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

STATEMENT OF BASIS
FOR
KODAK PARK INVESTIGATION AREA XIA-202/208
FINAL CORRECTIVE MEASURES SELECTION

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: 8-28-092

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 for the soil and groundwater contamination that has been identified at Investigation Area XIA-202/208, located in the southeastern portion of Kodak Park Section KPX, in Rochester, New York (see Figure 1). The investigation area is comprised of two groups of solid waste management units that were identified during the RCRA Facility Assessment. The two groups, one associated with Building 202 and the other associated with Building 208 have been assessed together due to their proximity, and have been designated XIA-202/208.

This document:

- Provides a brief overview of the site history and site investigations which were conducted at XIA-202/208;
    - Summarizes current and potential pathways of human exposure to contaminants in XIA-202/208
- Describes other remedies that were considered;
- Identifies the proposed remedy and presents the basis for its selection;
- Describes the remedial goals that were considered; and,
- Solicits public review and comment on the proposed remedy and other plausible remedies.

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 select a final remedy 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 investigations and findings that are available for this investigation area.

Proposed Remedy

The Department has tentatively selected the remedy for XIA-202/208 described below.

The proposed remedy includes:

- reliance on the existing sewer systems in XIA-202/208 to provide hydraulic control, capture of contaminated groundwater, and reduce the potential for off-site migration of contaminants. Intercepted groundwater under this proposal is conveyed to Kodak's King's Landing Wastewater Purification Plant (KLWPP), the Monroe County VanLare WWTP (for the water intercepted by the sanitary sewer and CSOAP tunnel), or discharged in low quantities, at typically non-detectable concentrations or concentrations below groundwater quality criteria, to the 48-inch storm sewer outfall (Genesee River).

- continued groundwater monitoring to assess the effectiveness of the remedy. This will be performed as part of the Kodak Park Groundwater Sampling and Analysis Plan, a site-wide monitoring program (includes routine groundwater quality monitoring, water elevation measurements, and reporting requirements) to ensure that the remedy performs effectively.

- annual water quality testing in the 48-inch storm sewer. This monitoring is performed as an existing requirement for the remedy selected and implemented for investigation area XIA-218, located near XIA-202/208. This program includes upstream and downstream sampling of the storm water, providing information about potential impacts associated with both XIA-218 and XIA-202/208. Current monitoring has shown that contaminant concentrations within the storm sewer are very low (below groundwater quality criteria) to non-detectable. Future testing will be conducted to ensure that concentrations continue to remain within acceptable levels.

- placement of a protective soil cover in areas identified as having surficial soil screening level exceedances to prevent exposure to contaminated soils. The protective soil cover would consist of a geotextile fabric as a marker layer; a minimum of 12 inches of clean soil; and then, 6 inches of topsoil to support vegetative cover.

- maintenance of existing asphalt soil covers in other site areas.

- an inspection and maintenance plan for protective cover systems to ensure that protective soil covers are in-place and continue to be effective.

- 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 XIA-202/208 groundwater can be a source for contaminated soil vapor, which can potentially affect indoor air quality in existing and future XIA-202/208 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.

- continued implementation of the Kodak Park Master Plan II and project specific health and safety protocols for any future excavations within XIA-202/208 that may be necessary (e.g., to conduct routine maintenance activities).

- annual inspection and 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 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 XIA-202/208 investigation area is located in southeastern Kodak Park Section X (KPX). KPX is bounded by the Kodak Park Section called KPW to the east, Mount Read Boulevard and Kodak Park Section M to the west, Ridge Road to the north, and Ramona Park and Wheatland Street to the south (Figure 1). Development in KPX began in the 1920's, following development of KPE and KPW. KPX has historically been used primarily for material storage and distribution and waste management. XIA-202/208 includes three existing buildings, and the sites of several former (demolished) buildings in approximately 14 acres.

Building 202 (B-202) was constructed in 1931 with several subsequent additions. The building was used for general waste burning from 1931 and 1951. Between 1952 and 1999 the building was used for incinerating sensitized photographic materials, prior to subsequent silver recovery processes. This operation stopped in 1999 and the building was then used for storage of recoverable sensitized materials. The building was subsequently demolished in April 2002.

Building 215 was constructed in 1958. The building is currently used as an electrical load distribution center. Building 217 was constructed in 1965 and was used as a fan room for an exhaust gas scrubber system for B-202. Since 1969, B-217 has been abandoned in place and was demolished in April 2002. B-208 was built in 1949, and is operated by Integrated Recycling Services Co.(in partnership with Kodak). The area is used for managing Kodak-derived scrap metal and related scrap materials segregation. B-212 was constructed in 1951 and is used by the Utilities Division for solid hazardous and non-hazardous waste container storage. Portions of the building have been used for mercury recovery and fluorescent bulb crushing operations. B-213 was initially built in 1959 and has been used by the Construction Division for roofing, scaffolding, tool storage and equipment maintenance. B-213 was demolished in 1997.

A railroad yard and former coal storage yard are located to the east of B-202. A major municipal storm water sewer passes under XIA-202/208. The Monroe County Combined Sewer Overflow Abatement Program (CSOAP) Tiger-Carlisle tunnel leg also passes under the area, in the

bedrock, at a depth of approximately 70 feet. The tunnel provides storm surge capacity for the county's sanitary sewer system. These features are shown on Figure 2.

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 XIA-202/208. This grouping includes the 15 SWMUs listed in Table 1 (see Figure 2 for SWMU locations).

Various remedial alternatives were examined in more detail in the XIA-202/208 Corrective Measures Study report, dated April 2004. The NYSDEC has reviewed this report and is soliciting public comment on the tentative selection of a final remedy to address conditions at XIA-202/208.

Facility Investigations

The RCRA Facility Investigation (RFI) for XIA-202/208 was completed and documented in a 2002 report. Eight subsurface investigations in and near XIA-202/208 have been conducted in a number of phases, between 1990 and 2002.

Subsurface Conditions/Groundwater

The field investigations were conducted to assess subsurface conditions of the overburden, upper bedrock and lower bedrock units in the investigation area. Approximately 22 monitoring wells are or have been located within or immediately adjacent to XIA-202/208. The majority of these wells were installed during the early 1990s.

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

- Overburden - Unconsolidated 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 to highly 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.

- Intermediate Grimsby - Sandstone/siltstone with relatively few fractures, exhibiting generally low hydraulic conductivity.

- 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. Investigation of this unit in XIA-202/208 was limited to the uppermost 30 feet this unit. More extensive investigation of this unit was conducted in the adjacent Kodak Park section KPW, located just to the east.

Figure 3 shows the vertical relationship between these zones in the XIA-202/208 area. Figures 4, 5 and 6 are groundwater elevation contour maps, indicating general groundwater flow directions for the overburden, top-of-rock, and GQ flow zones, respectively. For much of the investigation area, flow in the overburden and top-of-rock zones tends to converge on an area between B-208 and B-213 where there are a number of industrial sewer lines. Computer simulation of groundwater flow indicates that this convergence is likely related to groundwater infiltration into the industrial sewer lines. In the southern part of the investigation area flow in these zones is primarily towards the southeast, where flow simulations indicate groundwater infiltration into the main trunk of the industrial sewer line.

The multi-layer groundwater flow model has been developed by Kodak to aid in understanding groundwater flow conditions at the site. The flow model was used to estimate the water budget for flow across investigation area boundaries (note that the figures show separate budgets for the B-202 and B-208 areas) for the three various flow zones. Flow budgets for the three flow zones are shown on Figures 7, 8 and 9. The figures show the net flow (in cubic feet per day) and direction across the lateral boundaries for each layer. They also indicate net flow from vertically adjacent zones.

The multi-layer computer model also allows particles placed or “started” within the investigation area boundaries to be tracked to assess their flowpaths and fate. Figure 10 shows the fate (eventual discharge point) of overburden groundwater. Figures 11 and 13 show particle tracks for particles “started” in the overburden and top-of-rock zones, respectively. Figures 12 and 14 depict the fate of overburden and top-of-rock groundwater in the investigation area, respectively. The flow model keeps track of the discharge point of each particle, and this information is used to prepare these figures.

The site investigations and the modeling indicate that the majority of overburden and top-of-rock groundwater flow in the investigation areas discharges to the KPX southern sewers (the industrial/sanitary sewer corridor to the south) and the KPX industrial sewers. A minor amount of overburden flow appears to discharge to the 48" Storm Sewer that pass through the investigation area. A minor amount of flow also appears to discharge to pumping wells located to the east in KPW. A small fraction of flow also discharges to the CSOAP tunnels in the deeper bedrock (GQ zone).

Soils

Soil sampling has been conducted for various reasons in XIA-202/208. In addition to soil sampling specifically for the RFI, Kodak has tested soil during well installations, for tank and transfer station closures and upgrades, for closure of the coal storage site, and for other routine site activities. Borings have identified three types of unconsolidated deposits in KPX: imported fill, lacustrine deposits and glacial till. The average total overburden thickness is approximately 22 feet, although towards the east and south the unit thins to about 12 to 15 feet. The uppermost 2-10 feet is imported granular fill, consisting of sand, silt, gravel, mixed with minor amounts of bricks, cinders, rubber and asphalt. The lacustrine deposits are quite thin and sporadic, and are the least volumetric of the overburden deposits. The lacustrine deposits generally consist of compact, light brown sand or clayey silt, with a small proportion of gravel. The till thickness varies from not present to about 10 feet. Figure 3 is a geologic cross-section showing the various subsurface deposits in the investigation area.

A total of 159 soil samples have been taken in the investigation area. Soils have been tested for volatile organic compounds, semi-volatile organic compounds, pesticides/PCBs and metals. Soils data were compared to NYSDEC Technical Administrative Guidance Memorandum (TAGM)s 4046 and TAGM 3028, as discussed in the Summary of Facility Risks, below.

Soil Impacts to Groundwater Quality

Contaminant concentrations from all soil samples (both from the surface and at depth from borings) were screened to identify soils that have the potential to cause groundwater to be contaminated at concentrations higher than New York State groundwater comparison values (listed in NYSDEC TAGM HWR-94-4046). The results of this screening were discussed above. As indicated above, no VOCs exceeded the TAGM 4046 comparison values. Since these comparison values consider protection of groundwater in their derivation, the lack of VOC exceedances indicates that the soils do not pose a leaching threat for this class of compounds.

The SVOC and pesticides/PCB compounds detected in the soils at XIA-202/208 generally have very low potential to impact groundwater quality due to their very low aqueous solubility and their affinity to partition preferentially to soil. This is particularly true for the PCBs and PAHs that have been detected. Phthalate compounds have an increased relative leaching potential, however, there were few soils exceedances for phthalates in XIA-202/208. Quantifiable detections (maximum observed concentration of 30 ug/l (ppb)) of phthalates in groundwater were limited to the immediate vicinity of B-213.

Based on this data, site soils do not appear to contain substantial levels of contaminants that could serve as a long-term source of groundwater contamination. Nevertheless, under the proposed remedy, groundwater from the investigation area is contained, so contaminants that may leach from soils will be addressed. It should be noted that under the Kodak Park soils management plan, visibly contaminated soils and soils that exhibit elevated organic vapor readings will be removed and disposed of off-site if encountered during excavation activities.

Surface Water

Potential migration of groundwater contaminants to the Genesee River via the 48" storm sewer was evaluated in detail in the Statement of Basis for XIA-218. That evaluation concluded that potential exposures associated with this pathway were negligible for XIA-218. The amount of groundwater flow to the storm sewer and the contaminant levels observed in XIA-202/208 are considerably lower than those in XIA-218, so impact associated with infiltration to the storm sewer for XIA-202/208 is also negligible. As part of the remedy selection for XIA-218, a monitoring program has been established for the storm sewer. This program will indicate if there is a change in conditions that would warrant reassessing the remedies for these areas.

Summary of Facility Risks

Contaminated Media and Chemicals of Concern

Kodak conducted a Corrective Measures Study (CMS), to identify potential risks to human health and the environment and to evaluate various remedial alternatives to address site conditions. For groundwater, volatile organic compounds were identified as the primary concern. For the soils, semi-volatile organic compounds (primarily polycyclic aromatic hydrocarbons and polychlorinated biphenyls) and metals are the contaminants of concern.

Baseline Exposure Scenarios

There are no confirmed complete exposure pathways that are know to exist either for groundwater or soils in XIA-202/208. Potential pathways of exposure to XIA-202/208 contaminants are discussed, by media, below:

Soils

Although the soils data included samples collected from various depths, for the purposes of this assessment, all soil samples were conservatively assumed to be from the upper 2 feet of the subsurface. The upper 2 feet of overburden is conservatively considered to be surface soil for the purpose of exposure assessment. A multi-step screening process was used to identify soils that have the potential to pose an exposure threat under differing future uses of XIA-202/208. The first step compared results against NYSDEC TAGM 4046, a compilation of soil cleanup comparison values and also 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 results against criteria developed to represent an industrial/commercial (I/C) exposure scenario.

Detection of organic contaminants was quite limited. For VOCs, there were NYSDEC TAGM 4046 exceedances at only 3 locations, involving acetone, methylene chloride and xylenes. There

were no VOC exceedances of the NYSDEC TAGM 3028 comparison values.

For SVOCs, exceedances of the NYSDEC TAGM 4046 comparison values occurred at 23 locations. These exceedances were primarily for polynuclear aromatic hydrocarbons (PAHs), with phthalate exceedances noted at a few locations. PAHs are present in much of the fill placed at Kodak Park and are typically present in industrial and urban settings. PAHs can be naturally occurring or from anthropogenic processes and most commonly result from incomplete combustion of fossil fuels (coal) and coal combustion fly ash. The SVOC data was subsequently screened against TAGM 3028 comparison values. This screening step identified exceedances only for the following PAHs: (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and ideno(1,2,3 cd)pyrene).

For pesticides/polychlorinated biphenyls (PCBs), there were exceedances of TAGMs 4046 and 3028 at six locations for PCBs.

For the SVOCs and pesticides/PCBs, the following constituents also exceeded the I/C comparison values in one or more samples: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, ideno(1,2,3 cd)pyrene, Arochlor-1254, and Arochlor-1260.

For the inorganiucs, most soils had TAGM 4046 exceedances for one or more metals. The most common metals exceedances were reported for iron, zinc, arsenic and beryllium. Concentrations for these metals were relatively uniformly distributed across the investigation area, similar to what has been observed across other areas of Kodak Park. These detections could also be related at least in part to the imported fill present in the area. The fill includes cinders, ash and slag, materials that generally have elevated metals concentrations. These exceedances do not appear to be related to any particular SWMU or facility operation within the investigation area. Other metals TAGM 4046 exceedances were reported for barium, cadmium, chromium, copper, mercury, nickel, and selenium. The metals results were then screened against TAGM 3028. Only arsenic, beryllium and lead were found to exceed the TAGM 3028 comparison values. Of these parameters, only arsenic was found to exceed the I/C comparison value.

Figure 15 summarizes soils results for XIA-202/208 that exceed the I/C comparison values. There are no confirmed complete soil exposure pathways that are know to exist for soil in XIA-202/208. The screening level risk assessment identified the following potential exposure pathway for soils in XIA-202/208: exposure to soils by incidental ingestion, dermal contact and through possible inhalation of dust.

Dermal contact, ingestion and inhalation of contaminated exposed surface soil is a potential exposure pathway for site workers, site visitors and for future site workers. The potential also exists for off-site nearby residents to contact, ingest or inhale contaminants in surface soil from the off-site migration of dust.

The direct contact, inhalation and ingestion soil exposure pathways are generally recognized as

being incomplete because of existing XIA-202/208 conditions (e.g. surface covering such as concrete or asphalt) or managed by administrative controls (i.e. access restrictions, health and safety procedures) except for two areas of XIA-202/208 (see Figure 15). In these areas, chemical constituents in the soil exceeded I/C comparison values. Although the I/C exceedances were based on conservative assumptions of surface soil, for these specific areas, a protective cover (minimum of 12 inches of clean soil) will be placed to prevent potential exposure to constituents in these soils.

There are currently no completed exposure pathways for subsurface soil. Direct contact, ingestion or inhalation of contaminated subsurface soil are potential exposure pathways for future site workers who may contact subsurface soil during future remedial or construction work. Site visitors and off-site nearby community residents could potentially be exposed to contaminants in subsurface soil through the inhalation of dusts generated during future site excavation/construction work.

The proposed remedy would minimize potential exposures to contaminants in soils through continued implementation of Kodak Park's Excavation Master Plan II project specific health and safety protocols; maintenance of a protective cover system (soil or pavement); implementation of institutional controls (i.e site access restrictions) and the addition of deed restrictions limiting future use and development of the property to restricted commercial and restricted industrial uses.

The reasonably anticipated future use of XIA-202/208 is industrial/commercial. 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 8-28-092. The proposed remedy will add deed restrictions to limit the future use and development of XIA-202/208 to commercial/industrial uses.

Groundwater

Evaluation of groundwater analytical data included a review of site background conditions, including site hydrogeology, the results of the groundwater flow model, and the distribution of contaminants within groundwater. Evaluation of the groundwater quality data obtained from the XIA-202/208 RFI report, pre-CMS supplemental field investigation and Kodak's historic environmental database indicates metals, VOCs and other organic compounds have been detected in samples obtained from XIA-202/208 overburden, top-of-rock (TOR) and/or deep groundwater (e.g. the Grimsby-Queenston Contact zone or GQ zone) flow zones. Based on groundwater flow simulations, migration of dissolved contaminants within XIA-202/208 is controlled primarily by infiltration to XIA-202/208 industrial sewers. As a result of the hydraulic containment provided by the KPX sewer system in aggregate, contaminants within the overburden and TOR flow zones have not migrated significantly beyond XIA-202/208.

Although groundwater within and down gradient of XIA-202/208 is not used as a potable water source, contaminant levels were screened against NYSDEC groundwater quality criteria and

action levels that are based on the protection of drinking water. Figure 14 shows exceedances of groundwater comparison values within the study area.

An evaluation for the potential presence of Non-Aqueous Phase Liquids (NAPLs) was also performed for XIA-202/208. Based on calculations performed in the XIA-202/208 RFI and pre-CMS supplemental field investigation, a low potential exists for NAPL to be present in soil and/or groundwater for a limited suite of compounds, almost exclusively PAHs. No VOCs in groundwater or soils approached concentrations indicating the potential for NAPL. No direct NAPL observations have been made in XIA-202/208.

The constituents (metals and organics) identified as being of potential concern in groundwater at XIA-202/208 were evaluated in a screening level risk assessment in the CMS report. Evaluation of these constituents was based on a conservative screening approach, involving comparing their concentrations to corresponding NYSDEC groundwater quality criteria and action levels based protection of drinking water (direct ingestion pathway). Potential pathways for on-site and off-site receptors that could be exposed to these groundwater constituents were evaluated. There are currently no completed exposure pathways for groundwater. The site and surrounding area are served by public water; therefore, exposure to groundwater contaminants via ingestion, direct contact or inhalation is unlikely. Additionally, the potential for use of groundwater as a source of potable water is precluded by availability of high quality water from the municipal water system that supplies drinking water in this area, the generally poor quantity and natural quality of the groundwater in this region (low well yields because of the low permeability subsurface geology; high concentrations of dissolved solids - iron, etc.).

Under the proposed remedy, the site would continue to be managed as a commercial/industrial site and institutional controls (e.g. deed restrictions) would be imposed to mitigate future exposure pathways. This would include a groundwater use restriction to prevent the use of groundwater as a potable water source without treatment as determined by the NYSDOH. Additionally, the proposed remedy includes continued implementation of measures to provide hydraulic control, reduce the potential for off-site migration of contaminants and continued groundwater quality monitoring to assess the effectiveness of the remedy.

Soil Vapor

Volatile chemicals in the soil and groundwater can be a source for soil vapor contamination and can pose a potential threat to indoor air quality of existing and future on-site structures through the process of soil 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 XIA-202/208 investigation area.

Remedial Goals

The remedial goals for XIA-202/208 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 XIA-202/208 and by placing protective soil cover in certain areas (SWMUs X-023 and X-071).

    - Soil contaminants include:
        - volatile organic compounds: acetone, methylene chloride and xylenes;
        - semi-volatile organic compounds: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and ideno(1,2,3 cd)pyrene.
        - polychlorinated biphenyls (PCBs): aroclor 1254 and aroclor 1260; and,
        - metals: arsenic, beryllium, barium, cadmium, chromium, copper, iron, mercury, nickel, selenium and zinc.

- exposures to the contaminants in groundwater (listed below) by controlling migration of contaminated groundwater, reducing potential health and environmental exposures. Groundwater contaminants include: acetone, benzene, chloroethane, chlorobenzene, 1,1-dichloroethane, 1,2-dichloroethlyene, ethyl benzene, toluene, tricholoroethylene, vinyl chloride, xylene, 1,4-dioxane, 2-methylnaphthalene, and naphthalene.

- exposures to groundwater by implementing deed restrictions to prevent use of groundwater as a source of potable water in XIA-202/208. And,

- exposures to the constituents in soil and groundwater through the inspection monitoring and maintenance of existing and proposed institutional controls and engineering controls. This includes implementation of deed/land use restrictions to limit future use to certain types of industrial/commercial activities and to evaluate the potential for vapor intrusion to indoor air prior to any new construction or change in use of existing structures on XIA-202/208.

Further, the remedial goals for XIA-202/208 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 the remedy.

Identification and Screening of Remedial Technologies

Potential remedial technologies for soil and groundwater remediation at Kodak Park have been summarized and evaluated in a number of reports including: the Kodak Park Generic Feasibility Study (IT 1991), KPW Distilling/Southwest Area Feasibility Study Report (Eckenfelder 1992),

the RCRA Facility Investigation Pre-Investigation of Corrective Measures Technologies Report (Eastman Kodak 1994), and the NE-KPE RCRA Corrective Measures Study (SSP&A 1999). These reports were used as the basis for developing remedial alternatives for XIA-202/208 utilizing area-specific data.

Potential soil remedial technologies evaluated in the XIA-202/208 CMS included: excavation and disposal, soil treatment, containment and institutional controls. At the conclusion of the screening study, the technologies retained for further evaluation included: soil containment using protective cover, institutional controls, and excavation and disposal.

Potential groundwater remedial technologies evaluated in the XIA-202/208 CMS included: groundwater extraction, fracturing, groundwater treatment after extraction, in situ treatment (bioremediation, permeable reactive barriers, heat enhanced recovery, monitored natural attenuation, in situ oxidation, solvent/surfactant flushing, air sparging), containment, and institutional controls. At the conclusion of the screening study, the technologies retained for further evaluation included groundwater hydraulic containment and institutional controls.

Summary of Remedial Alternatives

Based on the technology screening results, Kodak developed seven remedial alternatives for XIA-202/208 in the Corrective Measures Study (CMS) report. All alternatives include the same recommended action for groundwater and differ only in how they would address the soil contamination. The alternatives are described below.

Alternative 1 - Maintain Existing Hydraulic Control/Protective Asphalt Covering of the B-208 Salvage Yard Area/Protective Asphalt Covering of Current 90-day Storage Area
This alternative relies on the existing sewer systems in XIA-202/208 to provide hydraulic control, capture of contaminated groundwater, and reduce the potential for off-site migration of contaminants. Intercepted groundwater under this scenario is conveyed to Kodak's King's Landing Wastewater Purification Plant (KLWPP), the Monroe County VanLare WWTP (for the water intercepted by the sanitary sewer and CSOAP tunnel), or discharged in low quantities to the 48-inch storm sewer outfall (Genesee River). This alternative would include covering two areas (the B-208 salvage yard area (SWMU X-023) and the current 90-day storage area (SWMU X-071)) of exposed soils with a suitable asphalt pavement and continued maintenance of existing surface covers in areas where soil contaminant concentrations have been identified as exceeding I/C comparison values. In addition, this alternative includes existing institutional controls, future implementation of deed/land use restrictions where appropriate, and annual certification that the institutional controls are in place and are effective in limiting potential exposures.

Alternative 2 - Maintain Existing Hydraulic Control/Protective Geosynthetic Cap and Cover System in B-208 Salvage Yard Area/Protective Asphalt Covering of Current 90-Day Storage Area. This alternative includes all of the components identified for Alternative 1 with the exception that an engineered geosynthetic cap and cover system is proposed in the B-208 salvage

yard area.

Alternative 3 - Maintain Existing Hydraulic Control/Excavation and Disposal of Soils in B-208 Salvage Yard Area/Protective Asphalt Covering of Current 90-Day Storage Area. This alternative includes all of the components identified for Alternative 1 with the exception that contaminated soils in the B-208 salvage yard area would be excavated and disposed of at an appropriate waste management facility, and backfilled with clean fill.

Alternative 4 - Maintain Existing Hydraulic Control/Protective Asphalt Covering of the B-208 Salvage Yard Area/Protective Soil Covering with Geotextile of the 90-day Storage Area. This alternative includes all of the components identified for Alternative 1 with the exception that contaminated soils in the current 90-day storage area would be covered with a geotextile material (to act as a separation barrier between contaminated and clean soils) and overlain with clean fill. Topsoil would be placed over the clean fill, mulched and then seeded.

Alternative 5 - Maintain Existing Hydraulic Control/Protective Geosynthetic Cap and Cover System in B-208 Salvage Yard Area /Protective Soil Covering with Geotextile of the 90-day Storage Area. This alternative includes all of the components identified for Alternative 4 with the exception that a protective geosynthetic cap and cover system would be placed over impacted soils in the B-208 Salvage Yard Area.

Alternative 6 - Maintain Existing Hydraulic Control/Excavation and Disposal of Soils in B-208 Salvage Yard Area/Protective Soil Covering with Geotextile of the current 90-day Storage Area. This alternative includes all of the components identified for Alternative 4 with the exception that contaminated soils in the B-208 salvage yard area would be excavated and disposed of at an appropriate waste management facility, and backfilled with clean fill.

Alternative 7 - Maintain Existing Hydraulic Control/Protective Soil Cover System of former B-208 Salvage Yard/Protective Asphalt Covering of Current 90-Day Storage Area. This alternative includes all of the components identified for Alternative 1 with the exception that a protective soil cover system would be placed over soils in the B-208 Salvage Yard Area. This will allow vegetative cover, satisfying City of Rochester planners requirement for green space due to the proximity of the area to Kodak's northern property line.

Evaluation of Alternatives

Criteria used to evaluate each remedial alternative included: technical; environmental; human health; institutional; reduction of toxicity, mobility or volume; and cost considerations. Descriptions of these criteria are provided below.

Technical - Evaluation of each corrective measure alternative based on performance, reliability, implementability, and safety.

Environmental - Facility conditions and pathways of contamination actually addressed by each

alternative and evaluation of the short and long-term beneficial and adverse effects of the response alternative.

Human Health - The extent to which each alternative mitigates short and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure.

Institutional - Assessment of relevant institutional needs for each alternative regarding Federal, State, and local requirements and permitting on the design, operation. and timing of each alternative.

Reduction of Toxicity, Mobility, or Volume - Evaluate the degree to which each of the alternatives will reduce the toxicity, mobility, or volume of the contaminants and/or impacted media.

Cost - This criterion identifies estimated costs associated with each alternative. This evaluation presents the estimated total costs including direct and indirect capital, operational and maintenance costs. These costs were estimated by Kodak from data including estimates for historic/current Kodak Park remedial activities, costing manuals (e.g. R.S. Means), preliminary estimates from contractors/vendors, and similar project experience.

The cost estimates also include engineering fees and contingencies for potential unexpected cost increases during formal design and implementation of the alternatives. A cost contingency was included provided based on the anticipated variability and/or uncertainty associated with each cost element based on prior Kodak experience. To allow comparison of the cost of the various alternatives, a 30 year operating period was assumed.

All of the alternatives that have been developed are technically feasible and rely on routinely available equipment and engineering practices. Some differences in implementability were identified due to potential impacts posed by either excavation or construction of protective cover. The alternatives all provide similar protections of the environment and human health. Alternative 3 would provide excavation and removal of impacted soil from the B-208 area salvage yard so this alternative may be considered to provide an incremental environmental benefit when compared to placement of protective cover.

The institutional requirements of the alternatives differ slightly. The City of Rochester zoning ordinances have a provision encouraging the creation of green/vegetated areas. Kodak reported that the City was concerned that the protective cover system for the former B-208 salvage yard (per Alternative 1) initially recommended by Kodak in the CMS report would not satisfy the greenspace requirement. In response to this concern, Kodak developed another remedial alternative (Alternative 7), as an addendum to the CMS report. Estimated 30-year cost for the alternatives ranged from approximately $538,000 to $1,414,000 (see tables D-1 through D-7 for a breakdown of costs).

A detailed evaluation of proposed remedy (Alternative 7) is provided below. Additional detail regarding evaluation of the recommended and other remedial alternatives can be found in the XIA-202/208 CMS report (Golder, 2004) and in an addendum to the CMS report that was submitted in December 2005.

Detailed Evaluation of Alternative 7

Technical Analysis - Under Alternative 7, the Kodak Park sewer system in combination with the CSOAP tunnel and the proximate extraction wells would continue to serve as the capture mechanism for groundwater within XIA-202/208. The extent of capture and containment of overburden and TOR groundwater by the existing systems is described within the XIA-202/208 RFI Report and in the CMS report. Infiltration to the sewers, CSOAP tunnel, and groundwater extraction system effectively provides hydraulic control over areas of impacted overburden and TOR groundwater.

The groundwater captured by the industrial sewers and groundwater extraction wells is subsequently treated at KLWPP and then discharged to the Genesee River, in accordance with the terms and conditions of Kodak's existing State Pollution Discharge Elimination System (SPDES) permit.

The low volume of groundwater captured by the KPX 48-inch storm sewer is periodically monitored by Kodak and subsequently discharged to the Genesee River. The low volume of water captured by the CSOAP tunnel and sanitary sewer would be captured and treated by the Monroe County VanLare Publicly Owned Treatment Works.

Under this alternative, protective cover would be placed on top of soils at the locations illustrated on Figure 15. For the former B-208 Salvage Yard, the cover would consist of: a grading layer to contour the area; geotextile fabric as a marker layer; a minimum of 12 inches of clean soil; and then, 6 inches of topsoil to support vegetative cover. For the current 90-day storage area, an asphalt cover would be placed to provide protective cover. Aside from these two areas, protective cover already exists in the other locations where there were I/C soils exceedances. Periodic inspection and maintenance of the protective cover is a component of the proposed remedy.

Because this alternative involves the continued operation of XIA-202/208 sewers and remedial systems, ongoing monitoring programs, and covering of limited areas of exposed soils, it is technically feasible and readily implementable. There are no short-term risks or environmental impacts associated with implementation of this remedy.

Environmental Analysis - Alternative 7 is protective of the environment by preventing the migration of impacted groundwater from XIA-202/208 to off-site areas. The direct contact soil exposure pathway was generally recognized as being incomplete because of existing XIA-202/208 conditions (e.g. surface covering such as concrete or asphalt) or managed by administrative controls (i.e. access restrictions, health and safety procedures) except for two

areas of XIA-202/208. For these specific areas, protective cover will be placed to prevent potential exposure to constituents in these soils. Existing and future conditions associated with implementation of Alternative 7 are protective of the environment.

Human Health Analysis - The screening level risk assessment (see Appendix B of the CMS Report) indicated that addition of proposed soil covering as proposed in Alternative 7 would be protective of human health. The results of the SLRA also indicated that the direct ingestion exposure for contaminants in groundwater was incomplete or managed by existing institutional or administrative controls, or were eliminated based on groundwater flow modeling information.

Groundwater contamination can pose a potential threat to indoor air quality. 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 XIA-202/208 structures.

Institutional Analysis - There are no additional local, State, or Federal requirements associated with the implementation of this corrective measure alternative. The existing components of this alternative are currently operated/performed in compliance with the applicable regulatory requirements. Compliance with a Site-specific health and safety plan under 29CFR 1910.120, RCRA and Occupational Health and Safety Act (OSHA) regulations are required during implementation of this alternative. Kodak maintains a current Site property survey. Land use restrictions prohibiting use of groundwater as a source of potable supply and limiting the site to industrial/commercial purposes in XIA-202/208 will be implemented.

A NYSDEC-approved Corrective Measures Implementation (CMI) Plan will be needed for the proposed remedy.

Cost Analysis - The costs associated with this alternative include regularly scheduled groundwater monitoring events, operation and maintenance of XIA-202/208 area hydraulic containment systems and treatment of the collected groundwater at KLWPP. In addition, the cost for this alternative includes the costs associated with placing protective soil cover on the B-208 salvage yard area and placing asphalt covering on the current 90-day storage area as shown on Figure 15. The costs for implementation of this alternative including the costs of maintaining the existing XIA-202/208 conditions and placing the proposed protective cover systems are detailed within Table D-7. The estimated 30-year cost (including capital and O&M costs) for Alternative 7 is approximately $538,000.

Selection of the Proposed Remedy

Based on the results of the detailed analyses of the alternatives, the proposed corrective measure alternative for XIA-202/208 is Alternative 7 - Maintain Existing Hydraulic Control/Protective Soil Cover System of former B-208 Salvage Yard/Protective Asphalt Covering of Current 90-Day Storage Area. The current conditions within XIA-202/208 with the current system of hydraulic control for contaminated groundwater and the addition of proposed protective cover

(vegetated soil or asphalt) at two locations is protective of human health and the environment. All of the alternatives perform comparably well at limiting the exposure pathway for soil, and equally well for controlling migration of contaminated groundwater off-site (since the migration control remedy is the same). The proposed remedy was selected based on cost, current use, and institutional requirements. However, all seven of the alternatives are functionally equivalent and may be considered for implementation if the anticipated use of the site changes.

Corrective Measures Implementation

With the exception of deed restrictions, annual certification requirements and placement of protective soils cover, the elements that comprise the proposed corrective measures are being implemented as part of Kodak's current operational practices. Within 180 days of final remedy selection, Kodak shall implement the proposed deed restrictions, and submit a Corrective Measures Implementation plan addressing the other elements of the remedy.

Public Participation

The Department encourages input from the community on the tentatively selected remedy. Documents concerning the proposed remedy selection are available for review at local document repositories. Copies of this Statement of Basis, the Fact Sheet, the RFI Report, the CMS Report, and the Addendum to the CMS for XIA-202/208 were made available for public review.

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