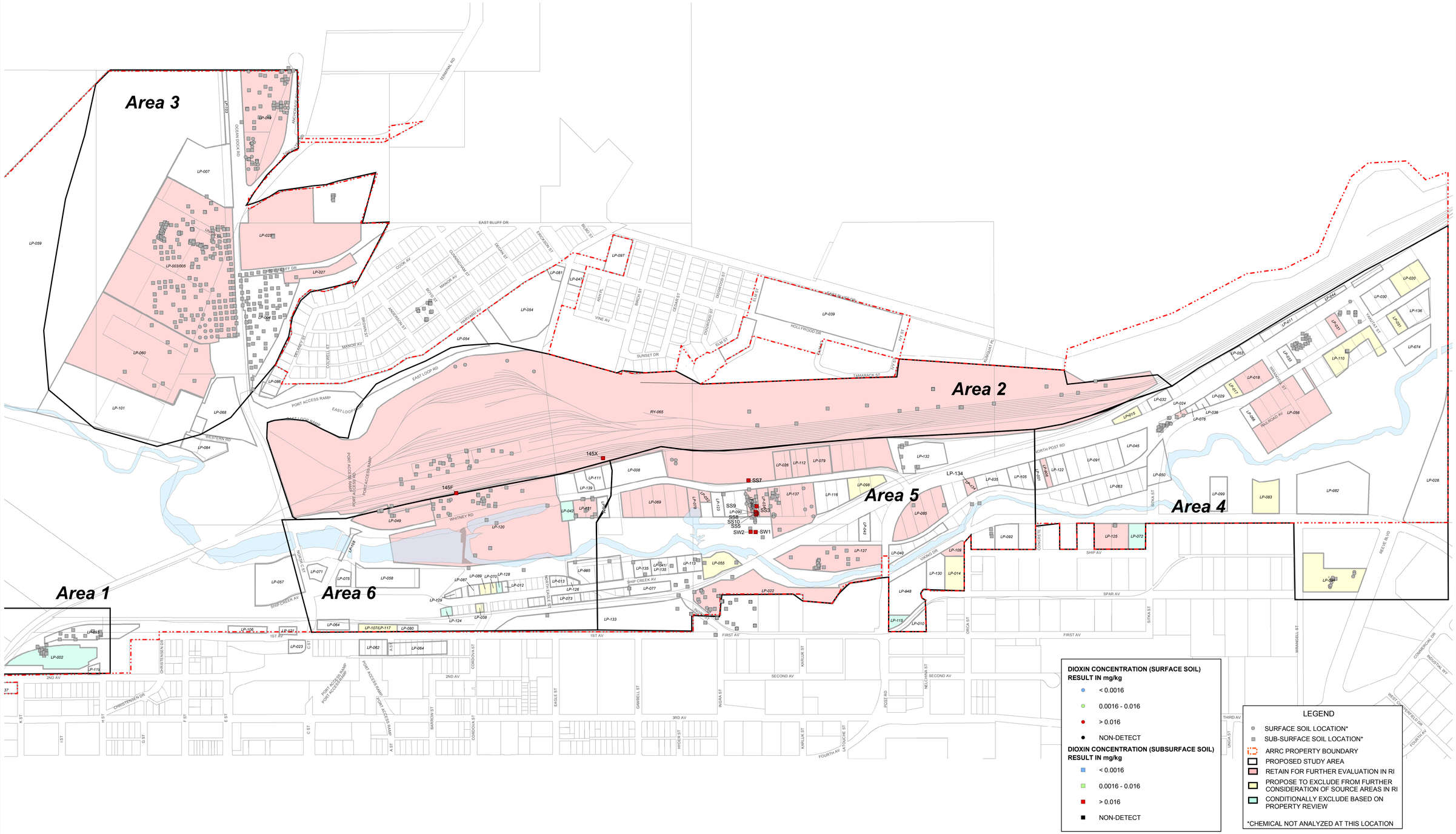
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

TRICHLOROETHENE CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc | **FIGURE: A-15**



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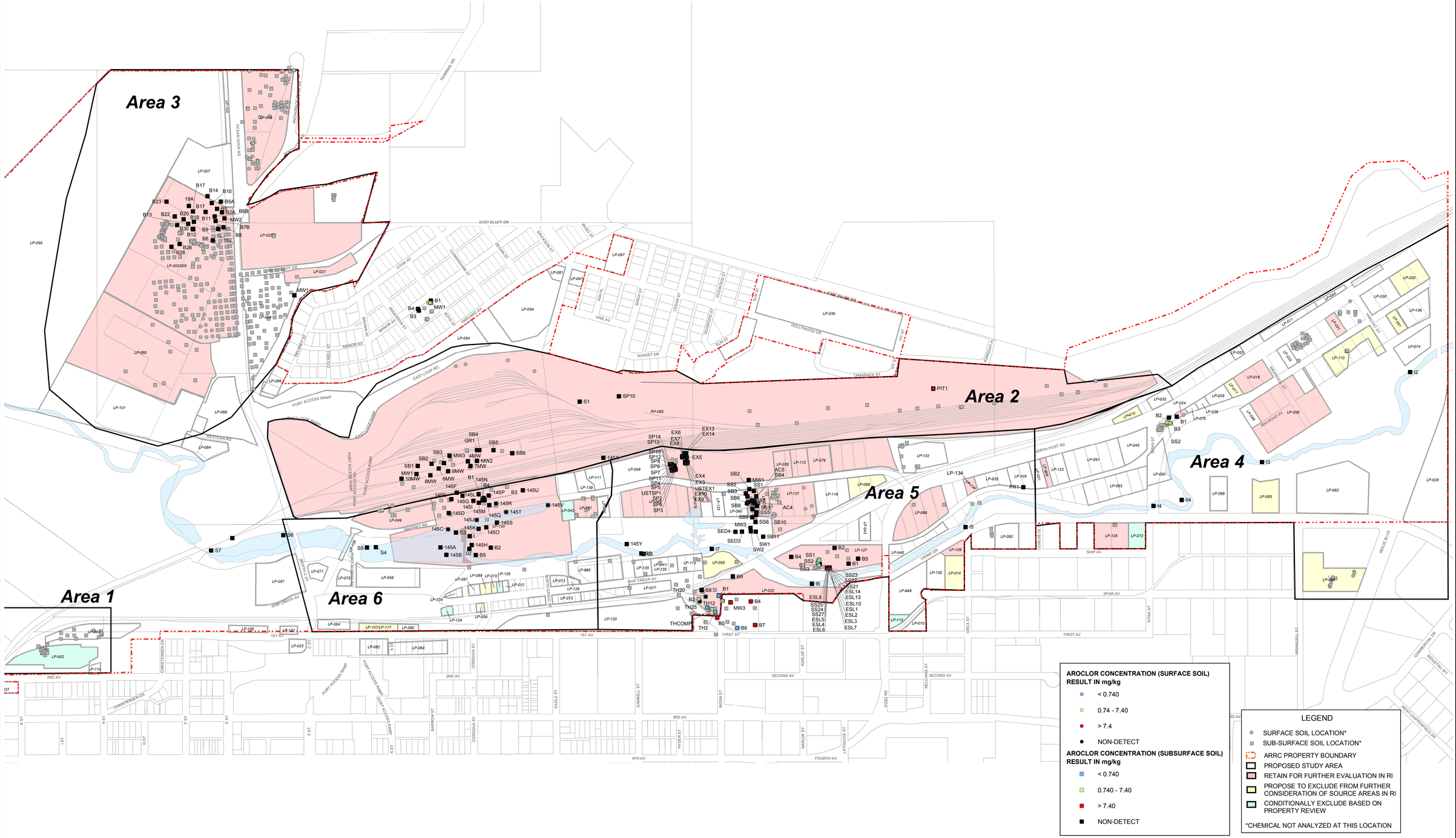
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

DIOXIN (1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin AND TOTAL HPCDD) CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-16



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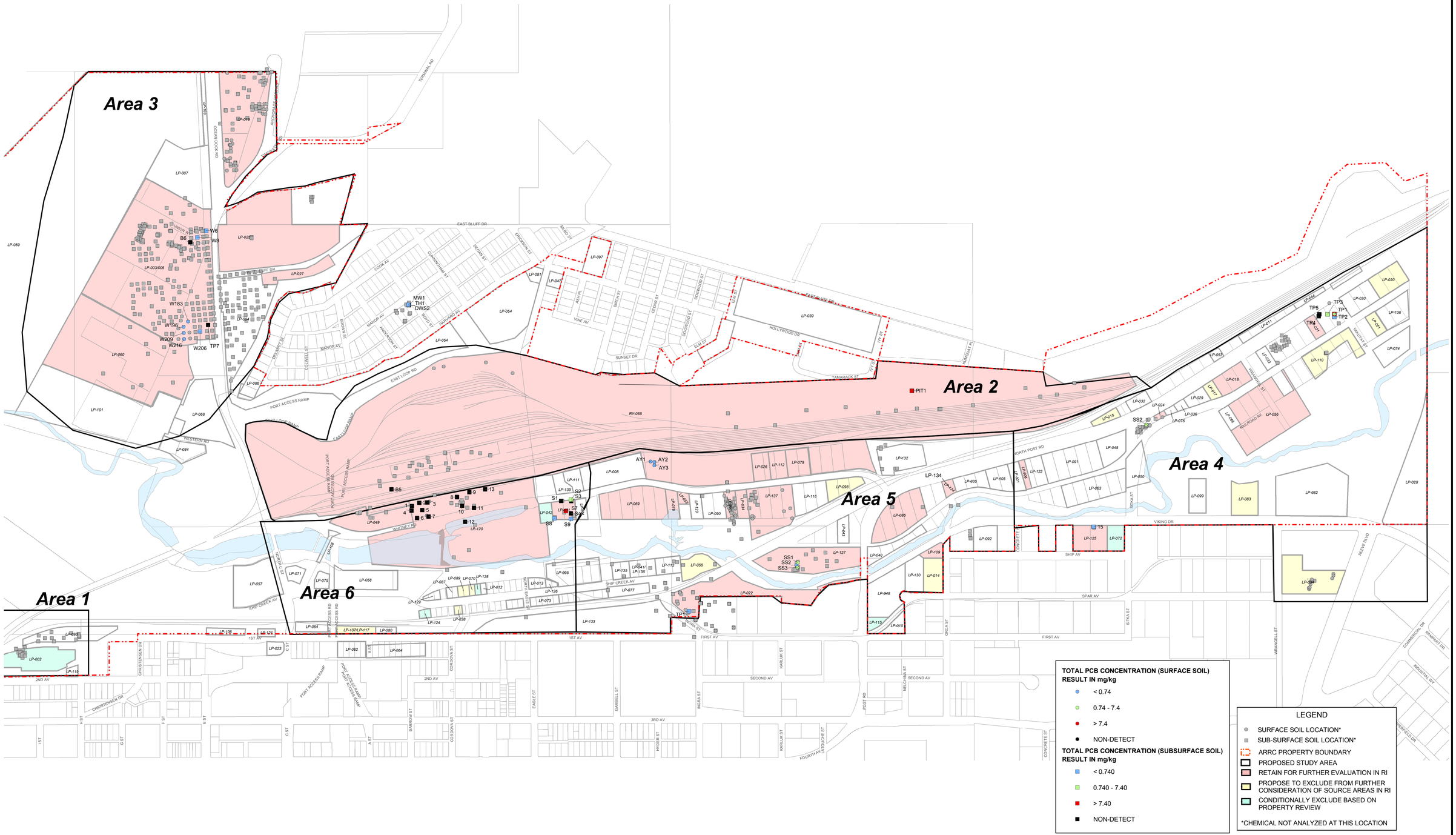
SITE BACKGROUND REPORT ADDENDUM

ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

PCB AROCLOR CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-17



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SITE BACKGROUND REPORT ADDENDUM

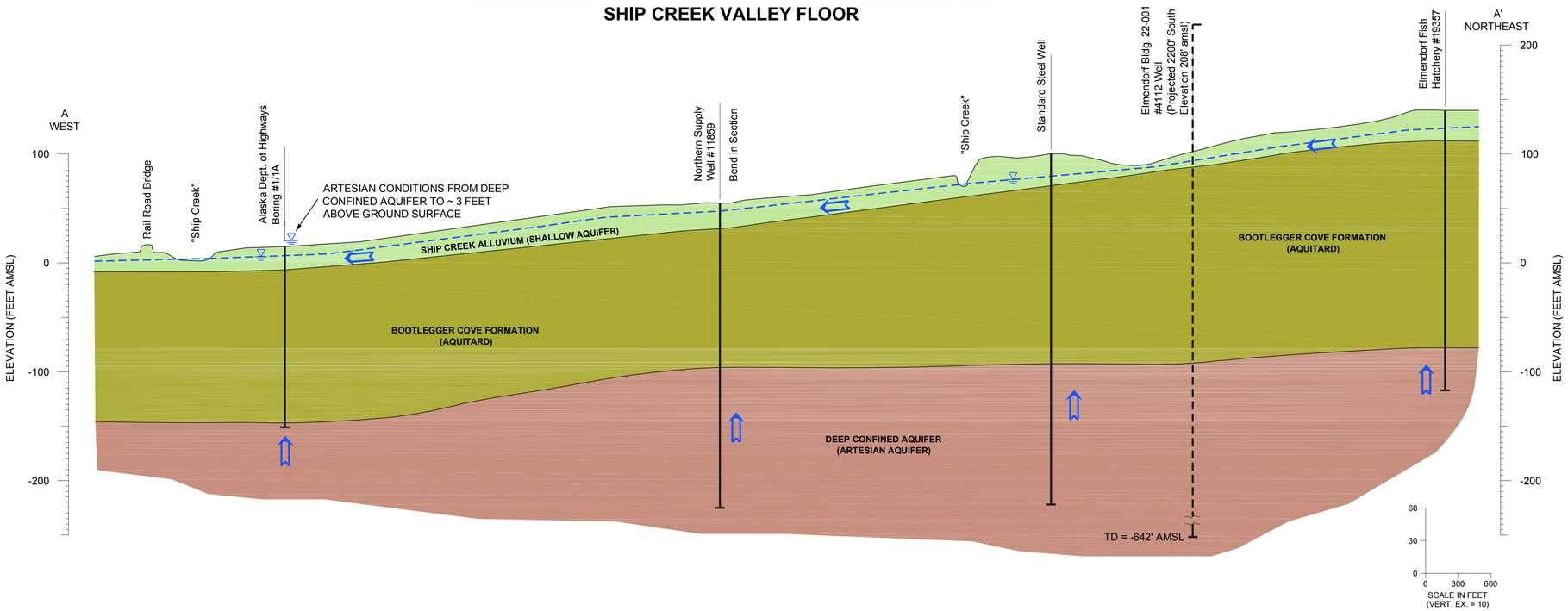
ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA

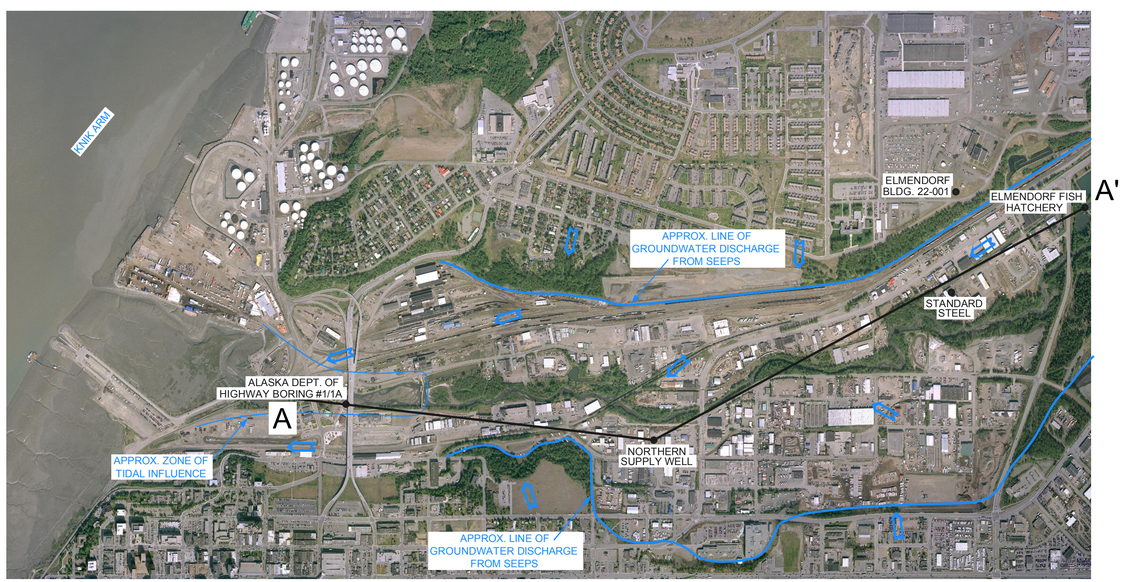
TOTAL PCB CONCENTRATIONS IN SOIL

Date: 2/1/05 | Dwn By: KBL/ftc

FIGURE: A-18

GENERALIZED GEOLOGIC CROSS-SECTION THROUGH THE SHIP CREEK VALLEY FLOOR





NOTES:

1) CROSS SECTIONS AND INSET MAP ILLUSTRATE THE HYDROGEOLOGY DISCUSSED IN SECTION 1.4.1 OF THE SITE BACKGROUND REPORT.
2) WATER SUPPLY WELL INFORMATION DERIVED FROM ALASKA DEPARTMENT OF NATURAL RESOURCES WELL LOG TRACKING SYSTEM DATABASE (WELT)
3) BASED ON THE LATERAL EXTENT AND THICKNESS OF THE BOOTLEGGER COVE FORMATION ACROSS THE SITE AND THE ARTESIAN NATURE (UPWARD HYDRAULIC GRADIENT) OF THE UNDERLYING DEEP CONFINED AQUIFER, IMPACTS FROM THE SHALLOW AQUIFER TO THE DEEP CONFINED AQUIFER ARE UNLIKELY.

LEGEND

GLACIAL OUTWASH. Composed of glacio-fluvial outwash laid down south of the Naptowne age (late Wisconsin) Elmendorf moraine. The outwash consists of sands and gravels displaying cross bedding and graded beds. The outwash appears to be about 50 to 60 feet thick immediately north of the railyard and has a relatively high hydraulic conductivity. An unconfined aquifer exists at the base of the outwash perched on the underlying silts and clays of the Bootlegger Cove formation.

SHIP CREEK ALLUVIUM. Ship Creek alluvium occupies the bottom of the Ship Creek valley and within the study overlies and is incised into the silts and clays of the Bootlegger Cove formation. The Ship Creek alluvium varies in texture but includes sands and gravels transported and deposited in the fast flowing waters of the Ship Creek channel; medium to coarse sands deposited on point bars in the stream; fine sands and silts deposited as overbank floodplain sediments and abandoned channel fill; and may include peat which accumulated in abandoned channels and on low lying areas of the floodplain. The Ship Creek alluvium varies in thickness from less than 1 foot to about 25 feet. Much of the alluvium is capped by fill materials in the valley floor but are not depicted in the cross section.

BOOTLEGGER COVE FORMATION. The Bootlegger Cove formation consists predominately of silts and clays deposited in a glacio-marine or glacio-lacustrine environment, although Updike et al. (1986) have identified sandy and sandy gravelly facies within the Bootlegger Cove formation. The silts and clays are typically gray and massive, and have a low permeability. Bootlegger Cove formation underlies the outwash, Ship Creek alluvium and tidal/estuarine sediments with a stratigraphic thickness that varies from about 120 feet to greater than 200 feet across the study area. The Bootlegger Cove formation. The combined low permeability and thickness of the formation function as an aquitard between shallow unconfined groundwater (within the Ship Creek Alluvium and Glacial Outwash) and the underlying confined aquifer.

DEEP CONFINED AQUIFER. Sequence of sands, gravels, and till several hundred feet thick that underlie the Bootlegger Cove formation. The sands and gravels underlying the Bootlegger Cove formation are saturated and constitute a confined aquifer. Geotechnical borings and wells that have been tapped this aquifer within the study area exhibit artesian conditions.

GEOLOGIC CONTACT (DASHED WHERE INFERRED)

POTENTIOMETRIC SURFACE OF SHALLOW AQUIFER

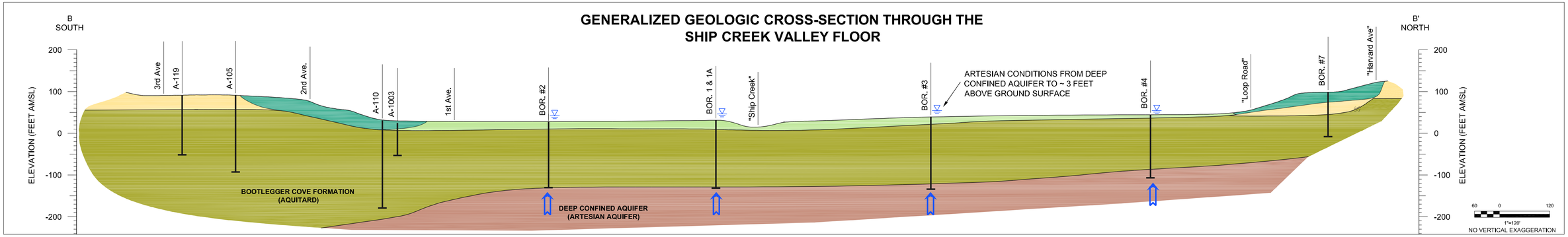
GROUNDWATER FLOW DIRECTION

SOIL BORING

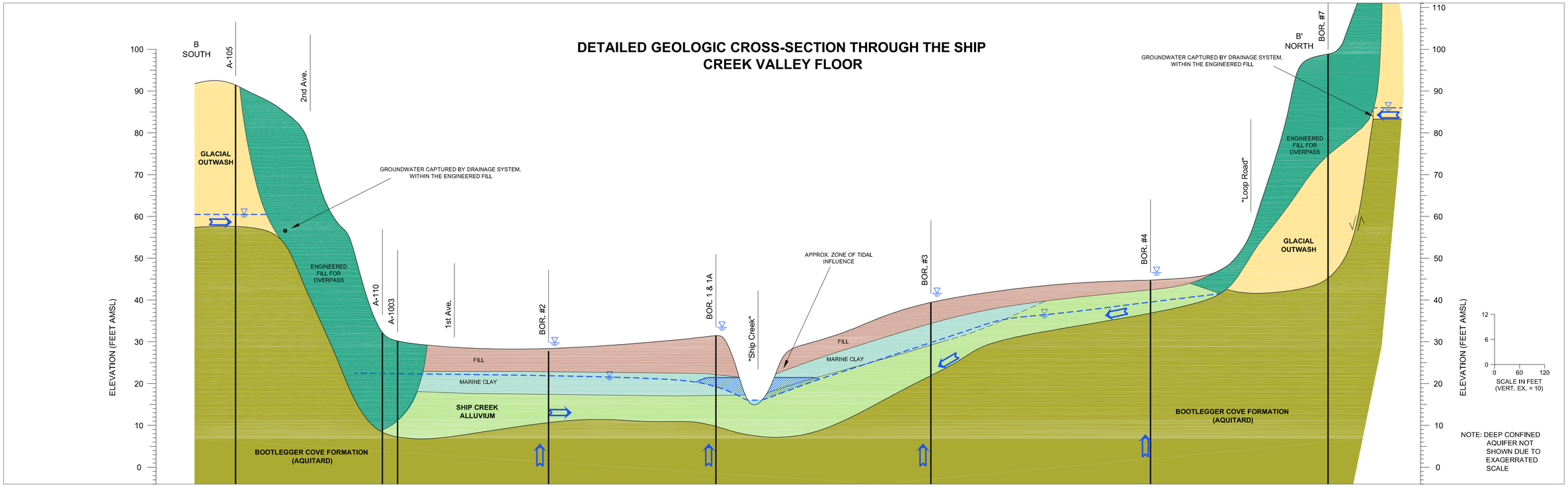
RETEC

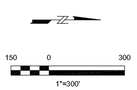
SITE BACKGROUND REPORT ADDENDUM ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA			GENERALIZED HYDROSTRATIGRAPHIC SECTION OF THE SHIP CREEK VALLEY
DATE: 02/01/05	DRWN: E.S.S./DEN		FIGURE A-19

GENERALIZED GEOLOGIC CROSS-SECTION THROUGH THE SHIP CREEK VALLEY FLOOR



DETAILED GEOLOGIC CROSS-SECTION THROUGH THE SHIP CREEK VALLEY FLOOR





NOTES:

1) CROSS SECTIONS AND INSET MAP ILLUSTRATE THE HYDROGEOLOGY DISCUSSED IN SECTION 1.4.1 OF THE SITE BACKGROUND REPORT.
2) SECTION BASED ON ALASKA DEPARTMENT OF HIGHWAYS, 1968, FOUNDATION REPORT ANCHORAGE PORT ACCESS VIADUCT, BRIDGE NO. 455, PROJECT NO. F-042-1 (23) PHASE I, JANUARY 1968.
3) BASED ON THE LATERAL EXTENT AND THICKNESS OF THE BOOTLEGGER COVE FORMATION ACROSS THE SITE AND THE ARTESIAN NATURE (UPWARD HYDRAULIC GRADIENT) OF THE UNDERLYING DEEP CONFINED AQUIFER, IMPACTS FROM THE SHALLOW AQUIFER TO THE DEEP CONFINED AQUIFER ARE UNLIKELY.

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LEGEND

GLACIAL OUTWASH. Composed of glacio-fluvial outwash laid down south of the Naptowne age (late Wisconsin) Elmendorf moraine. The outwash consists of sands and gravels displaying cross bedding and graded beds. The outwash appears to be about 50 to 60 feet thick immediately north of the railyard and has a relatively high hydraulic conductivity. An unconfined aquifer exists at the base of the outwash perched on the underlying silts and clays of the Bootlegger Cove formation.

SHIP CREEK ALLUVIUM / FILL/Marine Clay. Ship Creek alluvium occupies the bottom of the Ship Creek valley and within the study overlies and is incised into the silts and clays of the Bootlegger Cove formation. The Ship Creek alluvium varies in texture but includes sands and gravels transported and deposited in the fast flowing waters of the Ship Creek channel; medium to coarse sands deposited on point bars in the stream; fine sands and silts deposited as overbank floodplain sediments and abandoned channel fill; and may include peat which accumulated in abandoned channels and on low lying areas of the floodplain. The Ship Creek alluvium varies in thickness from less than 1 foot to about 25 feet. Much of the alluvium is capped by fill material in the valley floor. The **Fill** material above the Ship Creek Alluvium consists of reworked silt, sand, and gravel, and rail ballast. The **Marine Clay** consists of gray to black silty clay of low plasticity with up to 5% organic material.

BOOTLEGGER COVE FORMATION. The Bootlegger Cove formation consists predominately of silts and clays deposited in a glacio-marine or glacio-lacustrine environment, although Updike et al. (1986) have identified sandy and sandy gravelly facies within the Bootlegger Cove formation. The silts and clays are typically gray and massive, and have a low permeability. Bootlegger Cove formation underlies the outwash, Ship Creek alluvium and tidal estuarine sediments with a stratigraphic thickness that varies from about 120 feet to greater than 200 feet across the study area. The Bootlegger Cove formation. The combined low permeability and thickness of the formation function as an aquitard between shallow unconfined groundwater (within the Ship Creek Alluvium and Glacial Outwash) and the underlying confined aquifer.

DEEP CONFINED AQUIFER. Sequence of sands, gravels, and till several hundred feet thick that underlie the Bootlegger Cove formation. The sands and gravels underlying the Bootlegger Cove formation are saturated and constitute a confined aquifer. Geotechnical borings and wells that have been tapped this aquifer within the study area exhibit artesian conditions.

GEOLOGIC CONTACT (DASHED WHERE INFERRED)

POTENTIOMETRIC SURFACE OF SHALLOW AQUIFER

GROUNDWATER FLOW DIRECTION

SOIL BORING

SITE BACKGROUND REPORT ADDENDUM ALASKA RAILROAD CORPORATION, ANCHORAGE, ALASKA		GENERALIZED HYDROSTRATIGRAPHIC SECTIONS OF THE SHIP CREEK VALLEY
DATE: 02/01/05	DRWN: E.S.S./DEN	FIGURE A-20