NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF SOLID & HAZARDOUS MATERIALS

STATEMENT OF BASIS FOR KODAK PARK INVESTIGATION AREA MIA-317

FINAL October 2006

FACILITY: Eastman Kodak Company

Kodak Park

ROCHESTER, NEW YORK

MONROE COUNTY

USEPA ID No.: NYD980592497

NYSDEC Permit Application No.: 8-2614-00205/00104-0 **Inactive Hazardous Waste Disposal Site Code:** 8-28-082

Introduction

The purpose of this Statement of Basis is to provide an opportunity for the public to be informed of and to participate in the selection of a final remedy that will be protective of human health and the environment from contaminants identified in soils and groundwater at the investigation area MIA-317 that is located in the central portion of Kodak Park Section M (KPM), in Rochester, New York (see Figure 1). The investigation area is comprised of a grouping of solid waste management units that were identified during the RCRA Facility Assessment. The grouping has been designated MIA-317.

This document:

- Provides a brief overview of the site history and site investigations which were conducted at MIA-317;
- Summarizes current and potential pathways of human exposure to contaminants in MIA-317;
- Describes the remedial goals that were considered
- Identifies the proposed remedy and presents the basis for its selection; and.
- Solicits public review and comment on selection of the proposed remedy.

The New York State Department of Environmental Conservation (NYSDEC or Department), in consultation with the New York State Department of Health, has tentatively selected a proposed remedy. Changes to the proposed remedy, or the selection of an alternative remedy may be made if public comments or additional data indicate that such changes are warranted. The Department will finalize remedy selection for the facility after the public comment period has ended and the comments have been reviewed and considered.

This document summarizes information that can be found in greater detail at the document repositories identified below. The Department encourages the public to review the documents at the repositories to gain a more comprehensive understanding of the environmental investigations and related activities that have been undertaken for MIA-317, and the possible remedies to address that contamination.

Proposed Remedy

The Department has tentatively selected the remedy for MIA-317 described below. The proposed remedy consists of monitoring and maintenance activities including:

- operation and maintenance of the MIA-317 sewer systems;
- operation, maintenance, and performance evaluation (including reporting) of the

Northern KPM groundwater Migration Control System;

- continued groundwater monitoring to assess the effectiveness of the remedy;
- administrative controls to address potential exposure to contaminated soils and groundwater. This includes continued implementation of existing institutional controls (i.e., site access restrictions) and adding deed restrictions to limit the future use and development of the property to commercial and industrial uses only. This will include a restriction preventing the future use of groundwater as a source of potable water. Volatile chemicals in MIA-317 groundwater can be a source for contaminated soil vapor, which can potentially affect indoor air quality in existing and future MIA-317 structures through the process of vapor intrusion. Due to the presence of volatile organic compounds in groundwater, the potential for vapor intrusion to indoor air must be evaluated prior to any new construction or change in use of existing structures on the site. Administrative controls also include an operation and maintenance plan specifying routine monitoring, maintenance, and reporting for soil cover systems for areas with soils concentrations above industrial/commercial (I/C) comparison values;
- continued implementation of the Kodak Park Master Plan II and project specific health and safety protocols for any future excavations within MIA-317 that may be necessary (e.g., to conduct routine maintenance activities); and,
- annual certification by the property owner that the institutional controls and engineering controls are in place and continue to be effective.

Facility Background

Since the late 1800's Kodak Park has been Eastman Kodak Company's primary photographic manufacturing facility. Primary current or historic operations at the site include the manufacture of film and paper base; preparation and coating of photographic emulsions; production of vitamins and food additives; manufacture of electrophotographic toner; cutting, packaging and distribution of finished products; and the production of synthetic organic chemicals, dyes, and couplers.

The MIA-317 investigation area includes approximately 17.4 acres and is located in the central portion of KPM (Figure 1). MIA-317 is a subsection of KPM, a site listed on the New York State Department of Environmental Conservation Registry of Inactive Hazardous Waste Disposal Sites. MIA-317 currently includes four existing buildings: Building 313, Building 317, Building 318 and Building 321. Operations include medical slide manufacturing, solvent coating, film finishing, roll coating Estar and Polymer Base Departments, polyethylene teraphthalate and polyethylene naphthalate film base manufacturing and solvent coating, analytical testing, lithographic plate testing, and package printing. Building 321 is a cogeneration industrial power plant producing steam and electrical power for Kodak Park and is operated by Trigen Cinergy Corporation. MIA-317 is also used for chemical bulk storage of raw materials used in Kodak operations.

In 1998, Kodak completed a RCRA Facility Assessment for Kodak Park. The assessment identified solid waste management units (SWMUs) subject to corrective action requirements. To administer corrective action, SWMUs were grouped into investigation areas, based on geographic and operational concerns. This statement of basis is for the SWMU grouping MIA-317. This grouping includes the 29 SWMUs listed in Table 1. The location of MIA-317 and the position of the SWMUs are shown on Figure 2.

The RCRA facility investigation and presumptive remedy evaluation for MIA-317 were completed in 2002 and 2003, respectively. A presumptive remedy evaluation was used in lieu of a corrective measures study. This approach is consistent with USEPA guidance related to the proposed rule for corrective action for releases from SWMUs at hazardous waste management facilities (61 FR 19432 and 19447, May 1, 1996). Through this initiative, USEPA proposed improvements to the corrective action program to improve its speed and efficiency, including the use of presumptive remedy evaluations. In the presumptive remedy report Kodak reviewed site conditions and made recommendations for long-term care of the site.

Facility Investigation Results

The RCRA Facility Investigation (RFI) for MIA-317 was completed in 2002. Subsurface investigations in MIA-317 have been conducted in a number of phases, between 1990 and 2002. Investigations have focused on soils and groundwater. The field investigations initially focused on the fence line of KPM, and were implemented to determine if off-site groundwater contaminant migration was occurring in the overburden and upper bedrock. Additional subsurface investigations were subsequently implemented to more fully assess groundwater conditions in the overburden and bedrock within the interior of KPM, where MIA-317 is located. A total of approximately 24 wells have been installed in and near the MIA-317 area.

The investigations identified a number subsurface zones that have contrasting hydrogeologic properties. In order of increasing depth, these include:

- Overburden Unconsolidated materials, primarily glacially derived sands, silts, and clays and in some cases fill material including construction/demolition debris and boiler ash. The water table generally occurs in this interval.
- Top-of-Rock The uppermost bedrock, typically moderately fractured sandstone/siltstone of variable thickness but generally on the order of 15-20 feet. The top-of-rock and overburden are collectively referred to as the upper flow zones. In MIA-317 the upper bedrock is generally more competent and less fractured than in the section of Kodak Park located to the east of KPM.
- Intermediate Grimsby Sandstone/siltstone with relatively few fractures, exhibiting generally low hydraulic conductivity. This unit functions as an aquitard and is not considered a flow zone for groundwater.
- Grimsby/Queenston (GQ) Interval of moderately fractured (conductive) bedrock occurring within approximately 15 feet above or below the contact between the Grimsby

Sandstone and the Queenston Shale. The GQ and the underlying Queenston are collectively referred to as the lower bedrock flow zones.

• Queenston Shale - Interbedded siltstones and shales with no discernible horizontal interval of elevated hydraulic conductivity. This zone was not investigated within MIA-317, but was for the Kodak Park section KPW, located to the east.

Figure 3 shows the vertical relationship between these zones in the MIA-317 area. Figures 4, 5, and 6 show the groundwater potentiometric surface and general flow directions for overburden, top-of-rock and Grimsby/Queenston, respectively. For the overburden zone groundwater flow in the vicinity of MIA-317 is generally to the north, with a slight convergence along a north/south axis aligned with B-317. The average horizontal hydraulic gradient for the overburden is estimated to be 0.017 ft/ft. The hydraulic conductivity ranges from 5.91 x 10⁻³ cm/sec to 7.07 x 10⁻⁵ cm/sec, with a geometric mean of 5.09 x 10⁻⁴ cm/sec.

For the top-of-rock, groundwater flow is also primarily to the north within the investigation area, but there is a localized east-west depression in the potentiometric surface near the northern edge of the investigation area. This is likely an indication of groundwater infiltration into a subsurface utility line (e.g., industrial sewer lateral) in this area. The average horizontal hydraulic gradient is estimated to be 0.043 ft/ft. The hydraulic conductivity ranges from 2.14×10^{-4} cm/sec to 4.10×10^{-6} cm/sec, with a geometric mean of 3.16×10^{-5} cm/sec.

For the Grimsby/Queenston zone, the horizontal component of flow is generally to the northeast. The horizontal hydraulic gradient is estimated to be 0.006 ft/ft. The hydraulic conductivity ranges from 2.60×10^{-3} cm/sec to 2.18×10^{-5} cm/sec, with a geometric mean of 1.89×10^{-4} cm/sec.

As part of the MIA-317 RFI, groundwater elevations were plotted and contoured on several cross-sections to determine the degree of vertical groundwater flow. Groundwater flow is generally downward between the top-of-rock and GQ units and generally upward between the top of rock and overburden units.

Storm Water

The presumptive remedy report evaluated potential exposures associated with discharge of groundwater to the storm sewer system. Storm sewer lines are present within the investigation area. This evaluation was made using very conservative assumptions that would maximize the potential for adverse exposures. Assumptions included using the maximum observed groundwater concentration within MIA-317 as being representative of all of the groundwater discharging to subsurface utilities. The evaluation also assumed that all of this groundwater discharges to the storm sewer network, even though much of much of it is instead captured by the industrial sewer, and treated at Kings Landing. The speculative storm sewer loading assessment indicated that iron and manganese were the only constituents potentially exceeding the Class C surface water comparison values. This water comprises only about one-third of the flow in the receiving ditch. With this mixing, the iron and manganese concentrations would be reduced to concentrations below Class C surface water comparison values. Since this evaluation

did not indicate significant problems, and incorporated a number of conservative assumptions, this potential exposure pathway was not considered further.

Soils

Soil characterization has been conducted for various reasons in MIA-317. In addition to soil sampling specifically for the RFI, Kodak has tested soil during well installations, for tank and transfer station closures and upgrades, and for other routine site activities. The maximum total thickness of the overburden is approximately 39 feet, but generally averages about 21 feet thick. Investigations have identified three types of unconsolidated deposits in MIA-317: imported fill, lacustrine deposits and glacial till. The fill, consisting of: sand, silt, gravel, mixed with minor amounts of wood, bricks, cinders, slag and glass, is the uppermost deposit and ranges in thickness upwards to 12 feet. The lacustrine deposit is next and contains relatively coarsegrained sands and gravels, likely derived from reworking of the underlying glacial till. The lacustrine deposit is the minor component of the three overburden materials. The glacial till is the major component of the overburden. The till generally consists of dense, poorly sorted granular material (sand, silt, gravel with little clay).

As evaluated in the Presumptive Remedy report, the soil quality data set includes approximately 164 samples collected within MIA-317. These include results from soil boring and well installations, as well as results from soil piles and luggers (portable containers/rolloffs) generated during excavations for tank removals and other site maintenance activities. Soil sample locations are shown on Figure 6A.

A multi-step screening process was used to identify soils that may have the potential for human health or ecological exposure risks under differing uses of MIA-317. The first steps compared results against NYSDEC TAGM 4046, a compilation of soil cleanup comparison values and then against residential exposure criteria based on a direct ingestion/contact exposure pathway, per NYSDEC TAGM 3028. If soils did not exceed these comparison values, there would not be any reason to consider restricting future use to protect against this exposure pathway. Exceedances of the residential comparison values were subsequently evaluated against criteria developed to represent an industrial/commercial (I/C) exposure scenario. Soils data were screened against NYSDEC Technical Administrative Guidance Memorandum (TAGM) 3028 and TAGM 4046 comparison values. A tiered screening process was used to identify contaminants that may pose human health or ecological risks.

In the screening process, all soil samples were conservatively assumed to be from the upper 2 feet of the subsurface. The upper 2 feet of overburden was conservatively assumed to be "surface soil", regardless of the depth interval in which the samples were actually collected. There are no known current completed human exposure pathways for contaminants in soils in MIA-317. Potential future pathways of exposure to MIA-317 soil contaminants are discussed below.

For the VOCs, there were TAGM 4046 and/or TAGM 3028 exceedances for acetone, benzene, 1,2-dichloropropane, ethylbenzene, toluene and m- and p- xylene. Only one soil sample with

1,2-dichloropropane exceeded the TAGM 3028 comparison value. All other exceedances were only of the TAGM 4046 comparison values.

For the SVOCs, there were TAGM 4046 and/or TAGM 3028 exceedances for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a)anthracene, di-n-butyl phthalate, ideno(1,2,3-cd)pyrene, pentachlorophenol and phenol. For pesticides/polychlorinated biphenyl (PCB) compounds, there were exceedances for aroclor 1260, aldrin, dieldrin and heptachlor. Of these, chrysene, dibenzo(a)anthracene, di-n-butyl phthalate, pentachlorophenol, phenol and heptachlor only exceeded the TAGM 4046 comparison values, not the TAGM 3028 values.

Most locations had TAGM 4046 and/or TAGM 3028 exceedances for one or more metals, with exceedances being most common for arsenic, beryllium, chromium, iron and zinc. The levels of these metals in and around Kodak Park commonly exceed comparison values, and do not appear to be related to SWMUs within the investigation area. It appears that background concentrations in the area are often above the comparison values. Iron and zinc were also frequently detected above TAGM values, but are constituents typical of glacially derived soils in the area. Other metals exceedances were noted for barium, cadmium, copper, lead, mercury, nickel, selenium and thallium. Arsenic, beryllium, lead and thallium were the only exceedances of the TAGM 3028 comparison values.

The next step in the screening was used to identify contaminants posing potential direct ingestion hazards under a industrial/commercial (I/C) use scenario, rather than the residential use scenario that is implicit in the TAGM 3028 values. This step identified I/C exceedances for arsenic, lead, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and dieldrin (see Table 2 for I/C exceedances; locations are shown on Figure 10). These exceedances were further evaluated through comparison to typical background concentrations. For all but one sample, arsenic concentrations were within the TAGM 4046 New York State background concentration range of 3-12 mg/kg. The exception was a sample with 25.9 mg/kg (B02B317W080394), a location that is beneath protective cover (asphalt or concrete). Consequently there is no complete exposure pathway, and arsenic was not considered further in the presumptive remedy report..

Three lead samples exceeded the 400 mg/kg comparison value, which is also the default residential screening value, with concentrations of 423 mg/kg, 480 mg/kg and 649 mg/kg. Of these, only the 649 mg/kg result exceeded the typical urban background concentration. The three locations are below protective cover. Consequently there is no complete exposure pathway, and lead was not considered further in the presumptive remedy report.

The concentrations of PAHs exceeded I/C screening values at 5 locations. Four of these locations are located beneath asphalt or concrete, thus precluding exposure. One of these samples is not located beneath asphalt or concrete. However, the only screening exceedance at this location is for benzo(a)pyrene, with a concentration of 1.3 mg/kg. Background urban concentrations for carcinogenic PAHs are in the range of 1-3 mg/kg. PAHs are generated during incomplete combustion of fossil fuels (e.g. gas, oil, coal) and other materials (e.g. wood). Since this result is within this range, the PAHs were not considered further in the presumptive remedy report. The proposed remedy would further reduce the potential for future exposures to soil contaminants through implementation of an operation and maintenance plan specifying routine

monitoring, maintenance, and reporting for soil cover systems for areas with soils concentrations above industrial/commercial (I/C) comparison values.

One pesticide, dieldrin exceeded the I/C screening value. This location is currently under protective asphalt cover and therefore the exposure pathway is incomplete. Therefore, dieldrin was not considered further in the presumptive remedy report.

Contaminated soils were excavated and removed from the former B-317 tank farm location during the Storage Tank Improvement Program (STIP) upgrade activities. Much of the STIP work took place at a tank farm complex that was located on the east side of B-317 (also referred to as Hazardous Waste Management Unit (HWMU)-27). Within MIA-317, STIP upgrades involved removal of 37 tanks.

Even though the soils do not appear to pose an unacceptable risk via the direct contact/ingestion pathway, to reduce potential exposures to site soils, Kodak has recommended continued use of institutional controls to maintain current conditions through existing institutional controls and site operation and maintenance procedures. To limit potential exposure associated with subsurface excavations, Kodak has developed and implemented a soils excavation master plan. This plan imposes conditions, including health and safety provisions, that must be followed during the excavation and management of subsurface materials (soil) at the site.

The reasonably anticipated future use of MIA-317 is also industrial. This facility is listed in the registry of *Inactive Hazardous Waste Disposal Sites in New York State* that is published by the NYSDEC as Site Code 8-28-082. The facility is also under federal hazardous waste management facility permit, and has applied for a NYSDEC 6NYCRR Part 373 hazardous waste management facility permit. Due to these circumstances, use of MIA-317 for purposes other than industrial are not expected or likely. The proposed remedy will add deed restrictions to restrict future use of the MIA-317 area to industrial/commercial uses only.

Groundwater

MIA-317 and the surrounding area are served by public water, therefore exposure to groundwater contaminants via ingestion, direct contact or inhalation is unlikely.

Under the proposed remedy, MIA-317 would continue to be managed as a commercial/industrial site and institutional controls would be imposed to mitigate future exposure pathways. These controls would include a groundwater use restriction to prevent the use of groundwater as a potable water source without treatment as determined by the NYSDOH and implementation of deed/land use restrictions to limit future use to industrial/commercial activities.

For the overburden and top-of-rock wells, the most recent VOC results show comparison value exceedances for: benzene, ethylene glycol, methylene chloride, tetrahydrofuran and vinyl chloride. TAGM 3028 exceedances for benzene, ethylene glycol and methylene chloride (as well as 3 of 5 exceedances for vinyl chloride) were all "J" qualified as estimated values.

Of the SVOCs analyzed, only 1,4-dioxane exceeded the TAGM 3028 comparison at three locations.

Of the metals and inorganic parameters analyzed, 12 exceeded TAGM 3028 comparison values. Exceedances were noted for: antimony, arsenic, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, sodium and thallium.

Figures 7, 8 and 9 show total volatile organic contaminant concentrations for the overburden, top-of-rock, and GQ flow zones, respectively.

MIA-317 has a history of numerous releases of chemicals to the environment, mostly related to chlorinated and non-chlorinated solvents used in the area. During the RFI groundwater and soil data was evaluated against criteria commonly used to screen for the likely presence of non-aqueous phase liquid (NAPL). That evaluation suggested that NAPL may have been present within MIA-317, at least historically. However, there have been no direct observations of NAPL during the subsurface investigation work.

Reference values used for screening groundwater quality data for MIA-317 included NYSDEC TAGM 3028 "groundwater action levels" and NYSDEC TOGS 1.1.1 criteria for groundwater, values that are typically based on protection of drinking water quality.

Soil Vapor

Volatile chemicals in MIA-317 groundwater can be a source for contaminated soil vapor, which can potentially affect indoor air quality in existing and future MIA-317 structures through the process of vapor intrusion. Due to the presence of volatile organic compounds in groundwater, the potential for vapor intrusion to indoor air must be evaluated prior to any new construction or change in use of existing structures on the site.

Remedial Goals

The remedial goals for MIA-317 are to eliminate or reduce to the extent practicable:

- exposures to subsurface soil contaminants listed below by utilizing the soils management plan (Excavation Master Plan II) for excavation activities conducted in MIA-317.
 - Soil contaminants include:
 - volatile organic compounds: acetone, benzene, 1,2-dichloropropane, ethylbenzene, toluene and m- and p- xylene;
 - semi-volatile organic compounds: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a)anthracene, di-n-butyl phthalate, ideno(1,2,3-cd)pyrene, pentachlorophenol and phenol;
 - polychlorinated biphenyls (PCBs)/pesticides: aroclor 1260, aldrin, dieldrin and heptachlor; and,
 - metals: arsenic, beryllium, barium, cadmium, chromium, copper, iron,

lead, mercury, nickel, selenium thallium, zinc.

- exposures to benzene, ethylene glycol, methylene chloride, tetrahydrofuran and vinyl chloride, 1,4-dioxane, antimony, arsenic, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, sodium and thallium in groundwater by controlling migration of contaminated groundwater. The Northern KPM Groundwater Migration Control System, a component of the proposed remedy, is designed to intercept contaminated groundwater before it migrates off-site, reducing potential health and environmental exposures.
- exposures to groundwater by restricting future use of groundwater as a source of potable water; and
- exposures to the constituents in soil and groundwater through the maintenance of existing institutional controls and through implementation of deed/land use restrictions to limit future use to industrial/commercial activities.

Further, the remedial goals for MIA-317 include attaining to the extent practicable:

• Reduction of the contaminant mass in the subsurface. The long-term remedial goal is the restoration of groundwater quality in this area to New York State Ambient Water Quality Criteria. This will require that the remedy remain in operation until such time as Kodak can demonstrate that any residual contamination will not result in an exceedance of New York State Ambient Water Quality Criteria at the point of exposure. The Department will seek public comment prior to making a determination regarding termination of operation of the groundwater measures (i.e., Northern KPM Groundwater Migration Control System) that are a component of the remedy.

Summary of Proposed Corrective Action

As discussed above, current site conditions were found to be protective of human health and the environment. The primary focus of the proposed remedy is to ensure that conditions remain so in the future. For the groundwater, measures include continued monitoring to evaluate the performance of the remedy, and restrictions on future use of groundwater as a source of potable water. The proposed remedy relies in part on the Northern KPM groundwater Migration Control System (MCS). Kodak is required to operate this MCS for MIA-351, an adjacent investigation area, where the MCS has already been selected as a component of a final remedy.

For the soils, potential exposures will be controlled through periodic inspection (at least annual) and maintenance of soil cover in areas where industrial/commercial screening criteria were exceeded, and through use of an approved soils management plan (Excavation Master Plan II) that specifies the procedures and controls, including health and safety requirements, that must be followed when conducting excavation activities within Kodak Park. The excavation plan specifies routine procedures designed to minimize potential exposures associated with soil excavation activities. The proposed remedy was selected with the understanding that the area is in industrial use, and that the reasonably anticipated future use of this area is also industrial. To

ensure this remains the case, deed restrictions will be placed on MIA-317, to limit the future use and development of the property to commercial and industrial uses only

Under the remedy, the property owner would be required to provide an annual certification that the institutional controls and engineering controls are in place and remain effective. This will require at least annual inspections. The intent is to ensure that no unauthorized changes have occurred since the previous certification and nothing has occurred that would impair the ability of the controls to protect public health or the environment. This would also include verifying that administrative controls such as the soils management plan (Excavation Master Plan II) are being followed.

The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

The cost to operate the proposed remedy for 30 years is estimated to be approximately \$1.68 million. Table D-1 provides a breakdown of these costs.

The remedy that the Department is proposing be implemented for MIA-317, is similar to the recommended alternative in the Presumptive Remedy Report that Kodak submitted. This report and related environmental investigation reports are available for review at the NYSDEC Region 8 office located in Avon and at the Kodak Park Neighborhood Information Center located in Rochester.

The NYSDEC has determined that the proposed remedy satisfies the selection criteria and recommends that this remedy be implemented as the final corrective measure for MIA-317. The proposed remedy adequately addresses potential threats to the environment and human health, associated with MIA-317.

Corrective Measures Implementation

With the exception of deed restrictions and annual certification requirements, the elements that comprise the proposed corrective measures are being implemented as part of Kodak's current operational practices. Upon finalization of remedy selection for MIA-317, Kodak shall within 180 days implement deed restrictions. The other elements of the proposed remedy are already in place. Continued groundwater monitoring and operation and performance evaluation of the Northern KPM Groundwater MCS are conducted as outlined in the Kodak Park Groundwater Sampling and Analysis Plan (KPGSAP). Groundwater monitoring is generally performed on a semi-annual basis. The KPGSAP will be updated periodically to address current data needs.

Public Participation

NYSDEC solicits public comment before making final determinations about selection of remedies. The NYSDEC issues responsiveness summaries if comments are received during the comment period. Documents about the proposed remedy selection have also been placed in local document repositories. Copies of this Statement of Basis, the Fact Sheet, the RFI Report, the

Presumptive Remedy Report were made available for public review.		

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