DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	Eastman Kodak Company Kodak Park
Facility Address:	343 State Street, Rochester, New York 14650
Facility EPA ID #:	NYD980592497

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   ___ if data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. _

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Site Description, Kodak Park

The facility is located at Kodak Park, in the vicinity of Ridge Road, located on the western side of Rochester, in Monroe County, New York. The facility is approximately 2000 acres in size, and extends approximately 4 miles in an east-west direction (see Figure 1.1). The facility is surrounded by a mix of commercial, industrial and residential properties. The facility is bounded on the east by the Genesee River, and extends to the west to Interstate Route 390. Since 1891, Kodak Park has been Eastman Kodak Company's primary photographic manufacturing facility. Operations at the site have included manufacture of film and paper base; preparation and coating of photographic emulsions; production of vitamins and food additives; manufacture of toner; cutting packaging and distribution of finished products; and the production of synthetic organic chemicals, dyes and couplers.

Growth of the facility generally progressed from east to west, so the older, more densely developed portions of Kodak Park are located towards the eastern end. From east to west, Kodak Park is broken geographically into subsections named KPE, KPW, KPX, KPM, and KPS (as indicated on Figure 1.1). In 2008, Kodak completed a multi-year "Footprint Reduction Program" involving many building demolitions, and extensive restructuring of active manufacturing operations. As a result of this program, certain historic operations described below have been terminated. KPE includes film manufacturing and is supported by solvent storage and recovery operations in KPW that are linked by pipeline. KPE also includes the wastewater treatment plant and sludge incinerator that are operated by Kodak. KPX is mainly used for distribution services, but it also included a hazardous waste incinerator (at Building 218), and related storage facilities. This hazardous waste incinerator and related storage facilities were closed in 2007, and the incinerator was subsequently demolished. KPM included synthetic chemical production, solvent storage and recovery operations, film coating, polyester recovery and a major steam/electric generating plant. KPS was mainly used for warehousing and distribution of products. Portions of KPS, including a major warehousing operation (Building B-605) and all of KPT have been sold and are no longer part of the facility. Hazardous waste management facilities at Kodak Park currently include tanks, containers, transfer stations, a wastewater treatment plant, and a sludge incinerator. The hazardous waste tank and container storage facilities are now operated as less than 90 day units. The incinerator is covered by a NYCRR Part 373 hazardous waste management permit. The New York State Department of Environmental Conservation (NYSDEC) has identified and listed 5 inactive hazardous waste disposal sites at Kodak Park, with designated sites being in KPE, KPW, KPX and KPM. Most of the sites were listed for documented inadvertent releases of hazardous waste to the environment, not for intentional disposal.

Kodak began investigating environmental conditions at Kodak Park under NYSDEC oversight in 1988, initially focusing on areas of known releases and high risk facility perimeters. Kodak subsequently conducted formal RCRA corrective action activities for Kodak Park. The RCRA Facility Assessment for Kodak Park was completed in 1998. The facility currently includes 696 Solid Waste Management Units (SWMUs). SWMUs were grouped into investigation areas for the administration of subsequent corrective action activities. Since 1988 Kodak has completed more than 100 investigations of hydrogeologic, soil, sediment, air, and vapor intrusion conditions at and in the vicinity of Kodak Park. Investigations have been completed and interim and final corrective measures have been implemented for significantly contaminated investigation areas.

Most of the corrective action activities at the facility were performed under NYS interim status requirements. In March 2008, NYSDEC issued a final status 6NYCRR Part 373 (RCRA) permit to Kodak, for the Kodak Park facility. This permit now specifies the RCRA corrective action requirements for the facility.

A list of reference documents pertinent to the Kodak Park facility CA725 is attached to this form.

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "contaminated"[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	_X_	___	___	VOCs/SVOCs - chlorinated/non-chlorinated
Air (indoors)[2]	_X_	___	___	VOCs (On-Site)
Surface Soil (e.g., <2 ft)	_X_	___	___	Metals and PAHs
Surface Water	___	_X_	___	_____
Sediment	___	_X_	___	_____
Subsurf. Soil (e.g., >2 ft)	_X_	___	___	VOCs, metals, PAHs
Air (outdoors)	___	_X_	___	_____

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale:

A. Groundwater

Site groundwater contaminants include chlorinated and non-chlorinated volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. Numerous chemicals have been detected at concentrations exceeding NYSDEC comparison values. For groundwater, the comparison values that have been applied are those for class GA waters, as compiled in NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 Ambient Water Standards and Guidance Values (NYSDEC 1998). TOGS 1.1.1 summarizes ambient water quality standards where such have been promulgated, but also provides guidance values where standards are not available. For those constituents that do not have a standard or guidance value listed in TOGS 1.1.1, the groundwater action level in NYSDEC Technical Administrative Guidance Memorandum (TAGM) 3028 has been used (NYSDEC 1997). The primary VOCs detected in Kodak Park groundwater include: methylene chloride, dichloropropane, cyclohexane, benzene, toluene, xylene, isopropyl ether, methanol, and butanol. The main SVOCs include: various phthalates, 1,4-dioxane, cellosolve, and pyridine. However, a number of other compounds have shown exceedances.

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[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

B. Vapor Intrusion Assessment

On-Site

Based on the groundwater contamination observed on-site, it is reasonable to believe that indoor air quality could be impacted above NYS guideline values, as presented in the NYSDOH Vapor Intrusion Guidance (October 2006). Contaminants of greatest concern are chlorinated VOCs (TCE, methylene chloride) although there may be areas where aromatic hydrocarbons could be of concern (e.g., benzene). To date, Kodak has conducted limited on-site vapor intrusion assessment investigations. In the KPS area, at Building 514 testing showed subslab and indoor concentrations of chlorinated VOCs that would trigger further action under the NYSDOH guidelines. Additional on-site vapor intrusion assessment activities, which will be conducted in accordance with NYSDOH guidance, are anticipated for the Kodak Park site during 2009. This assessment work will be conducted as a requirement of the Kodak Park 6NYCRR Part 373 Hazardous Waste Management Permit Corrective Action Program (DEC Permit #8-2614-00205/00104, issued effective 3/10/08).

Off-Site

Kodak conducted off-site vapor intrusion assessment activities around Kodak Park between 2006 and 2008. These investigations were conducted under plans reviewed by the NYSDEC and NYSDOH. The investigations were conducted in three phases. The initial assessment (Phase I) was conducted under a plan that was approved by the Agencies on September 27, 2006. This effort focused on eight areas located along the perimeter of Kodak Park (Weiland Road, Koda Vista, Jesse Street, former Century Plaza, DeVitt Street, north of Building 135, east of Lake Avenue and Rand Street). Soil vapor and groundwater samples were collected in these areas. A report summarizing this work was submitted in December 2006. Based on the Phase I data, no further investigation of Jesse Street and north of Building 135 was required.

Further testing was conducted in the Weiland Road area, given the proximity of several homes to soil vapor detections. Indoor air and subslab testing was conducted at two home in this area. Results of this testing were submitted to the agencies in reports of June and July 2007. The results showed levels within the homes to be similar to New York State background conditions, and the Agencies agreed that no further action was warranted for the Weiland Road area.

A Phase II plan was developed to investigate low-level soil vapor detections identified during Phase I. Phase II included additional soil vapor sampling points in Koda Vista, the former Century Plaza area and Rand Street. Existing soil vapor probes in DeVitt Street and Lake Avenue were also sampled during Phase II. The plan was approved by the Agencies on August 22, 2007. Results were reported to the Agencies in December 2007. Phase II results indicated that no Kodak-related vapor intrusion concerns are present within Koda Vista, DeVitt Street or the area east of Lake Avenue. The potential for vapor intrusion exists at the Century Plaza area. However, due to other uses of this area, the source of these VOCs does not appear to be from Kodak.

A Phase III plan was developed to investigate VOCs along the southern boundary of Kodak Park, in the vicinity of Rand Street. The plan was submitted to the Agencies in December 2007 and approved in January 2008. Phase III included soil vapor, sewer headspace, ambient air and groundwater sampling of new and existing locations in the former Parking Lot 50 area of southern KPW as well as along right of ways in the Rand Street neighborhood to the south. Results indicated that there was not a Kodak Park related vapor intrusion concern in the neighborhood. However, there were low level detections of chlorinated VOCs in soil vapor probes installed in the backfill of the storm sewer in the vicinity of two houses. To determine if there were vapor intrusion concerns in these houses, Kodak agreed to conduct indoor air testing. In April 2008, Kodak collected indoor air and subslab vapor samples in these two houses. The agencies reviewed the results from this sampling and concluded that no further testing or action is warranted in these houses, or

in the remainder of the Rand Street neighborhood. These findings were consistent with vapor intrusion assessment activities that had been conducted historically, between 1988 and 1990, for the Koda Vista and Rand Street areas. Kodak has now completed the off-site vapor intrusion assessment for Kodak Park.

C. Soils

Numerous on-site investigations have identified areas where surficial and/or subsurface concentrations of metals and SVOCs (primarily polycyclic aromatic hydrocarbons (PAHs)) exceed NYS comparison values (per NYSDEC TAGM 4046, NYSDEC Part 375 Regulations, and USEPA Soil Screening Levels) for residential and in some cases industrial/commercial use exposure scenarios. In areas of Kodak Park where industrial/commercial comparison values are exceeded, engineering and institutional controls (protective cover, limiting access to the site) have been implemented to limit potential exposures.

D. Surface Water/Sediments

Monitoring has been conducted in drainages that receive storm water and non-contact cooling water discharges. This included storm sewer sampling in KPX, in the vicinity of Building 218, as well as monitoring in western KPM, near Interstate Route 390. This testing has not indicated the presence of contaminants at elevated levels. Kodak's industrial wastewater treatment plant, located at Kings Landing, operates under a NYSDEC SPDES permit, and discharges to the Genesee River. Sediment quality in the lower reach of the Genesee River was investigated by the NYSDEC in the 1990s. The NYSDEC reported some minor impairment based on biodiversity indices, but the results were not conclusively related to discharges associated with Kodak Park (the Genesee River flow through downtown Rochester, so there are many sources within the drainage basin). As a requirement of the NYSDEC Part 373 permit, Kodak will be conducting further evaluations of conditions in the lower Genesee River.

E. Air (Outdoors)

Kodak conducted an extensive ambient air monitoring program for the NYSDEC from approximately 1990-2005. This program was designed to monitor point source and fugitive air emissions from chemical manufacturing processes. The program showed very sharp decreases in emissions over this time period, due to enhanced controls and other changes in site operations. Based on this information, NYSDEC agreed to terminate the routine testing program. It should be noted that SWMUs at the site provide a very small fraction of the overall site emissions. In conjunction with the permitting of the multiple hearth sludge incinerator, located at Building 95, a multi pathway risk assessment was completed. In that assessment, NYSDEC and NYSDEC concluded that projected exposures were within acceptable guidelines. In addition to this information, limited ambient air sampling has recently been conducted in the vicinity of Kodak Park during off-site vapor intrusion investigation activities. Results from this testing has shown that ambient concentrations of volatile organic compounds are consistent with New York State background concentration ranges.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	Yes	No	No	No
Air (indoors)	No	Yes	No	No	No	No	No
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
~~Surface Water~~							
~~Sediment~~							
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
~~Air (outdoors)~~							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale:

A. Groundwater - Groundwater is not used as either potable or non-potable supply in the vicinity of Kodak Park. The area is served by a municipal water authority that draws on surface water supplies that are distant from the facility. Therefore, the only potential receptor that could be exposed to contaminated groundwater would be a construction worker involved with excavation activities extending below the water table.

B. Air (indoors) - The off-site vapor intrusion assessment activities did not identify vapor intrusion concerns related to Kodak operations, so there are no residential receptors affected by Kodak operations.

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[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

The only potentially complete pathways for this medium would be for an on-site worker in a structure.

C. Soil (surface, e.g., <2 ft) - There are potentially complete exposure pathways to this medium for on-site workers, construction workers and trespassers.

D. Soil (subsurface e.g., >2 ft) - The only potentially complete exposure pathway for this medium would be for a construction worker involved in intrusive subsurface excavation activities.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

X[5] If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale:

The only potentially significant exposure pathway is associated with on-site vapor intrusion exposure to workers. Testing at Building 514 showed subslab vapor concentrations of TCE above NYSDOH guidance

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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

[5] EPA's Office of Solid Waste and Emergency Response (OSWER) issued "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" in November 2002. Among the exposure scenarios discussed in this draft guidance, EPA addressed vapor intrusion into non-residential buildings, including those in occupational settings that may be regulated by the Occupational Health and Safety Administration (OSHA). Specifically, in the Introduction of the Draft Guidance, under Section I.D. ("What Is The Scope of The Guidance?"), OSWER states that "OSHA and EPA have generally agreed that OSHA will take the lead in addressing occupational exposures", and that "...EPA does not expect this guidance to be used for settings that are primarily occupational." OSWER reaffirmed this position in a fact sheet titled "Vapor Intrusion and RCRA Corrective Action Environmental Indicators (EI)," issued June 2003.

However, at this time, OSWER is reevaluating the guidance for the vapor intrusion to indoor air pathway in occupational settings. The matter is currently under internal review. OSWER plans to issue updated recommendations on when and how the Draft Guidance should be used.

For purposes of this Human Exposures Under Control EI determination, EPA Region 2 is deferring the determination of whether an unacceptable exposure to human health exists from the vapor intrusion to indoor air pathway in the on-site occupational setting at the Kodak Park facility. Once new draft guidance is issued by OSWER, EPA Region 2 expects to recommend that the vapor intrusion to indoor air pathway be reevaluated at the Kodak Park facility to determine if this pathway poses an unacceptable risk to human health in the occupational setting. This deferral applies only to the vapor intrusion to indoor air pathway in the on-site occupational setting exposure scenario.

action levels at some points beneath the building. However, only one indoor air sample exceeded the NYSDOH guidance action level for TCE (the sample had 35 $\mu g/m^3$). The indoor sample was not in the vicinity of the elevated subslab results so it is not clear if the indoor result is related to a vapor intrusion concern or due to an indoor source. The building is currently vacant but had been used historically as a metal shop, so confounding interior sources are a possibility. The NYSDOH guideline values are intended to be protective of all potential exposure scenarios. Since this building is vacant, current exposures are not expected.

Institutional controls are in place at Kodak Park that serve to limit potential exposure to groundwater and subsurface soils. An excavation control plan is in effect at the site. Intrusive excavation work requires a Kodak issued permit and review of the proposed activity by Environmental Health and Safety staff. A site specific health and safety plan is also required for such projects. Due to these precautions, exposures via these pathways are not expected to be significant.

Institutional and engineering controls are in place at Kodak Park that serve to limit potential exposure to surface soils. Protective cover and access controls (fencing/signing) and related inspection and maintenance of controls have been implemented for areas where elevated contaminant levels have been identified. Due to these precautions, exposures via these pathways are not expected to be significant.

Additional on-site vapor intrusion assessment activities, which will be conducted in accordance with NYSDOH guidance, are anticipated for the Kodak Park site during 2009. This assessment work will be conducted as a requirement of the Kodak Park 6NYCRR Part 373 Hazardous Waste Management Permit Corrective Action Program (DEC Permit #8-2614-00205/00104, issued effective 3/10/08).

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale: Not applicable.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA 725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility);

X * YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Eastman Kodak Company Kodak Park facility, EPA ID #NYD980592497, located at 343 State Street, Rochester, New York 14650 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

* = Note that the on-site vapor intrusion pathway analysis has been deferred in accordance with USEPA Region 2 policy, as described in the response to Question # 4 of this CA 725 form. In addition, an on-site vapor intrusion evaluation will be conducted in accordance with DEC Permit #8-2614-00205/00104.

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

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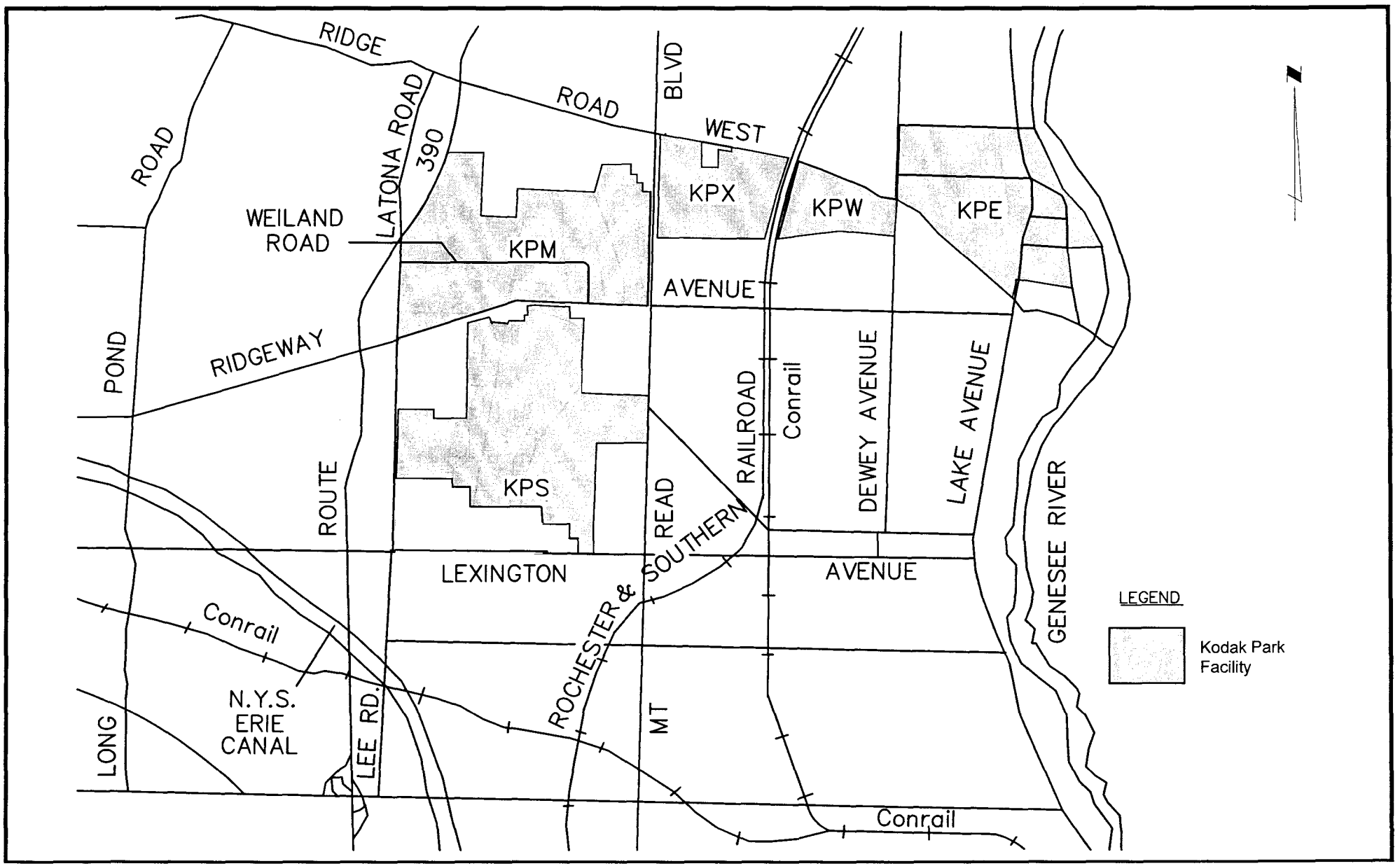
Figure 1.1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