Contamination Remediation

KDHE Orphan Sites

2015 Basin Report

Kansas
Department of Health and Environment

CONTAMINATION REMEDIATION – KDHE ORPHAN SITES

ACCOMPLISHMENTS AND SITE UPDATES
JANUARY 1, 2015 THROUGH DECEMBER 31, 2015

LIST OF ACRONYMS

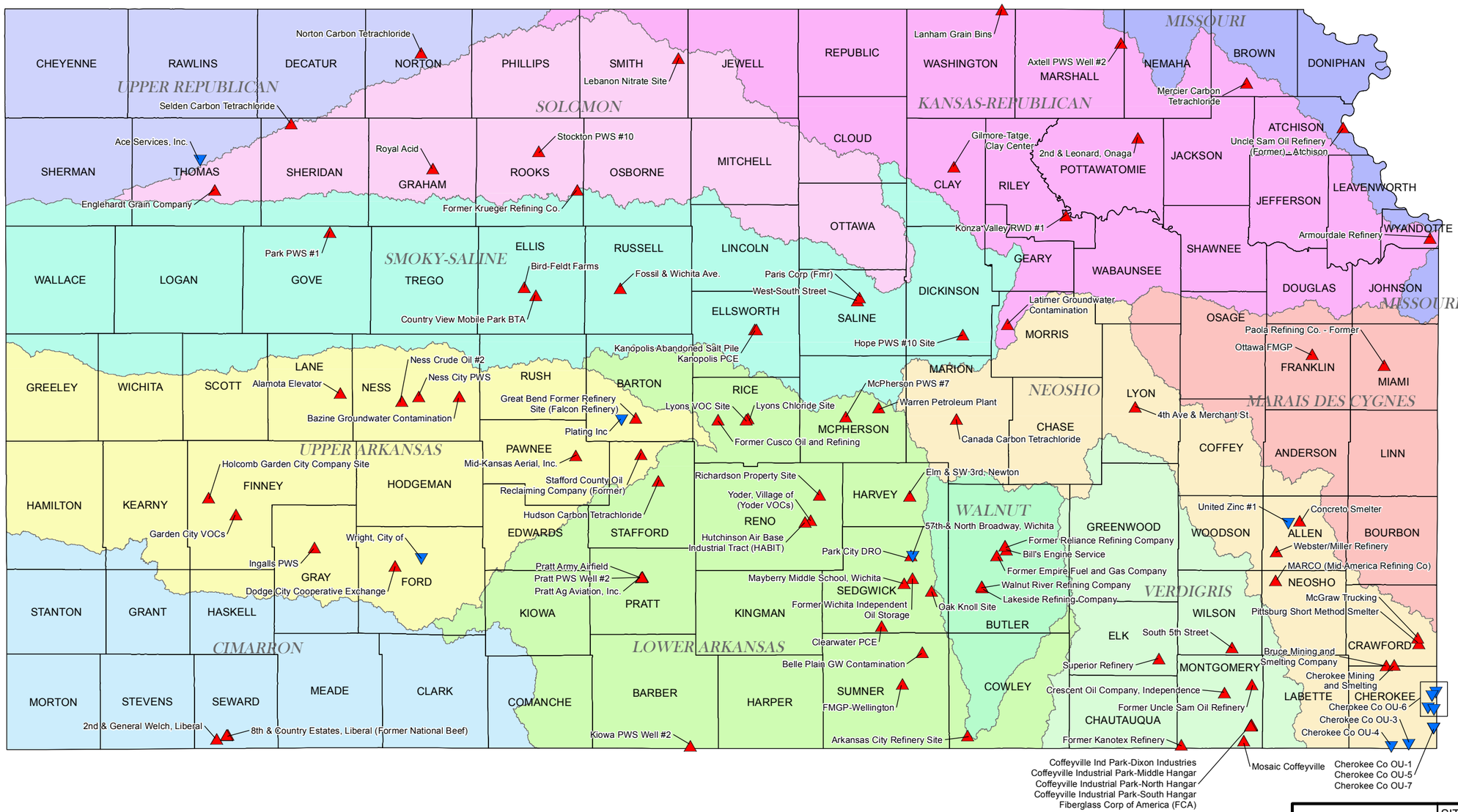
AAF	Army Airfield
ALC	Aquatic Life Criteria
AST	Aboveground Storage Tank
BER	Bureau of Environmental Remediation
BTA	Brownfields Targeted Assessment
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CA	Contamination Assessment
CAAF	Coffeyville Army Airfield
CAP	Corrective Action Plan
CAS	Corrective Action Study
CI	Comprehensive Investigation
1,1-DCE	1,1-dichloroethylene
1,2-DCA	1,2-dichloroethane
EUC	Environmental Use Control
EDB	Ethylene Dibromide
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FFRA	Focused Former Refinery Assessment
FFSA	Focused Former Smelter Assessment
FMGP	Former Manufactured Gas Plant
FUDS	Formerly Utilized Defense Sites
GAC	Granulated Activated Carbon
GWTS	Groundwater Treatment Plant and System
HABIT	Hutchinson Air Base Industrial Tract
IM	Interim Measure
KDHE	Kansas Department of Health and Environment
KDOT	Kansas Department of Transportation
MCL	Maximum Contaminant Level
MTBE	Methyl Tert-Butyl Ether
O&M	Operations and Maintenance
ONLM	Old North Lyons Mine
OSP	Orphan Sites Program

PA	Preliminary Assessment
PAHs	Polynuclear Aromatic Hydrocarbons
PCE	Tetrachloroethylene
PRP	Potentially Responsible Party
PSE	Preliminary Site Evaluation
PWS	Public Water Supply
RECs	Recognized Environmental Conditions
RSE	Removal Site Evaluation
RSK	Risk-based Standards for Kansas
RWD	Rural Water District
SFP	Superfund Program
SI	Site Investigation
SMCL	Secondary Maximum Contaminant Level
SRE	Site Reconnaissance and Evaluation
SSE	Supplemental Site Evaluation
SSI	Supplemental Site Inspection
TCA	Trichloroethane
TCE	Trichloroethylene
TEC	Threshold Effect Concentration
TPH	Total Petroleum Hydrocarbons
TPH-DRO	Total Petroleum Hydrocarbons-Diesel Range Organics
TPH-GRO	Total Petroleum Hydrocarbons-Gasoline Range Organics
UFA	Unified Focused Assessment
USACE	United States Army Corp of Engineers
USDA	United States Department of Agriculture
USDA/CCC	United States Department of Agriculture/Commodity Credit Corporation
UST	Underground Storage Tank
VCPRP	Voluntary Cleanup and Property Redevelopment Program
VOC	Volatile Organic Compound

Sites by River Basin Map

Sites by River Basin Map: The Sites by River Basin Map provides an overview of the State of Kansas, the twelve river basins, and the location of the Orphan Site and Superfund Program sites.

Sites by River Basin



LEGEND

- Orphan Site
- Superfund Site

River Basin

- Cimarron
- Kansas-Republican
- Lower Arkansas
- Marais des Cygnes
- Missouri
- Neosho
- Smoky-Saline
- Solomon
- Upper Arkansas
- Upper Republican
- Verdigris
- Walnut

N

0 12.5 25 50 Miles

Kansas Department of Health and Environment

SITE:	State Water Plan Funded Orphan and Superfund Sites		
TITLE:	Sites by River Basin		
PROJECT PHASE:	2015 Annual Basin Report		
DRAWN BY:	TW	12/8/15	BASEMAP DATE: 2015
CHECKED BY:	TW	12/8/15	Figure 1

CONTAMINATION REMEDIATION – KDHE ORPHAN SITES

INTRODUCTION

State Water Plan (SWP) funding is utilized by KDHE for addressing contaminated orphan sites in Kansas. Two programs address the sites funded by SWP: Orphan Sites Program (OSP) and Superfund Program (SFP). The following summarizes each Program, the respective accomplishments for 2015 and planned activities for 2016.

OSP INFORMATION

The OSP uses SWP funding for the evaluation, monitoring, and remediation of contaminated sites in the State of Kansas, where the responsible party is unknown or is unable or unwilling to undertake the necessary action. The program also provides funding to supply alternate water sources as an emergency response action to residences with contaminated drinking water sources. The OSP was developed with the specific objective of providing a mechanism to address sites which for one reason or another fall outside the parameters of other programs. These sites, referred to as orphan sites, generally do not have federal, state, or other funding sources available for complete investigation and cleanup activities. The program is designed as a mechanism to balance the need to hold parties accountable for the cost of investigation and remediation of contamination they have caused, while avoiding delays and further environmental degradation when no responsible party can be found, or when such parties are recalcitrant and uncooperative.

Upon the addition of a contaminated site to the program, OSP staff review available information about the site and evaluate the problem to determine the existence of contamination, the presence of affected or potentially affected health and environmental receptors, the source of the pollution, and the priority of the contaminated site based on the site's score on the Contaminated Sites Ranking System. If no previous investigation has been conducted, investigation may be necessary to obtain enough information to rank the site. Depending on the level of threat the site poses to the public, the contaminated site may be placed in a monitoring program, or proceed through one or more investigative phases which may result in a remedial action. OSP funds may be used to determine sources of contamination identify responsible parties, take legal or administrative actions tied to sites where OSP funds have been expended, seek cost recovery from responsible parties for funds expended by the program on a site, and for the administration of the program.

At the end of 2015 there are 85 sites in the OSP. Consultants and project managers have worked together to investigate five OSP sites in 2015. In addition, project managers have been monitoring contamination at 42 OSP sites.

ACTIVITIES IN THE OSP

Due to the large number of sites in OSP, funding provided by the SWP was prioritized so those sites which pose the most serious threat to the public and/or the environment are remediated. The prioritization includes orphan sites under state control in the SFP (see SFP section below). Many

sites are monitored to ensure that contamination does not impact or threaten receptors such as public or private water supply wells. Providing an alternative water supply is a common function of the OSP where needed to protect public health. A site in the program may progress through one or more phases prior to reclassification or transfer out of the program. A table indicating the status of each site is included at the end of the report.

OSP staff conduct project related tasks internally to more efficiently utilize funding, thereby saving resources for remedial activities. Sites will continue to be managed efficiently and evaluated based on priority to make sure potential and actual impacts to human health and the environment are adequately addressed.

In order to conserve resources for the OSP's primary mission of protecting Kansans and environment of Kansas, this annual report is being delivered electronically. It may be downloaded from the Bureau of Environmental Remediation (BER) website at http://www.kdheks.gov/ars/swp/index.html.

OSP POTENTIALLY RESPONSIBLE PARTY SEARCH

KDHE will determine whether a viable potentially responsible party (PRP), able to pay for the costs of investigation and cleanup, exists for each site. Should a PRP be identified, the site will be referred to another appropriate KDHE program.

OSP EMERGENCY RESPONSE ACTIVITIES

As an interim corrective action, a site may qualify for an emergency response if the sole source of drinking water is contaminated at levels exceeding the federally mandated Safe Drinking Water Standards, there are no alternate sources of water, and the responsible party is unknown, unwilling, or unable to respond. The OSP emergency response program may fund a remedial action to provide safe drinking water, and may perform a PRP search for eventual cost recovery. Emergency responses may include providing bottled drinking water, connecting a household to a public water supply (PWS), installing a household filtration or treatment system, or installing a treatment system at a public water supply.

OSP INVESTIGATION ACTIVITIES

Preliminary Site Evaluation/Contamination Assessment

If investigation is recommended, the site undergoes two separate investigation phases. The Preliminary Site Evaluation (PSE), generally conducted by environmental contractors, entails a complete historical records search and limited environmental sampling to determine the presence or absence of contamination. This sampling may include the collection and analysis of samples from existing water wells and, if necessary, an intensive phase involving surface and subsurface water and soil sample collection through direct push sampling techniques. If the site is determined to be contaminated and no responsible party is identified through the PSE, the site may progress to the Contamination Assessment (CA) phase. The CA is designed to delineate the lateral and vertical extent of contamination, and may include more invasive subsurface soil and groundwater sample collection through direct push sampling techniques and/or the installation of

monitoring wells. The contractor is required to submit a Work Plan to be reviewed for completeness, adequacy, and technical competency in accordance with state regulatory policies and guidelines. The investigations are intended to:

- characterize the nature and extent of contamination,
- identify and characterize contamination source area(s),
- identify the responsible party or parties, and
- identify any human and/or environmental targets impacted or threatened by contamination.

OSP REMEDIATION ACTIVITIES

Corrective Action Study

Following a comprehensive investigation, if the responsible party remains unknown or is unwilling or unable to address the contamination, the OSP may fund remediation. The Corrective Action Study (CAS) recommends a corrective action based on feasibility, effectiveness, and cost. Additional investigation may be required before a corrective action can be recommended. Some remedial actions evaluated include soil removal or in-place contaminant stabilization, groundwater treatment by air stripping or filtering, and monitored natural attenuation in which the contaminants are monitored while natural physical and biological processes reduce the contaminants to acceptable levels.

Corrective Action Plan

Once a corrective action is chosen, the environmental contractor submits a Corrective Action Plan (CAP). The CAP very specifically describes the remedial procedure, costs, and an implementation schedule.

Corrective Action

Once a cleanup plan has been prepared and approved, the on-site work can begin. The effectiveness of the corrective action is verified by post-cleanup sampling of the contaminated site and monitoring.

Typically, large remediation projects may take two to three years to complete after a thorough investigation and evaluation of alternatives; some projects, particularly groundwater cleanups, may require more time to reach cleanup objectives. A large majority of the initial time on a cleanup project is spent evaluating various cleanup alternatives in terms of effectiveness, cost, and cleanup plan development. Once a cleanup plan has been prepared and approved, the on-site work can begin.

OSP MONITORING AND CLOSURE ACTIVITIES

Monitoring

Sites in which contamination has been documented and cleanup is currently not appropriate, based on available funding and/or priority, may be recommended for monitoring. Monitoring provides periodic surveillance and re-evaluation of the sites. Sites in monitoring are generally

sampled on an annual or bi-annual basis. Sites can be removed from monitoring in one of the following ways:

- The site is reclassified as resolved because monitoring demonstrates cleanup goals have been achieved and maintained for four consecutive, equally time-sequenced sampling episodes conducted under KDHE oversight over a period of no less than two years, or as otherwise approved by KDHE;

  or

- The site is transferred to another KDHE program such as the Dry Cleaning Facility Release Trust Fund, the State Cooperative Program, the Voluntary Cleanup and Property Redevelopment Program (VCPRP), or an applicable program in the KDHE/BER Storage Tank Section.

Transfer of Sites
A site may be transferred to another KDHE/BER program if a PRP is identified, the use of an Environmental Use Control (EUC) will prevent exposure to remaining contamination, or a more appropriate funding mechanism is available for the site (i.e. the Dry Cleaning Facility Trust Fund or Storage Tank Trust Fund, etc.).

Resolution of Sites
Sites are reclassified as resolved once cleanup goals have been met or once contamination at the site has fallen to levels within criteria established in KDHE's Reclassification Plan.

OSP ACCOMPLISHMENTS FOR 2015

Program efforts are focused on characterizing contamination concerns, identifying PRPs, evaluating the risk to human health and the environment associated with the contamination, and remediation through cleanup or EUCs. The majority of the program's sites are being addressed in response to groundwater impacts which have affected or threaten public and/or private drinking water wells. There are 85 sites currently in the program.

Sites within the program continue to make progress beyond investigative stages and toward remediation. Eleven sites within the program are in some phase of remediation or awaiting funding for investigation or remediation activities. Sites are prioritized with a scoring system based on risk to human health to identify sites requiring immediate attention. Further, the scoring system provides a tool to ensure funds are available for continuing investigations and cleanups, while allowing funding for more cost-intensive cleanup activities.

Additional investigation activities were conducted at several sites this year. The purpose of the site investigations was to:

- identify potential source areas,
- gather additional groundwater data to better characterize the hydrogeology of the aquifer, and/or

- define the vertical and horizontal extent of contamination
- collection of soil and groundwater data to better evaluate remedial strategies.

Sites Added to OSP
Three new sites Fiberglass Corp of America (FCA) - Coffeyville, Gilmore-Tatge - Clay Center, and Mosaic - Coffeyville) were added to the program in 2015.

Potentially Responsible Party Search
Extensive research to identify PRPs was conducted on six sites in 2015 (Former Wichita Independent Oil Storage, Kanopolis Abandoned Salt Pile, Lyons Chloride Site, Norton Carbon Tetrachloride, Ottawa FMGP, and Selden Carbon Tetrachloride).

Emergency Response Activities
Funds were used to install and operate and/or maintain treatment systems at one site in 2015 (Hudson Carbon Tetrachloride). Funds were also utilized to address two emergency responses (Tonganoxie Methane and Neodesha Storm Sewer Oil).

Investigation Activities
Six sites have undergone investigative activities or investigation planning in 2015 (Bruce Mining and Smelting Company, Fiberglass Corp of America (FCA), Ingalls PWS, McPherson PWS #7, and Norton Carbon Tetrachloride, Neodesha South 5th Street).

Remediation Activities
There are five sites subject to some form of remediation (8th and Country Estates (Former National Beef), Cherokee Mining and Smelting, Clearwater PCE, Kanopolis PCE, and Lyons Chloride Site).

Monitoring Activities
There are 42 sites currently in monitoring.

Transfer of Sites
One site was transferred from the program in 2015. A PRP search identified a responsible party for MARCO (Mid America Refining Co.). The site was transferred to the State Cooperative Program.

Resolution and/or Closure of Sites
Two sites were resolved in 2015 (Holcomb Garden City Company Site and Park PWS #1).

PLANNED OSP ACCOMPLISHMENTS FOR 2016

The following proposed activities are being considered by KDHE subject to prioritization based on the SWP funding provided for FY15 and FY16.

Sites will be prioritized and addressed based on their priority ranking. The OSP will continue to deal with property access, PRP searches, public outreach, and other activities associated with OSP site management.

Sites that may be investigated or remediated in 2016 include 2nd & Leonard, Onaga; Bill's Engine Service; Cherokee Mining and Smelting; Clearwater PCE; Elm & SW 3rd, Newton; Englehardt Grain Company; FMGP-Wellington; Fossil & Wichita Ave.; Hutchinson Air Base Industrial Tract (HABIT); Kiowa PWS Well #2; Konza Valley RWD #1; Norton Carbon Tetrachloride; Park City DRO; Pratt Army Airfield/Pratt PWS Well #2; South 5th Street; Stockton PWS #10; West South Street; and Lyons VOCs.

SFP INFORMATION

The SFP provides state oversight of EPA Superfund Sites, which are typically orphaned sites with no responsible parties or portions of the site are orphan and require the use of federal Superfund money to accomplish the clean-up. The federal Superfund law requires states to provide a 10 percent cost match for remedial activities and to take over long term operation and maintenance of those remedial systems after they have been determined to be Operational and Functional (e.g. soil repositories) or after the Long Term Remedial Action is complete (e.g. groundwater treatment systems), depending on the type of remedial system. KDHE and EPA sign a Superfund State Contract (SSC) for each site requiring remedial action. The SSC details the state match and state-lead operations and maintenance (O&M) requirements. Sites follow the same general assessment and remediation process as noted above for the OSP.

SFP ACCOMPLISHMENTS FOR 2015

SFP activities utilizing State Water Plan funding in 2015 included conducting long-term O&M on a groundwater treatment system at the Ace Services Superfund Site in Colby, Kansas. Per the SSC, KDHE took over the long-term operation of the treatment plan on April 16, 2014. Funding is used for operations, maintenance and purchase of replacement resin for removal of chromium from the groundwater as it is pumped for use in the City of Colby Public Water Supply System.

PLANNED SFP ACCOMPLISHMENTS FOR 2016

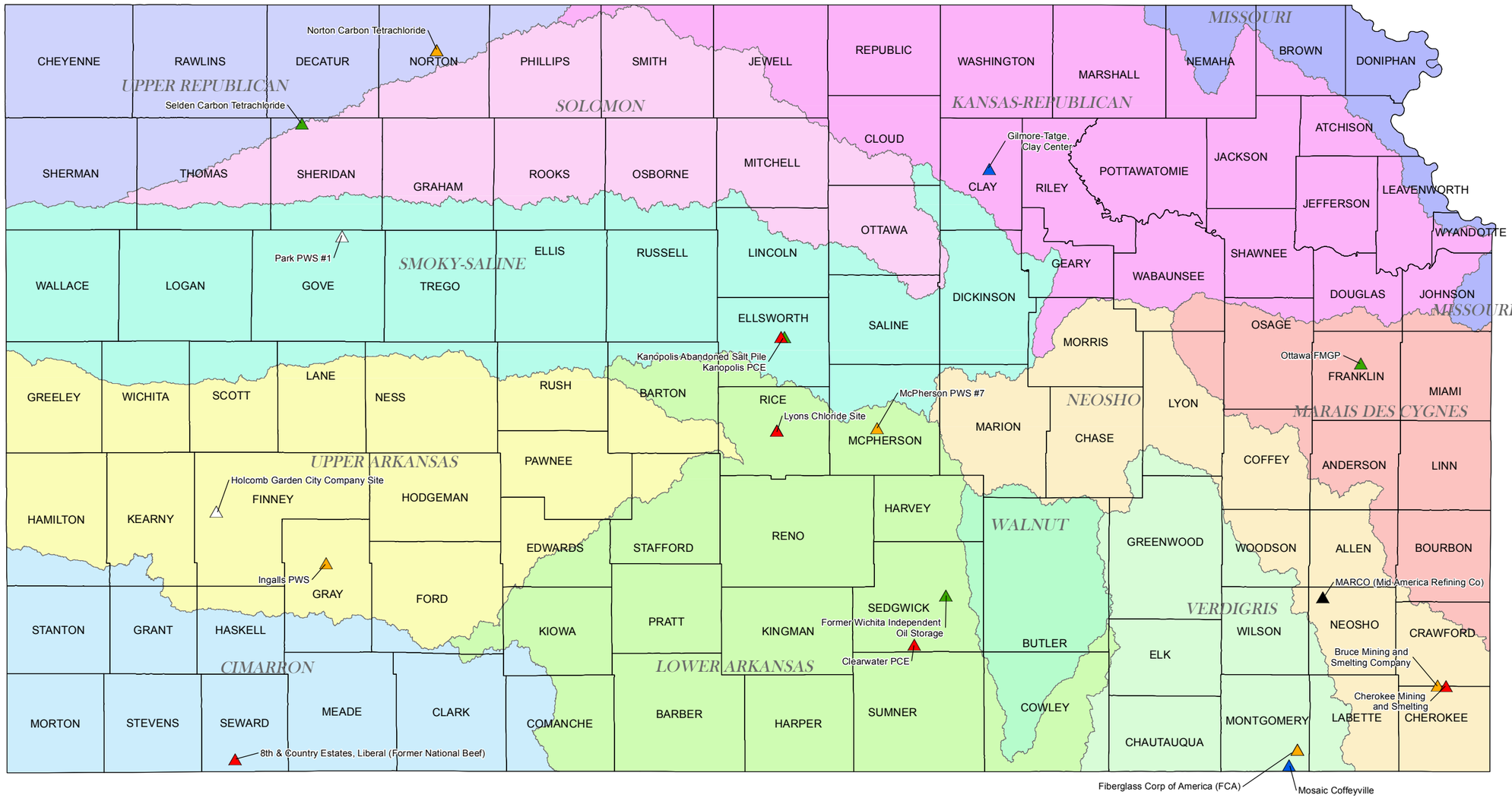
The following proposed activities are being considered by KDHE subject to prioritization based on the SWP funding provided for FY16.

The SFP will utilize SWP funding to provide continued long-term O&M for the groundwater treatment system at the Ace Services Superfund Site in Colby.
Sites within the SFP potentially subject to payment of outstanding or future state match funding in 2016 include: City of Wright (groundwater monitoring), Cherokee County OU-1 (drinking water system), Cherokee County OU-3/4 (Phase I Baxter Springs/Treece remediation), Cherokee County OU-5 (Galena remediation), and Cherokee County OU07 (Galena residential yard remediation). Potential upcoming remediation projects that may be subject to a 10 percent state match are: Wichita- 57th & North Broadway (Groundwater remediation), Great Bend – Plating Inc. (Groundwater remediation).

OSP ACCOMPLISHMENTS

This section of the report highlights some of the program accomplishments for the year 2015.

2015 Orphan Sites Program Accomplishments



LEGEND

- New Site
- PRP ID
- Investigation
- Remediation
- Transferred
- Resolved

River Basin

- Cimarron
- Kansas-Republican
- Lower Arkansas
- Marais des Cygnes
- Missouri
- Neosho
- Smoky-Saline
- Solomon
- Upper Arkansas
- Upper Republican
- Verdigris
- Walnut

N

0 12.5 25 50 Miles

Kansas Department of Health and Environment

SITE:	State Water Plan Funded Orphan Sites			
TITLE:	2015 Orphan Sites Program Accomplishments			
PROJECT PHASE:	2015 Annual Basin Report			
DRAWN BY:	TW	12/14/15	BASEMAP DATE:	2015
CHECKED BY:	TW	12/14/15	Figure 2	

Kansas Department of Health and Environment

Bureau of Environmental Remediation, Assessment and Restoration Section

Orphan Sites Program

Accomplishments: Resolved and Transferred Sites

Holcomb Garden City Company Site, Holcomb (*Resolved)*

The Holcomb United States Department of Agriculture/ Commodity Credit Corporation (USDA/CCC) operated an eight-acre grain storage facility from 1946 to 1968. The Garden City Company currently owns the property and began operations in the early 1970s.

Carbon tetrachloride was detected over Risk-based Standards for Kansas (RSK) groundwater values in the Garden City Company supply well, but was detected below RSK in the Garden City Coop-Lowe facility well in 1998. Both wells are not used for drinking purposes but as supply wells for their agricultural businesses. The site was transferred to the Orphan Sites Program (OSP) in 1998. No source areas could be identified through investigations and the site was placed into monitoring in 2002.

Carbon tetrachloride has been below RSK in the Garden City Company supply well since 2010. The Garden City Coop-Lowe facility supply well has been below RSK since 1998. The site has been reclassified as resolved on December 10, 2015.

The Garden City Company located north of Holcomb.

Park PWS #1, Park (*Resolved)*

The Park PWS #1 site was consistently sampled by the OSP semi-annually since May 2012. Carbon tetrachloride was last detected over RSK in one monitoring well in October 2012 and has since fallen below RSK. The only other monitoring well onsite to have carbon tetrachloride detections had been dry since 2010. A new monitoring well was installed at a greater depth in 2012 to replace this dry well but carbon tetrachloride has remained non-detect in the well. Analytical results from PWS #1 has shown fluctuating detections of carbon tetrachloride below RSK since 1995, but carbon tetrachloride has not been detected since 2007. The site was reclassified as resolved on February 2, 2015.

Granulated carbon filter used to treat PWS #1 from 1991 to 2012.

MARCO (Mid America Refining Co.), Chanute (*Transferred*)

MARCO site prior to remediation.

It was a two-year process from the time a potentially responsible party (PRP) was identified in 2013 for KDHE to negotiate a consent agreement that was reached in January 2015. During this time the OSP continued monitoring efforts at the site. The site has been transferred to KDHE's State Cooperative Program.

Kansas Department of Health and Environment

Bureau of Environmental Remediation, Assessment and Restoration Section

Orphan Sites Program

2015 Ongoing Investigations

Fiberglass Corp of America (FCA), Coffeyville

Previous investigations conducted at the FCA Site identified a magnetic anomaly located in the southwest corner of the property now owned by the City of Coffeyville. Geophysical survey results indicated an anomalous trend with a magnetic high corresponding to an area with the highest detections of volatile organic compounds (VOCs) in the groundwater, indicating the potential for buried containers.

Trenching in the southwest corner of the magnetic anomaly area. Soils were found to be native and undisturbed and no buried wastes were found.

The City of Coffeyville is redeveloping the site area for the location of a new electrical power plant, with major construction activities that began in October 2015. Before construction commenced, KDHE's Orphan Sites Program (OSP) needed to ensure buried wastes were not present within the proposed plant's footprint.

The purpose of conducting trenching activities was to determine whether or not buried waste was present and causing the magnetic anomaly and the elevated VOC groundwater contamination in the immediate area.

On July 27, 2015, trenching activities began and an excavator was used to dig one trench and six pot holes to approximate depths of 10-15 feet bgs, from west to east across the anomaly area. The anomaly area is square in shape and measures approximately 125 feet east to west and 120 feet north to south. Soil samples were collected from the excavator bucket and were field-analyzed using a photoionization detector (PID) as well as submitted for laboratory analysis for VOCs. Field management activities were conducted by OSP personnel and excavation work was conducted by City of Coffeyville personnel. Ambient air monitoring was also conducted to ensure health and safety of the field personnel during the trenching activities.

Pot-holing across the central area of the magnetic anomaly. On the far right, once Trench 1 was found to contain no buried wastes, it was immediately backfilled.

Field analysis did not detect any VOCs in the soil samples. This was confirmed by non-detections through laboratory analysis. The excavated areas were backfilled the same day. With no buried containers or waste found, the City of Coffeyville was able to move forward on schedule with their construction plans.

Kansas Department of Health and Environment

Bureau of Environmental Remediation, Assessment and Restoration Section

Orphan Sites Program

2015 Ongoing Investigations

Ingalls PWS, Ingalls

The Ingalls PWS site was assigned to KDHE's Orphan Sites Program (OSP) after City of Ingalls personnel encountered low levels of carbon tetrachloride and atrazine in the City of Ingalls public water supply (PWS) well PWS #3 in December 2003. Groundwater from PWS #3 is blended with PWS #4 before going into distribution. Carbon tetrachloride has also been consistently detected in a private well below Risk-based Standards for Kansas (RSK) residential groundwater values.

Former investigations including a Preliminary Site Evaluation (PSE) in April 2004 and a Contamination Assessment (CA) in October 2004 could not identify source areas. The site entered into annual monitoring in 2006. Additional historical research of Ingalls has identified a few key areas of interest.

In January 2015, the OSP had proposed installing six new monitoring at the site, located downgradient of potential sources as well as collecting soil samples from an area where an above-ground storage tank was formerly located. Work was awarded to a consultant in March 2015, with field work being completed between March 30 to April 11, 2015. Four-inch inside diameter nested wells (shallow and deep) were installed with total depths from 150-160 feet (shallow) to 240-251 feet (deep) on top of the bedrock. Three private wells and PWS wells #2 and #3 were also sampled.

Drilling and installing one of the six new 4-inch monitoring well in Ingalls, KS.

Collecting soil samples in the location of a former above-ground storage tank for analysis.

Groundwater and soil samples were analyzed for volatile organic compounds (VOCs) and pesticides. No VOCs or pesticides were detected in the soil samples. Carbon tetrachloride was detected in one new monitoring well and in PWS #3 below RSK. No pesticides were detected in the groundwater samples. The former tank location was ruled out as a potential source area.

With the installation of the monitoring wells, the OSP will now have a better understanding of groundwater flow and direction at the site. The site will be monitored again in 2016.

Prepared by KDHE, Bureau of Environmental Remediation, Assessment and Restoration Section. December 2015.

SITE UPDATES BY RIVER BASIN

This section of the report provides a summary of the work performed in 2015 at the OSP sites.

CIMARRON RIVER DRAINAGE BASIN

2nd & General Welch, Liberal

Location: Liberal, Seward County
KDHE District: Southwest, Dodge City
Contamination: Tetrachloroethylene
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The 2nd & General Welch, Liberal site is located near the intersection of 2nd Street and General Welch Boulevard within the historical limits of the Liberal Army Airfield. The site was referred to KDHE's Remedial Section in 1999 when tetrachloroethylene (PCE) appeared in monitoring wells associated with a nearby Underground Storage Tank (UST) site. Some of these monitoring wells consistently contained PCE until groundwater levels dropped below the total depth of the wells in 2001, and they were abandoned and plugged.

In October 1999, KDHE's Site Assessment Program conducted an investigation. Groundwater samples from five of the UST monitoring wells contained PCE at concentrations below KDHE Risk-based Standards for Kansas (RSK) levels. Soil samples indicated PCE detections at Building 639, a former engine-cleaning facility on the north side of the Liberal Combat Air Museum.

The OSP and the KDHE Formerly Utilized Defense Sites (FUDS) Program jointly evaluated the site in 2004. The evaluation did not find PCE in the PWS wells or a nearby runway well. Lab results of soil samples suggested PCE contamination below RSK levels was limited to the area of former Building 639.

In October 2005 samples from two City of Liberal PWS wells showed no PCE impact to these wells, which extend more than 400 feet below ground surface.

In June 2006, KDHE executed an EUC Agreement restricting groundwater use and certain activities at the Mid-America Air Museum property. The EUC agreement required installing deeper monitoring wells and groundwater monitoring sampling. Two monitoring wells were installed in February 2008. Groundwater monitoring activities include biennial sampling of two monitoring wells and one PWS well.

December 2015 Update: This site is being monitored on a biennial frequency with the 2015 report pending and the next sampling event scheduled for 2017.

8th & Country Estates, Liberal (Former National Beef)

Location:	Liberal, Seward County
KDHE District:	Southwest, Dodge City
Contamination:	Volatile organic compounds
Project Manager:	Richards, G.
Status:	Remediation and Monitoring

Site Summary: The 8th & Country Estates site entered the OSP in 1994. The National Beef Packing Company identified VOC contamination in Well #3 above federal safe drinking water standards. Well #3 is classified as a PWS well. National Beef's Well #2 also had trace concentrations of these VOCs. Investigations conducted by the EPA, private entities, and the OSP have been unable to identify a contamination source.

KDHE and National Beef executed a contract in February 1998. The OSP designed and constructed a remedial air-stripper system to remove VOCs from water pumped from Well #3, and National Beef agreed to operate and maintain the air-stripper after installation. This approach allows National Beef to continue using Well #3. Groundwater modeling indicates that using Well #3 helps contain and reduce the amount of VOCs in groundwater over time. The air-stripper system began operating in July 1999.

The last LTM sampling event for this site occurred in June of 2014. Contaminants were detected in monitoring wells but not in samples collected from the supply wells. All results were below their respective RSK and similar to results obtained from previous years.

December 2015 Update: The next groundwater sampling event is planned for spring 2016.

KANSAS-REPUBLICAN RIVER DRAINAGE BASIN

2nd & Leonard, Onaga

Location: Onaga, Pottawatomie County
Contamination: Tetrachloroethylene, Trichloroethylene
KDHE District: Northeast, Lawrence
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The 2nd & Leonard, Onaga site was established in June 2000 when trichloroethylene (TCE) was identified in a groundwater sample collected from a monitoring well at the Lawrence Potter UST Site. Assessments were completed in December 2000 and July 2002. Analytical results from groundwater samples revealed PCE and TCE. No responsible party could be identified. The alley behind 2nd & Leonard Street was identified as the likely source area.

The site was transferred to the OSP and placed into the monitoring program in September 2002. The first monitoring sampling event in January 2004 confirmed the presence of PCE and TCE. KDHE closed the Lawrence Potter UST site and plugged its monitoring wells in January 2005; in August OSP installed six new monitoring wells. Annual monitoring sampling events since 2005 have detected PCE and TCE above RSK levels in two monitoring wells. The site was placed into biennial sampling in 2014.

December 2015 Update: A focused soil and groundwater investigation to delineate the size of the source area and potential remedial options is proposed for 2016, subject to funding availability. The site will continue to be monitored with the next event scheduled for 2016.

Armourdale Refinery

Location: Kansas City, Wyandotte County
Potential Contamination: Refinery waste including polynuclear aromatic hydrocarbons
KDHE District: Northeast, Lawrence
Project Manager: Wells, T.
Status: Assessment

Site Summary: KDHE identified former refineries statewide in 2005 through historical reviews and reconnaissance. KDHE delegated State Water Plan funds to assess site conditions and associated human health and environmental risks, and evaluate PRPs if contamination were found.

In February 1910, the Uncle Sam Oil Company tore down their refinery in Atchison and moved the equipment to Armourdale, Kansas City. The Armourdale Refinery was built in 1910 on 13

acres; though its actual footprint was much smaller. The refinery was operated by Uncle Sam Oil Company and other various entities until 1950. In 1954, the Kansas City Board of Public Utilities built a coal-fired power plant (Kaw Power Station Municipal Plant) at the site. The power plant was converted to natural gas in 1997, and is currently used for emergency backup power. The power plant and corresponding parking lot cover the majority of the refinery footprint.

A Phase I FFRA Report was approved by KDHE in March 2007. The Phase I FFRA concluded that historic and current uses of the subject property and several surrounding properties may pose environmental impacts at the property. A Phase II FFRA was recommended but has not yet been conducted.

December 2015 Update: OSP did not address this site in 2015. This site will be addressed in 2016, subject to funding availability.

Axtell PWS Well #2

Location: Axtell, Marshall County
Contamination: Nitrate
KDHE District: Northeast, Lawrence
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The Axtell PWS Well #2 site was discovered during statewide sampling of public water supplies when 1,2,-dichloroethane (1,2-DCA) was identified in PWS Well #2. KDHE identified nitrate and 1,2-DCA in local groundwater, but identified no sources. The 1,2-DCA concentrations were attributed to well-head contamination during maintenance on the well or the well house and the well was taken out of service.

The site entered the OSP in 1995. Sampling suggests VOC contamination has attenuated below detection limits, but nitrate continues to be above the MCL in one private lawn and garden well and the former PWS Well #2.

KDHE collected subsurface and surface soil and groundwater samples in 2002 and 2003 to investigate the localized nitrate problem. The problem may be due to a former poultry operation on the property. Nitrate levels continue to be elevated.

The Axtell PWS Well #2 site is sampled biennially to monitor nitrate contamination in one lawn and garden well and the former PWS well. Nitrate levels have fluctuated since 1988, particularly in the private lawn and garden well. The source area of the nitrate contamination has not been identified.

December 2015 Update: Groundwater at this site will be monitored in 2016.

Gilmore-Tatge, Clay Center

Location:	Clay Center, Clay County
Contamination:	Volatile organic compounds, Heavy metals
KDHE District:	North Central, Salina
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The Gilmore and Tatge Manufacturing Company began operations in 1958 which included the manufacture of grain dryers, augers, drills and other agricultural equipment. In 1986 the company was sold and changed to GT, Inc. and operated until April 1991, when GT, Inc. filed for Chapter 7 bankruptcy. GT Manufacturing Inc. purchased equipment and machinery from the bankruptcy estate and currently operates at the facility.

A KDHE RCRA inspection in March 1984 discovered the Gilmore and Tatge Manufacturing Company used Barsol C869, which is comprised primarily of PCE and naphtha; xylene; methyl ethyl ketone (MEK); and various metal-based (chromium and lead) paints, paint sludges and paint wastes. Gilmore and Tatge Manufacturing Company was classified as a small-quantity generator of hazardous wastes as a result of the inspection.

A PWS well evaluation conducted in April 1987 by KDHE's Bureau of Water discovered the Clay Center PWS well #2 and well #5 PCE were impacted with PCE.

A Preliminary Assessment (PA) was conducted by KDHE in 1992. Analytical results from three samples collected during the PA indicated that a release of PCE had occurred from the former Gilmore-Tatge Manufacturing facility. Samples collected at several PWS wells indicated that they were contaminated with PCE.

In December 1994, KDHE utilized funds through a motion of the trustee for the bankruptcy estate to collect groundwater samples in areas surrounding the site and impacted PWS wells. Analytical results verified the 1992 PA findings that the former Gilmore-Tatge facility is a significant source of soil and groundwater contamination. Groundwater monitoring wells were installed and initial sampling of the wells conducted in May and June 1995 indicated a significant plume of groundwater contaminated with chlorinated solvents from the site.

Two corrective actions have been implemented at the site. The first was a soil cleanup conducted by the City of Clay Center, which included excavation and offsite disposal of PCE-contaminated soils. To address the groundwater contamination, a Hazelton Air Stripper was installed at the City of Clay Center's PWS #2. The air stripper was decommissioned in 2009.

In 2014, KDHE was notified that the City of Clay Center is in the process of replacing the pump on PWS #2. To maintain PCE levels below RSK, strategies such as blending will be employed. KDHE will be notified prior to PWS #2 being returned to service.

The site was originally monitored by the KDHE's State Cooperative Program. Funding for the site was provided through the Voluntary Agreement 96-E-0219; however, this project funding

has been exhausted. The property owners were deemed not liable for remedial actions during court proceedings in 1997. A PRP for this site does not exist and funding is no longer available in the SCP to continue the current monitoring plan or initiate remedial actions. As a result, the site was transferred to the OSP in May 2015 for future site remediation and monitoring considerations.

December 2015 Update: A comprehensive file review of the site is underway.

Konza Valley RWD #1

Location:	Manhattan, Riley County
Contamination:	Tetrachloroethylene
KDHE District:	North Central, Salina
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The Konza Valley RWD #1 site was referred to the OSP in August 2007 by KDHE's Bureau of Water after PCE was detected above the RSK in the PWS well #3. The initial investigation in August 2007 consisted of confirmation sampling of PWS #3 and sampling six nearby domestic wells. Three private wells and PWS well #3 had PCE concentrations above RSK.

In October 2007 three whole house carbon treatment systems were installed at the three impacted residences. KDHE also conducted a groundwater investigation consisting of direct-push sampling onsite. PCE was found over RSK at depths ranging from 24-30 feet below ground surface.

In February 2008 three monitoring wells were installed southwest of PWS #3, and PCE was detected above and below RSK. In March 2008 a granular activated carbon (GAC) system was installed on PWS #3, consisting of two 1500-pound vessels designed to treat 65 gallons of water per minute. The GAC system was operational by April 2008. The carbon vessels were placed in an enclosed mobile trailer. Pre-treatment and post-treatment sampling confirmed the treatment systems removed PCE from PWS#3 and the private wells. KDHE continued to maintain the trailer-mounted carbon treatment system and whole-house carbon water treatment systems on three nearby private water supply wells.

In April 2009 the site was placed into the OSP monitoring program.

In December 2012 the City of Manhattan extended its PWS pipeline to replace water supplied by PWS #3. In May 2013 PWS #3 was taken out of service and abandoned. In October 2013 the GAC system was decommissioned from PWS #3 and removed from the site.

In January 2014 the GAC was replaced on one private well due to PCE breakthrough. In May 2014 a GAC system was installed on another private well. A site investigation to identify potential source areas for the PCE groundwater contamination was conducted in October 2014.

December 2015 Update: A monitoring event was conducted in April 2015. Three monitoring wells and six domestic wells were analyzed for VOCs. PCE was detected above RSK in one pre-treatment sample. PCE was detected below RSK in two pre-treatment and three monitoring well samples. Additional work is proposed to further delineate the source area and evaluate potential remedial options. The site is monitored annually.

Lanham Grain Bins

Location: Lanham, Washington County
Contamination: Carbon tetrachloride
KDHE District: North Central, Salina
Project Manager: Farve, S.
Status: Monitoring

Site Summary: The Washington County RWD #1 is currently served by four PWS wells, all of which are within 0.5 to 1.5 miles southwest of Lanham. Carbon tetrachloride was first detected in the PWS #4 well in July and October 1991 below RSK. PWS #4 was later abandoned and plugged due to production issues. Starting in 1996, PWS compliance samples were collected from the Lanham Pump House #1. Carbon tetrachloride was detected six times between 2005 and 2011, all below RSK.

In March and April 2013, KDHE's Site Assessment Program conducted a PA which included the collection of groundwater samples from four PWS wells, eleven domestic wells, and from one direct-push sample location. Carbon tetrachloride was detected in one domestic well below RSK, located north of the site in Nebraska; and in one PWS below RSK. Soil samples were collected around a grain storage facility. All soil samples were below detection limits for carbon tetrachloride. During the investigation, one-gallon cans of "80/20" grain fumigant were found onsite. The "80/20" fumigant contained 80.9 percent carbon tetrachloride, 16.5 percent carbon disulfide, 2 percent sulfur dioxide, and 0.6 percent pentane. A box of six "80/20" cans (with the bottoms rusted out) plus two additional cans were found in the storage shed and two cans in the weigh station. All cans were found empty.

In January and February 2014, the Site Assessment Program conducted a Site Inspection which included groundwater collection using direct-push and drilling techniques from eleven sample locations and from three domestic wells. Carbon tetrachloride was again detected in the same domestic well below RSK. Two sample locations had carbon tetrachloride detections below RSK.

In May 2014 the Nebraska Department of Environmental Quality was notified of the carbon tetrachloride detection in the domestic well. Also in May, the site was referred to the OSP. A PRP search did not identify any viable responsible parties.

December 2015 Update: In April 2015, two PWS wells and three private wells were sampled. Carbon tetrachloride was detected below RSK in PWS #2. The site is sampled annually.

Latimer Groundwater Contamination

Location:	Latimer, Morris County
Contamination:	Carbon tetrachloride, Ethylene dibromide, Trichloroethylene, Perchlorate
KDHE District:	North Central, Salina
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: Groundwater impacts were first discovered in the City of Latimer during a 1989 Buried Tank Leak Assessment (BTLA) at the Latimer Agri-Services facility. TCE and carbon tetrachloride concentrations exceeded RSK in a private well sampled at the facility.

Between 1994 and 1996, the Tri-County Public Airport site was discovered in connection with the United States Army Corps of Engineers (USACE) investigation of the former Herington Army Airfield base, located approximately three miles upgradient and southeast of the city of Latimer. During the investigation, the USACE identified TCE contamination in the groundwater. The property was used by the Department of Defense from 1942 to 1945 as a staging facility for aircraft and crews preparing for overseas deployment. Following facility closure in 1945, the Department of Defense transferred the property to the City of Herington in 1948 for use as a public airport and for industrial development. The Beech Aircraft Company (now Raytheon Aircraft Corporation) operated at the airport for a decade during the 1950s to 1960s and used TCE for degreasing activities. A black powder manufacturer and other light industries also operated at the property.

KDHE's 1996 Preliminary Assessment/Screening Site Investigation at the Tri-County Public Airport site detected TCE in monitoring and supply wells. A TCE groundwater plume extends northwest from the former air base to private wells in the city of Latimer. In response, KDHE initiated a Preliminary Removal Evaluation (PRE) at the Latimer Groundwater Contamination site; while the EPA conducted an Expanded Site Investigation (ESI) of the Tri-County Public Airport site. KDHE executed a Consent Agreement with Raytheon Aircraft Company, identified as a PRP, to address remaining TCE impacts under the KDHE State Cooperative Program. KDHE has since updated the Consent Order to assign Hawker-Beechcraft Corporation as the PRP.

The OSP provided bottled water and carbon water treatment systems to Latimer residents with contaminated water supplies. KDHE also initiated a Comprehensive Investigation (CI) in 1998 to further investigate carbon tetrachloride and ethylene dibromide (EDB) impacts. The CI identified the former Latimer Agri-Services facility as a source for an EDB/carbon tetrachloride groundwater plume extending approximately 0.5 miles northwest. The CI also reported elevated nitrate levels, probably from non-point sources.
The Latimer Groundwater Contamination site entered the monitoring program in October 1998. Early monitoring data reported TCE, carbon tetrachloride, and EDB above respective RSKs and indicated relatively stable groundwater plumes. Private well sample data proved the effectiveness of the in-house treatment systems.

Groundwater monitoring analytical data collected in 2002 and 2003 found perchlorate impacts to groundwater. EPA's 1998 findings prompted additional perchlorate sampling that eventually delineated a perchlorate groundwater plume extending to Latimer and surrounding areas. The Hodgdon Powder facility, also located at the Tri-County Public Airport, is a source of perchlorate releases to soil, sediment, surface water, and groundwater. KDHE executed a Consent Agreement with Hodgdon Powder Company in 2002 to address remaining perchlorate impacts under the KDHE State Cooperative Program.

Due to the extent of groundwater impacts within the Latimer area EPA, KDHE, and Hodgdon Powder dedicated funds to construct a water supply line from the City of Herington to the City of Latimer. Water line construction and connection to all residences in Latimer was completed in early 2007. EPA gave Raytheon permission to remove the carbon filtration systems.

December 2015 Update: In October 2015, three monitoring wells and two private livestock wells were sampled for VOCs. Carbon tetrachloride was detected above RSK in four wells and below RSK in one well. TCE was detected in every well sampled. A Source Investigation is proposed, pending available funding. The site will continue to be monitored annually.

Mercier Carbon Tetrachloride

Location: Mercier, Brown County
Contamination: Carbon tetrachloride, Nitrate
KDHE District: Northeast, Lawrence
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The Mercier Carbon Tetrachloride site was discovered in 1998 when investigative screening of a former United States Department of Agriculture/Commodity Credit Corporation (USDA/CCC) grain bin storage facility discovered carbon tetrachloride above RSK levels in a livestock well. KDHE's Site Assessment Program investigated in June and August 1998, confirming groundwater impacts by carbon tetrachloride, chloroform, and nitrates. Contaminant source areas were not identified. The site was referred to the OSP in September 1999.

Further investigation in July 2000 sampled nearby private wells and installed and sampled six monitoring wells. The results indicated elevated concentrations of carbon tetrachloride in two wells and elevated nitrate concentrations throughout the study area. The investigation did not identify any source areas.

Annual monitoring since 2001 sampled private and monitoring wells for VOCs and nitrate. By landowner request, four monitoring wells without a history of carbon tetrachloride detections were abandoned and plugged in May 2002. Carbon tetrachloride is consistently above RSK in one monitoring well. Nitrate levels remain elevated above the MCL in nearly all wells sampled, suggesting non-point source nitrate contamination.

Although a PWS is available in and near Mercier, one residence had chosen not to connect to it. It was reported that water from the unconnected residence's well is treated prior to use. All other residences were reportedly connected to the PWS.

A PRP search in March 2014 confirmed the historical presence of USDA/CCC grain storage, as well as another historic grain storage facility. Only one monitoring well was sampled during the November 2014 monitoring sampling event. Carbon tetrachloride was detected above RSK.

December 2015 Update: The site has been placed into biennial sampling and will be sampled again in 2016. A site investigation has been recommended in order to delineate the carbon tetrachloride plume, as well as focus on sources within the historic former grain bin locations.

LOWER ARKANSAS RIVER DRAINAGE BASIN

Arkansas City Refinery Site

Location: Arkansas City, Cowley County
Contamination: Total petroleum hydrocarbons
KDHE District: South Central, Wichita
Project Manager: Wells, T.
Status: Assessment

Site Summary: From 1916 until 1925, the Milliken Company operated an oil refinery on the western edge of Arkansas City. Fire destroyed most of the refinery operations in 1925 and the site was abandoned in 1931. The site was subsequently used for unregulated dumping of household and solid wastes until 1981. The EPA placed the Arkansas City Dump Site on the National Priorities List in 1984. Two distinct areas of waste were identified by the EPA. An acidic sludge pond, identified as the Northern Waste Area, was neutralized in place in 1992. It was determined that the remaining petroleum waste materials in the southern waste area were not eligible for treatment under the Comprehensive Environmental Response Compensation Liability Act (CERCLA). The site was deleted from the National Priorities List in 1996. The remaining petroleum contamination, a daughter site named the Arkansas City Refinery Site, was assigned to the OSP in June 2003. A PSE identified localized groundwater contamination in 2004. KDHE evaluated historical ownership and operations and did not identify a viable responsible party.

In April 2014, a Phase I Waste Delineation was completed by delineating the remaining sludge ponds to the south by trenching. It was estimated that 1,908 cubic yards of refinery wastes were present, with the surrounding impacted material totaling 6,826 cubic yards. Corrective action options were evaluated and the most cost effective option recommended was the consolidation of the waste materials and capping the materials onsite.

December 2015 Update: OSP did not address this site in 2015. This site will be addressed in 2016, subject to funding availability.

Belle Plaine GW Contamination

Location: Belle Plaine, Sumner County
Contamination: Nitrate, Pesticides
KDHE District: South Central, Wichita
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The Belle Plaine GW Contamination site was discovered in 1997 when a KDHE investigation of a former grain storage facility identified excessive nitrate concentrations in a nearby lawn and garden well. The site entered the OSP for further evaluation.

Subsequent OSP investigations conducted in 1999 and 2002 verified nitrate point source impacts to soil and groundwater, including impacts to several domestic lawn and garden wells. Investigation findings indicated the abandoned Agri-Data facility, located on railroad right-of-way property, as a source area. Because no viable responsible party for the former Agri-Data facility exists, the site remains in the OSP.

The site was placed in the monitoring program in 2003. Annual sampling events since then indicate relatively steady to decreasing nitrate concentrations.

December 2015 Update: The site has been placed into biennial sampling and will be sampled again in 2016.

Clearwater PCE

Location:	Clearwater, Sedgwick County
Contamination:	Tetrachloroethylene
KDHE District:	South Central, Wichita
Project Manager:	Farve, S.
Status:	Remediation, Monitoring, and Assessment

Site Summary: The Clearwater PCE site was identified in 1985 through routine PWS well sampling for VOCs. In response to PCE levels above the drinking water standards, the City of Clearwater disconnected PWS #2 from the public water system. Two other PWS wells nearby have no reported impacts. PWS #2 was occasionally used for the public swimming pool and for park irrigation. Area investigations conducted by the OSP between 1990 and 1998 confirmed the presence of a PCE source in northeastern Clearwater and delineated a groundwater plume approximately ½ mile in length. Several irrigation and lawn and garden wells have also been impacted.

Based on groundwater data, the source area is located between the public swimming pool and the intersection of Heller Avenue and Elaine Avenue; however there have been no potential source facilities identified. The PCE contamination appears to be from indiscriminate waste dumping in the area. KDHE initiated a CAS in 1999 that recommended ex-situ groundwater treatment at the apparent source and natural attenuation in downgradient areas. Additional investigations were conducted in 1999 and 2000 suggested there is an ongoing contaminant source in areas adjacent to the Clearwater Historical Museum and the pool. A historical review of the area identified no source facilities. The impacted wells do not supply drinking water, but PCE in the groundwater is widespread and extends beneath several residential areas, including the Clearwater High School and the Clearwater Middle School.

In June 2007, a shallow tray air stripping treatment system, piping, and a new concrete block well house were installed on PWS #2 to remove PCE from the groundwater. The system operates seven days per week and treats approximately 21,000 gallons of water per day; regular sampling shows its effectiveness.

Monitoring since 2005 has included sampling PWS #2 pre-treatment and post-treatment, private lawn and garden wells, and eight monitor wells. The private lawn and garden wells that are sampled vary from year to year as some property owners may be unavailable and unable to grant access during the sampling activities.

December 2015 Update: OSP sampled the site in October 2015. Five monitoring wells, PWS #2 (influent and effluent), and five domestic wells were sampled. PCE was detected below RSK in six samples. PCE concentrations in PWS #2 have declined over the last five sampling events. As concentrations continue to decline or remain below detection levels, the air stripper on PWS #2 will be evaluated for removal. The site will remain in annual monitoring.

Elm & SW 3rd, Newton

Location:	Newton, Harvey County
Contamination:	Tetrachloroethylene, Trichloroethylene
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: The Elm & SW 3rd, Newton site was discovered in 1988 when PCE and TCE were detected in two monitoring wells associated with the diesel-related Burlington Northern Santa Fe (BNSF) – Newton Railyard site. From 1991 through 1996, BNSF files indicate neither PCE nor TCE were detected in the two monitoring wells. In April 1997 PCE again appeared in one monitoring well, and in the second monitoring well in October.

KDHE's Site Assessment Program conducted a SRE investigation in 1998. Corner Cleaners, located upgradient of the site, was identified as a separate source of PCE contamination and was placed into the Drycleaners Trust Fund Program. No PCE source was determined for the Elm & SW 3rd, Newton site; which entered the OSP in 2000.

A PSE was conducted in two separate phases from June 2004 through January 2005. One of the two originally impacted monitoring wells was covered by concrete. Soil samples were collected near potential source locations. Again, no source areas could be identified and the site was placed into monitoring in November 2005.

From 2005 to 2013, OSP has annually sampled four monitoring wells for VOCs. Three monitoring wells indicate VOC contamination is not present above detection limits. One monitoring well has a history of PCE and TCE above RSK levels since 1997. Between 2010 and 2011, PCE and TCE concentrations in one monitoring well greatly increased, indicating a spill or an active source of contamination nearby.

In March and April 2014, a Source Investigation was conducted upgradient and in the area surrounding the impacted monitoring well. PCE and TCE were only detected in soil and groundwater samples collected in the immediate area of the impacted monitoring well. The lack of any detectable VOCs in soil and groundwater the northern or eastern portions of the site

indicated that the adjacent scrap metal business to the north is likely not a source. Also, since there were no detections of VOCs in shallow soil samples, it does not appear that the PCE impacts are a result of a surface spill in the vicinity of the impacted monitoring well. It was recommended for the downgradient groundwater plume to be delineated, a water well survey to be completed, and the installation of additional monitoring wells in the to-be-determined downgradient portions of the plume.

December 2015 Update: The site has been placed into biennial monitoring and will be sampled again in 2016. Work has been proposed to delineate the groundwater contaminant plume, identify potential receptors and exposure pathways at the site, and develop corrective action alternatives; pending the availability of funding.

FMGP—Wellington

Location:	Wellington, Sumner County
Contamination:	Volatile organic compounds, Polynuclear aromatic hydrocarbons, Arsenic
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: In 1993, Western Resources investigated a number of Former Manufactured Gas Plant (FMGP) sites across Kansas to determine if they were a PRP for these historical facilities. The investigation determined that the Wellington FMGP was not a facility in which Western Resources had historic involvement. The site was referred to KDHE's Site Assessment Program. A Preliminary Assessment/Screening Site Inspection completed in 1998 found VOCs, Polynuclear aromatic hydrocarbons (PAHs), and metal contaminants in onsite soil and groundwater, as well as a substance thought to be coal tar (a by-product of the production of coal gas). Since no PRP was identified, the site entered the OSP.

OSP concluded a CI in February 2000, installing and sampling several nested (shallow and deep) monitoring wells. Results indicated that the FMGP had caused benzene, toluene, ethylbenzene and xylene (BTEX); total petroleum hydrocarbon-diesel range organics (TPH-DRO); PAHs; and certain metals contamination, concentrated near the former gas holder. The CI also found free-phase hydrocarbons, consistent with coal tar, in three deep wells near the gas holder.

A CAS and preliminary CAP in April 2002 found detectable levels of benzene and naphthalene in indoor air results at the former FMGP building. The OSP contractor modified the ventilation system to introduce more fresh air into the building.

The CAS recommended a soil ventilation system to reduce indoor air exposure but pilot testing indicated this system would be ineffective. KDHE considered removing the existing gas holder and contaminated soil, but further investigation in November 2003 suggested the gas holder was not the only source of contamination.

In February 2009, KDHE found coal tar in three deep monitoring wells and volatile petroleum hydrocarbons and PAH contamination far above RSK levels in deep and shallow wells nearest the FMGP gas holder. These and other site wells also had elevated arsenic.

A phased Source Investigation examined the horizontal and vertical extent of soil and groundwater contamination and located buried FMGP structures contributing to site contamination. The August 2010 Phase I collected soil cores for subsurface profiling, soil samples, and perimeter groundwater samples. Soil cores located buried process wastes from FMGP operations north of the FMGP building, between the building and gas holder, and inside the gas holder along with historically disposed of municipal waste. The primary contaminants were PAHs, benzene, naphthalene and arsenic; the waste tested as non-hazardous.

A Phase II Source Investigation in March and April 2011 consisted of subsurface trenching, monitoring well installation, and well sampling. Trenching confirmed buried wastes north of the FMGP building, located two sides of the FMGP gas holder and confirmed the buried wastes inside. The investigation installed additional nested monitoring wells further upgradient and along the perimeter of the property downgradient of known contamination. Organic contaminants remained in the central portion of the site while there were elevated concentrations of arsenic within, downgradient, and upgradient of the area of impact.

In December 2013, a PRP search was conducted but did not identify any viable PRPs.

In 2014, the City of Wellington was planning a sewer line replacement project in an area adjacent to the site. The City provided a Soil Management Plan to the OSP. In October 2014, a limited soil investigation was completed in the line replacement area and samples were evaluated for VOCs, PAHs, and heavy metals. Contaminants detected within the soil samples were all below their respective RSK values.

December 2015 Update: The site has been placed into biennial monitoring and will be sampled again in 2016. Additional assessment will be evaluated pending available funding.

Former Cusco Oil and Refining

Location:	Chase, Rice County
Contamination:	Naphthalene, Heavy metals
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The Former Cusco Oil and Refining site was identified when KDHE identified and ranked former oil refinery facilities in Kansas. The refinery operated from 1916 to 1926.

In May 2011 KDHE's then Sector Assessment Program conducted a UFA, collecting and analyzing groundwater and soil samples for radiation, VOCs, TPH-DRO, chloride, and metals. Analytical results for the soil samples resulted in detections below RSK values. Groundwater

sample analysis results had detections of naphthalene, arsenic, and manganese above their respective RSK values.

The site entered the OSP in 2011 after a PRP search found no viable responsible parties.

December 2015 Update: Due to its priority ranking and limited resources, funds, and staff, the OSP did not work on the Former Cusco Oil and Refining site in 2015. Pending available funding, additional investigation is necessary to determine the extent of VOC and metal contamination.

Former Wichita Independent Oil Storage

Location:	Wichita, Sedgwick County
Contamination:	Total petroleum hydrocarbons, Volatile organic compounds, Heavy metals
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	PRP Identification

Site Summary: The Wichita Independent Oil Company had a storage facility located at 1041 North Water Street in Wichita from 1914 to 1917. The site had been identified by KDHE in 2010 through the research and identification of former petroleum refineries and storage facilities in Kansas.

An UFA was performed by KDHE's then Sector Assessment Program in November 2010. Groundwater samples were analyzed for VOCs, chloride, metals, and TPH-DRO and TPH-GRO. PCE was detected in one groundwater sample above its RSK value, but was attributed to the North Industrial Corridor (NIC) groundwater contamination. TPH-DRO and TPH-GRO were detected in one sample collected closest to the site, with both concentrations being above their RSK values. Manganese was detected above its RSK residential value. Soil samples were also collected and analyzed for gross alpha, gross beta, VOCs, TPH-DRO, TPH-GRO, chloride, and metals. Radiation was found to be at natural background concentrations. No VOCs were detected aside from methylene chloride, which was found to be a laboratory contaminant. TPH-DRO and TPH-GRO were not detected above the laboratory detection limits. All metal concentrations were below their respective RSK values. The former oil storage was identified as a Historical Recognized Environmental Condition. The source for the elevated levels of manganese was unknown; it could be naturally occurring, or from an offsite source such as the metal fabrication company to the northwest of the site. The TPH-DRO and TPH-GRO may be attributed to the former oil storage.

Further assessment was recommended to verify if TPH originates from the former refinery storage or another source area.

A Site Evaluation was proposed in January 2013, but was put on hold due to funding issues. In June 2013, the site was transferred to the OSP.

A PRP search was completed in October 2014. No viable potentially responsible parties were identified.

December 2015 Update: No actions were completed for this site in FY2015. Further investigation is being considered FY2016 pending available funding.

Hudson Carbon Tetrachloride

Location:	Hudson, Stafford County
Contaminations:	Carbon tetrachloride, Trichloroethylene
KDHE District:	Southwest, Dodge City
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: The Hudson Carbon Tetrachloride site was discovered through groundwater monitoring conducted at the KDHE's Leaking Underground Storage Tank (LUST) Country Side Service site. A restaurant supply well was sampled in March 2005 and carbon tetrachloride was detected over RSK. The Hudson Carbon Tetrachloride site was referred to the OSP in April 2005. The OSP provided a supply of bottled water to a private residence and to the restaurant. Further review of the private residence sampling data indicated that the private residence was not contaminated and therefore the supply of bottled water was discontinued. In May 2005, the OSP installed a carbon treatment system at the restaurant.

A PSE was conducted in June 2005. Carbon tetrachloride impacting the restaurant well was not identified in any soil or groundwater samples collected at the site and no source areas were identified. Beginning in August 2005, six monthly sampling events were carried out to evaluate the effectiveness of the carbon treatment system on the restaurant well, which proved successful.

In January and February 2006, a SSE was conducted and indicated a likely source area in the vicinity of an old shed, brush, and small drainage ditch; however, the source area could not be confirmed since the contaminants of concern were below analytical detection limits in all shallow groundwater samples.

In April 2008 the OSP completed a SI. Results of the SI identified a likely source area consisting of a drainage ditch and old shed immediately upgradient of the impacted well. In August and September 2008, the OSP installed seven monitoring wells and the site was entered into monitoring.

From February 2006 until 2011, the OSP conducted quarterly monitoring of the treated restaurant water supply and determined the treatment system is adequately addressing contamination in the impacted well. Starting in 2012 the OSP began sampling the treatment system annually instead of quarterly. Influent and effluent water samples are collected from the restaurant well, coinciding with the annual sampling of the monitoring wells.

December 2015 Update: The 2015 monitoring event report is pending. Additional assessment is necessary to determine potential source areas and to delineate the groundwater contaminant plume. The site will be monitored on an annual basis.

Hutchinson Air Base Industrial Tract (HABIT)

Location: Yoder, Reno County
Contamination: Carbon tetrachloride, Trichloroethylene
KDHE District: South Central, Wichita
Project Manager: Richards, G.
Status: Monitoring and Assessment

Site Summary: The HABIT site entered the OSP in 1994 after an EPA investigation discovered carbon tetrachloride and TCE groundwater contamination emanating from the former air naval base. No responsible parties were identified at the time. In 1988 the EPA connected affected homes and the City of Yoder to the new Reno County RWD #101. In 1996 the OSP installed several monitoring wells to evaluate plume migration toward RWD #101. Groundwater sampling detected contamination in domestic drinking water wells at homes not connected to the rural water district. As an interim measure, OSP installed carbon filter units at homes where contaminants were above the federal MCL.

OSP evaluated RWD #101 and the adjacent RWD #3 to determine a long-term solution for the area residents. OSP repaired RWD #3's two supply wells, pressurizing and automating the system and installing service lines to homes. A contingency interconnection between RWD #3 and RWD #101 was installed in case RWD #101 should become impacted by contaminants at levels exceeding the federal MCLs. RWD #3 and RWD #101 signed an agreement for a sale of water and temporary transfer of water rights as part of the plan; it will not be used unless contamination is discovered in RWD #101's well.

The Department of Defense added the HABIT site to their list of FUDS requiring investigation. The OSP and the FUDS Program completed a joint investigation in 2004 in order to identify source areas. No definitive source was encountered, but investigation data defined a narrow plume originating at the site.

Since OSP monitoring activities indicated the contamination had migrated closer to the RWD #101 well, a CAS in 2004 evaluated several different options, including using recovery wells to intercept the contaminant plume and installing a remedial system at the RWD #101 well. In December 2004 the OSP connected a previously unidentified impacted residence to RWD #3.

A direct-probe investigation in the spring of 2005 detected very high levels of carbon tetrachloride and TCE in groundwater near a seed storage operation. OSP reviewed and approved a CAS Work Plan to address remedial actions at the seed storage operation, but this plan was put on hold.

Further investigation in 2007 attempted to differentiate groundwater plumes on the former base in order to locate possible sources attributable to historical use. The investigation identified another TCE plume in the eastern portion of the HABIT property.

In January 2009 the OSP installed whole-house treatment systems in two homes whose shared water supply well had been impacted with TCE above the MCL. In June 2009 a soil-gas source investigation was initiated. Data from this investigation was supplemented by soil and groundwater samples collected in October 2009 and sewer sediment samples collected in December 2009.

In May 2010 a comingled TCE and carbon tetrachloride plume was traced to an area where historical aerial photographs indicate dumping by the Navy. Geophysical surveys conducted in November 2010 discovered three anomalies near the area of highest shallow groundwater contamination.

In January 2011, due to budgetary constraints within OSP, another KDHE program conducted exploratory trenching in the anomalous area. Engraved Navy tableware, Navy watch mugs, and bottles and trash cans dating to World War II, as well as drums containing kitchen refuse and TCE, were uncovered. KDHE presented the findings to the USACE. In December 2011 OSP installed whole-house treatment systems in three homes where private water supplies were contaminated by the encroaching contaminant plume. In spring 2012 OSP added eight private wells to its monitoring network in response to the continued migration of contaminant plume.

Acting upon KDHE findings, USACE excavated the burial trench in March 2013 as the first phase of a removal/in situ remedial plan. OSP added fourteen nested monitoring wells to its spring 2013 network to provide a data baseline to enable evaluation of groundwater quality changes resulting from the USACE's remedial efforts.

December 2015 Update: At the time this report was prepared analytical data from the winter 2015 groundwater sampling event was not available. OSP will continue to monitor this site and maintain whole-house treatment systems in 2016.

Kiowa PWS Well #2

Location: Kiowa, Barber County
Contamination: Carbon tetrachloride
KDHE District: Southwest, Dodge City
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The Kiowa PWS Well #2 site was discovered in August 1986 during a statewide screening of PWS wells. PWS Well #2 had carbon tetrachloride exceeding RSK levels, and the City of Kiowa discontinued using the well in October 1986. A Preliminary Assessment in 1989 confirmed excessive carbon tetrachloride in PWS Well #2 and 1,2-DCA above the drinking water standard in a private well. At that time the City of Kiowa was using a new well field near the City of Sharon to obtain its drinking water.

The issue of water quality for the former Kiowa PWS wells resurfaced in September 1999 when the City of Kiowa requested KDHE to sample several former wells to evaluate their suitability as a PWS. Groundwater samples collected from the former PWS wells contained high concentrations of carbon tetrachloride and nitrate in PWS Wells #2 and #11, and inorganic compounds above drinking water standards in several other PWS wells. Based on the results, the Kiowa PWS Well #2 site entered the OSP in September 1999.

A phased CI conducted between August 2000 and January 2002 found elevated petroleum constituents, carbon tetrachloride, and nitrate in various wells. The OSP installed monitoring wells in spring 2002. A possible nitrate point source was identified, but not for carbon tetrachloride. The site went into monitoring in 2002.

A supplemental groundwater assessment was conducted in December 2005 and tried to define the upgradient extent of the carbon tetrachloride groundwater plume. Carbon tetrachloride was farther upgradient than previously known and the source appeared to have been a former grain bin.

In May 2007, the OSP transferred the nitrate portion of the site over to the State Cooperative Program.

Monitoring analytical results indicate carbon tetrachloride concentrations have generally remained steady or decreased in all monitoring wells except two. In PWS Well #2, carbon tetrachloride was last over RSK in 1999, and has been non-detect since 2009. Carbon tetrachloride concentrations in a private well have been decreasing since 2002, but remain slightly over RSK.

Carbon tetrachloride was detected from a Kiowa PWS Well #2 site monitoring well during Phase I and II Brownfields Targeted Assessments (BTAs) that took place at the then-proposed Kiowa hospital property in March and April 2012. Brownfields recommended additional assessment due to the unknown source of the carbon tetrachloride in the groundwater. This was transferred to the Site Assessment Program to investigate, even though the carbon tetrachloride issue was already being investigated and addressed by the OSP.

In a collaborative effort between the OSP and the State Cooperative Program, Site Assessment conducted a full-scale groundwater monitoring sampling event in November 2014 which included the sampling and analysis of the multiple monitoring wells, PWS #2, and two private wells for VOCs, nitrate, and pesticides. The most upgradient detections of carbon tetrachloride were identified in two State Cooperative Program monitoring wells which had only historically been sampled for nitrate. These two monitoring wells are located upgradient of the private grain bin that had been considered a source area during the December 2005 supplemental groundwater assessment. There are two building foundations also located upgradient of the two monitoring wells.

December 2015 Update: At the time of this report analytical data from the winter 2015 groundwater sampling event was not available. A source area investigation around these former building foundations is proposed for future work. OSP will continue to monitor the site in 2016.

Lyons Chloride Site

Location:	Lyons, Rice County
Contaminant:	Chloride
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Remediation, Monitoring, and PRP Identification

Site Summary: The Lyons Chloride Site is a chloride-impacted groundwater plume resulting from historical mining operations in the northeastern area of Lyons. The mine, referred to as the Old Lyons Mine Shaft site, was addressed and resolved in 1993 and 1994. The mine plugging project was undertaken as groundwater quality downgradient of the mine property indicated extremely elevated levels of chloride. The mine wastes on the surface with some impacted soil were disposed back down the old mine and the mine shaft was plugged. The area of the old mine is considered as the source for the chloride contamination in groundwater extending from the old mine property, south through Lyons, and ultimately co-mingling with chloride groundwater contamination associated with the American Salt site located south of Lyons. Remediation of the contaminated soil as the source associated with the Lyons Chloride Site was addressed under the Old Lyons Mine Shaft site; the Lyons Chloride site deals exclusively with the groundwater contamination resulting from the historical mining operations.

Results from groundwater monitoring upgradient of the American Salt site indicate that sometime between 1986 and 1993, the Old North Lyons Mine (ONLM) plume migrated to the American Salt site (over 1.5 miles). KDHE initiated two rounds of investigations which confirmed the plume migration and location. The site was referred to KDHE's OSP. Additional investigations were conducted to delineate and monitor the OLNM plume through 1997. Overall results revealed concern that the ONLM plume could impact three Lyons PWS wells that are used for the city's supply in addition to supplying a local rural water district.

KDHE entered into an agreement with North American Salt whereby the OSP would install groundwater recovery wells to contain the chloride plume from migrating to a position that could impact Lyons PWS wells, the salt company would take the pumped water for reuse or disposal, and provide for continued operation and maintenance of the recovery wells. The project was unique in that it involved the State, industry, and a municipality.

Recovery wells were installed and became operational in June 1998. Intensive monitoring of the project verified that containment had been achieved and Lyons PWS wells would be protected from the OLNM plume as long as the recovery wells could be operated. This containment would later be referred to as the "Southern Containment System". The recovery wells continued to operate; an overall assessment of the project progress and comprehensive monitoring event occurred in June 2001.

Beginning in October 2002, plans were developed to conduct aquifer testing in Lyons generally referred to as the "Northern Containment Project." One recovery well and two observation wells were installed in January 2003. The aquifer testing was completed February 2003. Results of the aquifer testing confirmed that it would be possible to install a pumping containment system in the northern area of the chloride plume where lower volumes of water could be withdrawn and the removal of higher concentrations of chloride to provide for a more effective longer-term containment of the plume. The Northern Containment System was installed in September 2005 and included the installation of two recovery wells and six observation wells. Continued monitoring of the Northern and Southern Containment Systems indicate the chloride plume is being contained.

In June 2014, a PRP was identified with connections to the operation and ownership of the historic salt mine.

December 2015 Update: OSP will continue to search for a PRP and monitor this site FY2016.

Lyons VOC Site

Location: Lyons, Rice County
Contaminant: Carbon tetrachloride
KDHE District: North Central, Salina
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: In 1997, VOCs were detected in groundwater during the sampling of former grain bin sites in the City of Lyons. A monitoring well associated with the Lyons Chloride site had detections of PCE and TCE above RSK. KDHE initiated additional sampling in Lyons to find a widely distributed plume(s) of low-level VOC contamination in groundwater including the contaminants PCE, TCE, 1,2-DCA, BTEX, MTBE, carbon tetrachloride and chloroform. The wide variety of VOCs present indicated possible multiple sources.

A SRE was performed in late 1998 and determined the PCE contamination was attributable to former drycleaner operations and was referred to the Drycleaners Trust Fund program. Since source areas for other VOCs were not identified, the site was placed into the OSP.

A Phase I VOC investigation was conducted in April 1999. Results indicated petroleum VOCs present in groundwater attributable to leaking underground storage tanks, which were referred to the Storage Tank Section. Carbon tetrachloride was determined to be present but a specific source was not identified. The investigation revealed that releases of VOCs had occurred in the northern part of Lyons and had migrated over 1.5 miles south; these were detected at low levels in recovery well effluent as part of the Lyons Chloride site remediation project. The plumes had migrated close to the Lyons PWS wells where KDHE had already installed two recovery wells to contain the chloride groundwater plume emanating from the OLNM.
A Phase II VOC investigation was conducted in June 2001, specifically attempting to locate the source for the carbon tetrachloride but none were identified.

Monitoring of the Lyons Chloride site Northern Containment System would include analyzing both chloride and VOC concentrations in monitoring and recovery wells. Through these comprehensive monitoring events, it has been determined that the Lyons Chloride site recovery wells were containing the VOC plumes and preventing further migration to the PWS wells. The OSP continues to monitor the VOC plumes (mainly carbon tetrachloride and chloroform) in conjunction with continued remediation efforts associated with the Lyons Chloride Site.

December 2015 Update: Groundwater monitoring will continue at the site on a biennially frequency. OSP will complete a comprehensive file review of the site history and analytical data in order to determine data gaps that need to be addressed FY2016. The next monitoring event is scheduled for 2017.

Mayberry Middle School, Wichita

Location:	Wichita, Sedgwick County
Contamination:	Tetrachloroethylene, Naphthalene
KDHE District:	South Central, Wichita
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The Mayberry Middle School, Wichita site was referred to KDHE's Remedial Section in April 2004 by KDHE's Storage Tank Section to investigate PCE detected in monitoring wells at Mayberry Middle School. The site was later referred to KDHE's Site Assessment Program in August 2004. A KDHE field team collected groundwater samples from locations between several historical and active dry cleaning and laundry facilities in 2005. The data suggested that none of the identified potential source facilities was a contributor to the site.

KDHE returned to the Mayberry Middle School site in 2005 to evaluate groundwater at the school and to determine a migration pathway for the PCE. The investigation found no VOCs in any of the direct-push samples. Two UST monitoring wells had low concentrations of PCE. The absence of PCE in groundwater immediately upgradient of the impacted monitoring wells suggests that the contamination is isolated to the vicinity. No source for the contamination was identified.

Concentrations of PCE decreased to below RSK levels between 2000 and 2005 and no human or environmental targets had been identified. In December 2005 the site entered the OSP monitoring program.

Since March 2006, the OSP annually analyzes groundwater samples for VOCs. Petroleum contamination is being addressed by KDHE's Storage Tank Section. PCE concentrations had decreased to below RSK levels and the site was being considered for reclassification to resolved status.

In September 2008 three monitoring wells were plugged in order to resurface the school's parking lot. The Storage Tank Section replaced and renamed two monitoring wells and installed three new monitoring wells. Only one well showed PCE above RSK levels. Since the 2008 installation, this well has had PCE detections consistently above RSK.

OSP could not gain access from USD #259 to conduct monitoring in 2012. An access agreement has been signed that allows KDHE access for monitoring events through December 31, 2017.

December 2015 Update: The OSP monitored the site in July 2015. PCE was detected below RSK in one monitoring well. Additional investigation is being considered for the site FY 2016. Groundwater monitoring at this site will continue with an annual sampling frequency.

McPherson PWS #7

Location:	McPherson, McPherson County
Contamination:	Volatile organic compounds
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: The McPherson PWS #7 site was discovered in 1997 during a SRE of an aerial pesticide application facility at the McPherson City/County Airport. PCE, 1,1-dichloroethene, and 1,1,1-trichloroethane were discovered in a monitoring well near PWS #7 well. The chlorinated compounds were not attributed to the aerial pesticide application facility.

KDHE performed a Preliminary Assessment/Screening Site Investigation in 2000-2001. Data suggested a source in an open area on airport property south of PWS #7. Two types of geophysical surveys, a magnetometer survey and a terrain conductivity survey, yielded no evidence of buried containers or wastes. Since the source area could not be attributed to any apparent discharge facility, the site entered the OSP in 2001.

In September 2001 a CI sampled area wells and advanced direct-push probes for soil and groundwater samples. Similar VOCs were detected in one groundwater probe and one monitoring well below RSK levels. Apparent historical source areas could not be attributed to any specific facility or apparent discharge area. The site was placed into monitoring in 2002.

Since 2002, OSP annually monitored two monitoring wells and PWS #7 to analyze the groundwater for VOCs. In February 2014, monitoring wells TW-2 and TW-3 were plugged by KDHE due to declining static water levels.

In March and April 2014, a two-Phase Groundwater Investigation was conducted which included the collection of groundwater samples (Phase I) and the installation of three new monitoring wells near PWS #7 (Phase II). PCE was detected in four samples collected southwest of PWS #7. 1,1-DCE was detected in two samples. Phase II activities were completed in April and included

the installation of three monitoring wells. PCE was detected in one monitoring well above its residential RSK value.

Phase III of the groundwater investigation took place in October 2014. Twelve groundwater samples were collected in areas south-southwest of PWS #7. Elevated PCE concentrations were identified south of the impacted monitoring well. Additional groundwater investigation was recommended to continue delineating the apparent source area.

December 2015 Update: In December 2015, a work request for the Phase IV groundwater investigation was awarded to a consultant in order to complete the delineation of the groundwater plume and to evaluate potential source area(s). Groundwater monitoring will continue on an annual frequency.

Oak Knoll Site

Location:	Wichita, Sedgwick County
Contamination:	Volatile organic compounds, Heavy metals
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	EUC

Site Summary: In January 1990, a private groundwater quality assessment study was conducted for the Oak Knoll Addition. VOCs and heavy metals were detected over RSK in temporarily installed monitoring wells. KDHE was notified of the discovery in April 1990. Installing and sampling permanent wells in September 1990 confirmed the contamination.

In May 1994, a private Phase II Site Assessment was conducted on the property adjacent to the Oak Knoll Addition to the west, confirmed VOC contamination near a disposal lagoon formerly used by an automotive and radiator repair business.

In 1997, the Site Assessment Program conducted a SRE which included the sampling of existing monitoring wells. Low levels of VOCs were detected in some site wells and significant contamination in the former lagoon area. By then the facility was occupied by a concrete pumping service and the lagoon was no longer present.

The site entered the OSP to determine potential source areas. A CI in 2000 installed eight additional monitoring wells and sampled existing wells. Soil and groundwater sample results indicated that four VOCs, lead, and cadmium were the main contaminants at the former lagoon; the former automotive repair business was identified as the PRP. KDHE attempted to contact the former auto repair business but did not receive a response.

The site was added to monitoring in 2003. Over time, monitoring wells have been plugged or destroyed, or not sampled due to temporary conditions. However, concentrations of VOCs and metals in wells sampled have been below RSK since 2006. The concrete pumping business built an extension over the former lagoon area.

A 2011 PRP search identified no viable PRPs.

In June 2012 OSP conducted a Limited Site Investigation along with monitoring sample collection in order to assess remnant impacts on groundwater. The investigation collected several soil samples and one groundwater sample near the former lagoon. Soil VOCs were below RSK, but four VOCs in groundwater were above RSK.

December 2015 Update: The last time VOCs had been detected above RSK outside the lagoon area was 2006, indicating the groundwater contamination does not appear to be migrating. The lagoon area has been capped by the building extension. OSP recommends placing an EUC on the property in order to restrict exposure in the area of the former lagoon. The OSP will work with the property owner in the placement of the EUC.

Park City DRO

Location: Park City, Sedgwick County
Contamination: Total petroleum hydrocarbons
KDHE District: South Central, Wichita
Project Manager: Farve, S.
Status: Assessment

Site Summary: The Park City DRO Site is located along West 61st Street between North Seneca Street and North Broadway Street in the City of Park City. A Limited Site Investigation was conducted by a private consultant on behalf of a property development company in March 2009. Investigation activities included soil and groundwater sample collection for analysis of VOCs and TPH-DRO. TPH-DRO was detected in groundwater samples at and above RSK. 1,2-DCA and MTBE were detected below their respective RSK values. Due to the elevated TPH-DRO detections in groundwater, the consultant recommended the property be submitted to KDHE.

In October 2011 the site entered the VCPRP as the Park City Properties site. VCPRP personnel conducted site reconnaissance and observed various dumped items and potential offsite sources of contamination.

In July 2013 the TPH-DRO portion of the site was referred to KDHE's Site Assessment Program to evaluate offsite contamination sources. In December 2013 a Site Evaluation collected eight groundwater samples with direct-push techniques and two groundwater samples from domestic wells located on West 61st Street. Groundwater samples identified VOCs and TPH-DRO below RSK. MTBE was detected below RSK in one of the domestic wells.

The 2013 Site Evaluation recommended that property development company address the TPH-DRO contamination present on their property through the VCPRP, and that the OSP investigate the MTBE contamination, especially in potentially impacted domestic wells.

December 2015 Update: A Site Investigation and receptor search is planned for FY 2016.

Pratt Ag Aviation, Inc.

Location:	Pratt, Pratt County
Contamination:	Pesticides, Volatile organic compounds
KDHE District:	Southwest, Dodge City
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: Pratt Ag Aviation, Inc. (Pratt Ag) was an aerial applicator of agricultural chemicals located within the Pratt Airport/Industrial Park. An UST for aviation fuel was installed along the east side of the facility property in 1986. Pratt Ag ceased operations temporarily in late 1998, when the facility owner died. In April 1999, KDHE conducted a Buried Tank Leak Assessment (BTLA) and a 3000-gallon UST tank and product lines used for aviation fuel were removed. Petroleum contamination was discovered at the elbow bend in the product lines and soils were excavated. The Pratt Ag Aviation, Inc. site was entered into KDHE's Storage Tank Section in May 1999. Operations at Pratt Ag resumed in May 1999 under a new owner, and continued until approximately August 2001. In January 2002 aerial spraying services resumed under the business name Pratt Ag Aviation.

In April and May 2001, KDHE conducted a Summary Site Assessment and installed four monitoring wells related to the UST tank site. The sampling identified carbon tetrachloride, chloroform, and TCE in the monitoring wells and carbon tetrachloride in PWS #2. This contamination was assigned to the Pratt PWS Well #2 site. A soil sample collected in July 2001 at the Pratt Ag Aviation UST site contained several pesticides. Groundwater samples confirmed pesticide and petroleum contamination.

An Integrated Preliminary Assessment/Screening Site Inspection (PA/SSI) for the Pratt PWS Well #2 site was conducted from July 2001 through January 2002. The source of the pesticides and petroleum-contaminants appeared to be the Pratt Ag facility. The pesticide detections lead to the creation of the Pratt Ag Aviation, Inc. Site, which was referred to KDHE's State Cooperative Program in April 2002.

KDHE excavated fuel-impacted soil at the Pratt Ag Aviation UST site in May 2002. In December 2002, seven additional monitoring wells were installed to better delineate the extent of the petroleum contaminants. Soil sample analytical results indicated that most of the petroleum contamination in soil had been removed during the excavation with the highest petroleum contamination still present just below total depth of the excavation. Groundwater samples collected after the installation had shown that the groundwater plume had not been fully delineated. In February 2003, five additional monitoring wells were installed.

In August 2004, two vapor observation wells, one vapor extraction well, and one air sparge well was installed at the Pratt Ag Aviation UST site as part of the Remedial Design Report/Remedial Design Plan. Pilot tests indicated that vapor extraction and air sparging were only marginally effective to remediate remaining contaminated soil below 50 feet. The Storage Tank Section

program abandoned and plugged some monitoring wells and the unsuccessful remedial wells and began semi-annual monitoring in 2006.

Increasing concentrations of carbon tetrachloride over RSK in PWS #2 led to the well taken offline in 2005.

Several attempts were made between 2005 and 2007 to have the Pratt Ag Aviation, Inc., owner enter the KDHE State Cooperative Program and conduct investigation and remediation of the pesticide contamination. A 2007 Ability to Pay Analysis indicated she had insufficient financial resources. No other PRPs were identified. The site was transferred to OSP for additional investigation in March 2011.

From February through March 2012, OSP conducted a joint investigation including a PSE for the Pratt Ag Aviation, Inc. site and a Source Investigation/Supplemental Sampling for the Pratt PWS Well #2 and Pratt Army Airfield sites. Eleven monitoring wells and PWS #1 were sampled and analyzed for pesticides and VOCs. Six wells located near the remaining Pratt Ag facility building where former pesticide storage, mixing and distribution equipment had been located had pesticides above their respective RSK values. The PSE concluded that significant pesticide contamination had been detected in the groundwater located near the loading area of the former Pratt Ag facility and near the drainage ditch leading from the loading area.

In 2013, PWS #2 was plugged and its water rights were transferred to PWS #1.

December 2015 Update: The site was placed into biennial monitoring with the next monitoring event scheduled for 2017. It is recommended that delineation of pesticide impact to soil and groundwater be completed FY2016.

Pratt Army Airfield/Pratt PWS Well #2

Location: Pratt, Pratt County
Contamination: Volatile organic compounds
KDHE District: Southwest, Dodge City
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The United States Army constructed and operated the Pratt Army Airfield (AAF) from 1942 to 1945. Flight school training occurred at the base, and later B-29 bombers were sent to Pratt AAF for modification before action during World War II. Military operations may have resulted in releases to the environment. Two PWS wells served the airfield: PWS #1 in the central portion and PWS #2 in the northern portion. After closure, the airfield land west of Highway 281 was quit-claimed to the City of Pratt in 1948, and the area east of the highway reverted to private ownership. Many of the former airfield buildings have been moved or destroyed and much of the airport has been leased to private companies for various commercial and industrial purposes. A feedlot is operated on the western portion of the site. The runways are

still used for small aircraft. The City of Pratt deeded the entire former airfield west of Highway 281 to the Pratt Airport Authority in May 1991.

An Archives Search Report in September 1994 identified materials disposal, chemical warfare training materials, and small arms munitions as potential contaminants and recommended that a different investigation be conducted to investigate other contaminants such as solvents. A Phase II investigation conducted in 1994 installed and sampled six monitoring wells but no VOCs were detected.

In April and May 2001 four monitoring wells were installed for a KDHE Petroleum Storage Tank Release Trust Fund Investigation at the Pratt Ag Aviation, Inc. site. The sampling identified carbon tetrachloride, chloroform, and TCE in the monitoring wells and carbon tetrachloride in PWS #2. This contamination was assigned to the Pratt PWS Well #2 site.

In July and August 2001 KDHE conducted an investigation to determine the source of carbon tetrachloride in the PWS well. Based on regional groundwater flow direction and results from the trust fund investigation, Hangar T-304 (North Hangar) was identified as a source of contamination. KDHE installed additional monitoring wells and collected soil samples. The investigation confirmed the presence of VOCs in soil and groundwater near the North Hangar and near Hangar T-307. KDHE also concluded that additional sources may be contributing to groundwater contamination. The site was referred to KDHE's Assessment and Restoration Section for further response by the USACE under the Federal Facilities Program.

Between August and October 2002, a supplemental investigation identified eleven downgradient domestic water wells for sampling. Carbon tetrachloride was detected in seven wells, and two wells had concentrations above RSK. Low levels of TCE were detected in two of the wells. In spring 2003 the USACE installed granulated activated carbon filters at the wells containing carbon tetrachloride above RSK.

Increasing concentrations of carbon tetrachloride over RSK in PWS #2 led to the well taken offline in 2005.

KDHE's Site Assessment Unit extensively sampled groundwater during an Expanded Site Inspection in 2010. Groundwater results suggested at least four potential source areas for low levels of carbon tetrachloride, including three hangars, but did not find the source of high concentrations of carbon tetrachloride in the private wells to the east.

The Pratt PWS Well #2 site entered the OSP in September 2011. A Phase I Source Investigation in November included private well sampling east of Highway 281 and direct-push soil and groundwater sampling near two former Army mess halls and garbage storage areas. The investigation did not identify a source area for the contamination and well sample results confirmed carbon tetrachloride above RSK at the two private wells. The USACE continued to monitor and maintain the two treatment units. Additionally, at KDHE's request, EPA Region 7 completed a PRP search in 2011.

KDHE sampled monitoring wells and PWS #1 for pesticides and VOCs in March and April 2012 during a PSE performed for the Pratt Ag Aviation, Inc., site that also provided supplemental data for this site. Groundwater samples collected found pesticides and hydrocarbons associated with aviation fuel in some monitoring wells but no carbon tetrachloride or TCE.

KDHE's own PRP search was concluded in June 2013. In July the USACE turned ownership and maintenance of the carbon treatment systems over to the private well owners and withdrew from site activities. In lieu of the USACE's withdrawal, the Pratt Army Airfield portion of the site was transferred to the OSP. OSP has continued with semi-annual monitoring of the two contaminated private wells to ensure the carbon treatment systems are effectively remediating the well water to allow for domestic use.

In 2013, PWS #2 was plugged and its water rights were transferred to PWS #1.

December 2015 Update: Groundwater was sampled in March of 2015. OSP will continue to investigate source(s) of contamination and maintain the private treatment systems as necessary.

Richardson Property Site

Location:	Hutchinson, Reno County
Contamination:	Total petroleum hydrocarbons, Volatile organic compounds
KDHE District:	South Central, Wichita
Project Manager:	Farve, S.
Status:	Assessment

Site Summary: The Richardson Property site was discovered in May 2001 when the KDHE South Central District Office was notified of onsite oil sludge, kerosene, and refuse. A district office representative informed the Reno County Health Department of the refuse and referred the remainder of the site to KDHE for further action.

An assessment performed by KDHE's Site Assessment Program in 2001 found petroleum in soil, groundwater, and lagoon samples. Numerous corroded drums were tested and the contents were determined to be non-hazardous.

The assessment did not identify a viable PRP, so the site entered the OSP in December 2001. A phased CAS cleared the site of trash and drums with the help of a KDHE Bureau of Waste Management grant in June 2003.

Further cleanup activities in May 2004 emptied, crushed, and disposed of bulk storage tanks at the Reno County Landfill. Approximately 800 cubic yards of sludge were stabilized with cement kiln dust onsite and approximately 1000 cubic yards of stabilized sludge and contaminated soil was disposed of at the Reno County Landfill. The excavated area was then backfilled and reseeded to native grass. Groundwater contamination remains above MCL, but below non-residential RSK levels. Either an EUC needs to be placed on the property or groundwater reassessed to determine the current level of impacts.

December 2015 Update: OSP will conduct a comprehensive file review of the site history and identify data gaps that will be addressed FY 2016.

Warren Petroleum Plant

Location:	Galva, McPherson County
Contamination:	Total petroleum hydrocarbons, Heavy metals
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: Several refineries across the state were identified in the fall of 2005 through historical reviews and reconnaissance activities. The former Warren Petroleum Plant, identified through historical records, operated from 1935 to 1942 in an area one mile northeast of Galva. The plant produced propane, butane, and gasoline that were shipped by truck and rail.

In May 2006, a Phase I FFRA was completed. The Phase I FFRA identified potential environmental impacts from former petroleum plant operations and multiple ASTs, concrete foundations, and exposed pipes present on site since the 1930s.

In April 2010, a Phase II FFRA investigation was conducted. Analytical results indicated arsenic, cadmium, mercury, nickel, naphthalene, gasoline, and TPH-DRO were present in soil and/or groundwater at concentrations exceeding RSK. Free product was identified in two pipes protruding from the ground. An additional investigation was proposed to further delineate the extent and magnitude of contamination.

December 2015 Update: Due to its priority ranking and limited resources, funds, and staff, the OSP did not work at the Warren Petroleum Plant site in 2015.

Yoder, Village of (Yoder VOCs)

Location:	Yoder, Reno County
Contamination:	Carbon tetrachloride
KDHE District:	South Central, Wichita
Project Manager:	Richards, G.
Status:	Monitoring and Assessment

Site Summary: The Village of Yoder site is located in the same vicinity as the HABIT site. In 1988 the EPA connected impacted homes in the City of Yoder to the newly created Reno County RWD #101 in response to the discovery of VOC contamination in domestic water supply wells.

Because a responsible party was not identified during the EPA investigations, the site was referred to the OSP in 1994. In 1996 KDHE installed 13 monitoring wells upgradient of the

RWD #101 and RWD #3 wells to create a sentry monitoring well network for the water districts. Due to the proximity of the two sites, the Village of Yoder site entered the LTM program with the HABIT site in 1999, with private water supply and monitoring wells sampled semiannually.

A CAS in 2004 evaluated the safety of the RWD #101 water supply, located in the path of the contaminant plume migrating from the HABIT site. The CAS proposed several remedial options, including installing recovery wells to intercept the contaminant plume and installing a remedial system at the RWD #101 well. Budgetary constraints prevented any remedial action at that time.

In January 2009 the OSP installed whole-house treatment systems in two homes whose shared water supply well had been contaminated with TCE above RSK. In June 2009 a soil-gas source investigation was initiated. Data from this investigation was supplemented by soil and groundwater samples collected in October 2009 and sewer sediment samples collected in December 2009.

OSP installed three more whole-house treatment systems in late 2011 due to PCE above RSK in private wells, and added eight private wells to its spring 2012 monitoring network in response to the continued migration of the contaminant plume.

December 2015 Update: Investigation and monitoring of this site is being managed concurrently with the HABIT site.

MARAIS DES CYGNES RIVER DRAINAGE BASIN

Ottawa FMGP

Location: Ottawa, Franklin County
Contamination: Polynuclear aromatic hydrocarbons, Volatile organic compounds, Heavy metals
KDHE District: Northeast, Lawrence
Project Manager: Wells, T.
Status: PRP Identification/Negotiation

Site Summary: The Ottawa FMGP was discovered in a KDHE statewide evaluation of historical manufactured gas plants. The site entered the OSP for further investigation.

A PSE conducted in June 2005 collected soil and groundwater samples and analyzed them for cyanide, metals, VOCs, and PAHs. PAHs were found above RSK in soils. VOCs and PAHs were above RSK in four groundwater samples.

Soil samples collected in January 2006 as part of the CA indicated metals and PAH concentrations above RSK levels. Groundwater samples contained metals, VOCs, and PAHs below RSK levels. It could not be determined if PAH and metals concentrations were due to FMGP operations or materials placed at the site when it was reportedly used as a dump.

A May 2008 review of historical records indicated VOC contamination was from bulk gasoline storage tanks adjacent to the site, not FMGP operations. The VOC contamination was subsequently transferred to the Storage Tank Section. A 2010 CI indicated metals, PAHs, and VOCs exceed RSK in soil and/or groundwater. Coal tar identified onsite did not exceed the MCL for toxicity characteristics. The majority of contamination appears limited to the subject property.

A PRP search in May 2014 identified a PRP.

December 2015 Update: KDHE is currently negotiating with the PRP to enter the site into an appropriate state response program.

Paola Refining Co.—Former

Location: Paola, Miami County
Contamination: Total petroleum hydrocarbons, Volatile organic compounds
KDHE District: Northeast, Lawrence
Project Manager: Wells, T.
Status: Assessment

Site Summary: During a November 2002 VCPRP investigation, KDHE identified TPH-GRO and TPH-DRO at the Miami County Coop. A review of the property history determined that a petroleum refinery had once been located on the Coop property. The site entered the OSP in April 2003.

A PSE found soil and groundwater contaminated by benzene, TPH-GRO, and TPH-DRO but could not define groundwater plumes or determine groundwater flow due to the inadequate volume of water recovered. It appeared the water encountered was not representative of actual groundwater, but rather seasonal, perched water on the shale bedrock. A 2004 evaluation of the aquifer concluded it could not be considered potable based on quality and quantity.

In June 2005 a review of historical information revealed more about former refinery operations. KDHE determined that contamination on the northern portion of the Coop property likely resulted from former Coop operations rather than the former refinery and transferred several impacted sample locations to the Storage Tank Section.

In November 2005 soil samples collected in an area of former refinery storage tanks indicated TPH-GRO, TPH-DRO, motor oil, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene above RSK. Soil samples collected further downgradient of the former refinery were non-detect or below RSK.

December 2015 Update: OSP will conduct a comprehensive file review of site history and analytical data in order to determine data gaps to address FY 2016.

MISSOURI RIVER DRAINAGE BASIN

Uncle Sam Oil Refinery (Former)—Atchison

Location: Atchison, Atchison County
Potential Contamination: Refinery waste including polynuclear aromatic hydrocarbons
KDHE District: Northeast, Lawrence
Project Manager: Wells, T.
Status: Assessment

Site Summary: The Uncle Sam Oil Company operated from 1906 to 1910, when the company tore down the refinery in Atchison and moved the equipment to the Amourdale Refinery in Kansas City. KDHE identified former refineries statewide in 2005 through historical reviews and reconnaissance. The site was placed with the OSP in 2006.

A Phase I FFRA was completed in May 2006 and additional assessment activities were recommended.

December 2015 Update: A comprehensive file review of the site history and analytical data is necessary in order to identify data gaps and further address this site in 2016.

NEOSHO RIVER DRAINAGE BASIN

4th Ave & Merchant St.

Location: Emporia, Lyon County
Contamination: Carbon tetrachloride
KDHE District: Southeast, Chanute
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The 4th Ave & Merchant St. site was referred to the KDHE Remedial Section by KDHE's Storage Tank Section after finding carbon tetrachloride above RSK levels in two monitoring wells at the Lyon-Coffey Electrical Coop UST Site in January 2004.

A SRE in February 2005 identified a source area at the northeast corner of the property at 104 West 4th Avenue but did not find a responsible party. Groundwater data indicates that the lateral extent of carbon tetrachloride contamination appears to be limited to within 120 feet of the apparent source area.

In March 2005 the site entered the OSP monitoring program. Monitoring sampling activities since 2005 have detected carbon tetrachloride in two monitoring wells above RSK levels. The remaining monitoring wells have had no detections of carbon tetrachloride.

December 2015 Update: The OSP sampled groundwater at the site in October 2015. The extent of the carbon tetrachloride in groundwater requires additional investigation, The next monitoring event is scheduled for 2017.

Bruce Mining and Smelting Company

Location: Cherokee, Crawford County
Contamination: Heavy metals
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: In 1897, the Midland Mining and Smelting Co. began buying coal lands, founded a town called Midland, and built a zinc smelter. In 1899, the post office rejected the name of Midland as being too similar to the name of Midway, Kansas; and the town and company changed their names to Bruce. Like other coal-fired smelters, the Bruce smelter could not compete with the early gas-fired smelters in Allen County and shut down in 1900. Bruce Mining and Smelting Co. could not meet its financial obligations, and the smelter and town site were auctioned in 1906 to The South Side Improvement Co. South Side Improvement repaired the smelter and leased it to Cockerill Zinc Co. that year, who operated it intermittently through

1907. Cockerill Zinc Co. went bankrupt in 1910 and the plant was abandoned. In 1915 the plant was either leased or purchased by Cherokee Smelting Co. and operated through 1916, when it was abandoned permanently. Coal companies operated on the property from 1940 to 1971.

The Bruce Mining and Smelting Company site was identified in 2003 through historical reviews and reconnaissance activities. KDHE conducted these efforts to identify several former smelter facility locations documented to exist throughout southeast Kansas. The site was placed in the OSP in May 2003.

Phase I and Phase II Focused Former Smelter Assessment (FFSA) activities in 2004 confirmed smelting operations and smelter wastes on site. Two intermittent tributaries of Wolf Creek were cutting into slag piles. Surface soil, subsurface soil, smelter waste, and sediment samples have arsenic, cadmium, lead, and zinc concentrations well above background concentrations. Cadmium, lead, and zinc concentrations in one groundwater sample exceeded RSK. Cadmium and zinc concentrations in a surface water sample were above the EPA's Aquatic Life Criteria (ALC) values.

KDHE was unable to identify a PRP in 2006.

In April 2008 a SI evaluated the horizontal and vertical extent of smelter wastes onsite, collecting surface soil, subsurface soil (trench), sediment, and surface water samples. No groundwater was found. Soil and sediment samples contained arsenic, lead, cadmium, and zinc concentrations above RSK for soils and Threshold Effect Concentration (TEC) values for sediments. Upstream surface water samples had zinc concentrations above the EPA's ALC values; while downstream surface water samples had concentrations of cadmium and zinc above ALC values. An estimated volume of 25,000 cubic yards of impacted soils and smelter waste is onsite.

In January and February 2013 KDHE collected surface soil samples for metal analysis from seven residential yards surrounding the site to determine if the properties had been impacted by historic smelting operations. Laboratory analysis indicated surface soils at six of the residential properties were below RSK. One residential property had elevated detections of chromium; however, the concentrations were comparable to background levels in the associated soil series and no other metals related to historic smelting activities were detected. No further action was recommended for the residential properties.

December 2015 Update: A Wetland Delineation Report was provided to the OSP in March 2015. The document was submitted to the USACE with OSP noting additional areas at the site that may require additional smelter waste characterization before remedial activities are implemented.

Canada Carbon Tetrachloride

Location:	Canada, Marion County
Contamination:	Carbon tetrachloride, Nitrate
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: The USDA/CCC ran grain storage operations in Canada from 1954 to 1974. Ownership of the grain storage operation changed several times from 1974 to present-day.

The Canada Carbon Tetrachloride site was identified in October 1997 during private well sampling conducted to inventory former USDA/CCC grain bin sites in Kansas. In response to findings of carbon tetrachloride in domestic wells, KDHE conducted a SRE in March 1998. The former USDA/CCC facility was identified as a potential source area for the carbon tetrachloride groundwater contamination.

A PA/SI conducted in April 1999 suggested the former USDA/CCC facility as the carbon tetrachloride source and confirmed carbon tetrachloride and nitrate impacts to groundwater above federal drinking water standards, including impacts to several domestic wells in the area. Elevated nitrate levels appeared to be associated with non-point sources and possibly the Co-op facility located on site. Following review of the PA/SI report, the USDA/CCC was requested to provide alternate water supplies to the affected residences. Bottled water was supplied to two residences temporarily. The Marion County RWD #4 extended water lines to Canada in April 1999. Additional investigation was conducted by USDA in 1999, which suggested a private grain storage facility as the carbon tetrachloride source, rather than the former USDA/CCC facility. Consequently, the site was referred to the OSP for further evaluation.

A SSA was conducted in November 1999. The results of the SSA indicated trace detections of carbon tetrachloride in soil at the location of the SRE activities and on the former USDA/CCC site.

Three monitoring wells were installed in January 2001 as part of a Limited CI. Based on the data obtained, six additional monitoring wells were installed in September 2001. A CI completed in 2002 indicated both the former USDA/CCC facility and the private facility as likely carbon tetrachloride source areas. With the impacted receptors addressed and inconclusive nitrate and carbon tetrachloride source areas, the site was placed into monitoring in August 2002.

In October 2007, KDHE permitted the USDA/CCC to reclassify the site to “No Further Action” status under the Intergovernmental Agreement between KDHE and USDA/CCC.

Since 2002, monitoring events include sampling the private wells and monitoring wells. In the private wells, carbon tetrachloride concentrations have been decreasing. Carbon tetrachloride has been persistently present over RSK, but decreasing in monitoring wells. Nitrate concentrations have been elevated over MCL in all private wells and monitoring wells.

December 2015 Update: The site is sampled annually with the support of the North Central District Office. In February 2015, 11 wells were sampled for VOCs and nitrate. Carbon tetrachloride was detected over RSK in one monitoring well; and was detected below RSK two private wells and six monitoring wells. Nitrate was detected over the MCL in two private wells and all eight monitoring wells. It is recommended for a carbon tetrachloride source investigation to take place in the northern portion of the site and a nitrate source investigation to take place in the central portion of the site. The site will be monitored until a site investigation can be completed.

Cherokee Mining and Smelting

Location:	Cherokee, Crawford County
Contamination:	Heavy metals
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Remediation

Site Summary: The Cherokee Mining and Smelting site was identified during research of former smelter sites in Kansas completed in April 2006. The site operated as a smelter from 1894 to 1905 and has been used primarily as agricultural land since.

KDHE's Site Assessment Unit conducted an SRE in May 2006 which identified smelter waste and slag. Surface soil samples contained arsenic, lead, cadmium, and zinc above the RSK soil values. There are no viable PRPs. The site entered the OSP in July 2008.

In April 2009 a SI evaluated the horizontal and vertical extent of smelter wastes by collecting surface soil, subsurface soil (trench), sediment, and surface water samples. Soil and sediment samples contained arsenic, lead, cadmium, and zinc concentrations above RSK for soils and TEC values for sediments. A surface water sample contained cadmium and lead above the EPA's ALC values. A calculated volume of 13,850 cubic yards of impacted soils and smelter waste is present onsite.

In April 2010 the OSP collected additional sediment samples along the intermittent creek and two background sediment samples. Most sediment samples contained arsenic, cadmium, lead, and zinc above their respective TEC values. Zinc was highest in the background sediment sample located farthest upstream.

In October 2010 KDHE conducted a Supplemental Site Inspection (SSI) to collect and analyze surface soil samples for total metals from three nearby residential properties, the Southeast High School USD #247, and background locations. The SSI focused on determining if historic smelting operations had impacted surface soils on properties bordering the site. Initial results indicated elevated total chromium at two residential properties and the high school. Additional work in July 2011 resampled the elevated residential properties and the school and collected background surface soil samples. Data collected during the SSI suggest that no surface soils at properties adjacent to the site had been impacted by the historic smelting operations. The data

indicate that arsenic and total chromium on adjacent properties is native and naturally elevated rather than the result of smelter operations.

Aquifer testing in August 2011 showed the upper unconfined aquifer onsite to be non-potable, thus requiring no future need for groundwater monitoring.

A Wetland Delineation in September 2012 identified two areas of fringe wetlands. The report was submitted to the USACE for a preliminary jurisdictional determination of the wetlands. The site is ready for remediation pending available funding.

December 2015 Update: The OSP did not address the Cherokee Mining and Smelting site in 2015.

Concreto Smelter

Location: Gas, Allen County
Contamination: Heavy metals
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The Concreto Smelter site was identified during research of former smelter sites in Kansas completed in April 2006. The site was originally developed as a Portland cement factory in the early 1900s, and was used as a smelter by the Iola Zinc Company from 1915 to 1916. It was largely dismantled in 1917. The site entered the OSP in 2006.

A 2006 SRE identified visual slag smelter waste and identified lead, cadmium, and arsenic concentrations above RSK values in surface soil. EPA Region 7 conducted a PRP search in August 2010. KDHE reviewed the EPA PRP search report and conducted an additional independent PRP search.

A PRP search in January 2014 identified a PRP. KDHE negotiated with the PRP to enter the site into the State Cooperative Program; but was not successful. Additional assessment and waste characterization is needed.

December 2015 Update: The Concreto Smelter site will be further addressed in 2016 by the OSP.

MARCO (Mid-America Refining Co.)

Location:	Chanute, Neosho County
Contaminations:	Total petroleum hydrocarbons, Volatile organic compounds
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Transferred

Site Summary: The MARCO site was a former oil refinery located on the north edge of Chanute, Kansas. The site has historically been a source of surface water, groundwater, and soil contamination by gasoline, crude oil and oil products, and other VOCs. The site included an adjacent property containing a tank bottoms sludge disposal pit accessible to the public. When the site was discovered, it was unsecured and children were able to enter and play on the property. One child reportedly slipped into the bottom sludge pit, which was approximately eight feet deep.

For a period of several years, firms contracted by the property owner salvaged metal from the site. Salvage operations stopped in the early 1990s when KDHE Southeast District Office personnel discovered improper disposal of petroleum wastes into a Class II disposal well, numerous spills of tank and piping contents, and burning tank contents.

In 1998 the EPA used funding available through the Oil Spill Prevention and Control Act to address source areas for contamination that had migrated off the MARCO property. The EPA completed the cleanup of the site; removing tanks, product, piping, and several thousand tons of contaminated soil.

In 1998 the OSP discovered two areas east and southeast of the MARCO property that were significantly contaminated. The CI defined areas of surface and subsurface soil and groundwater contaminated with VOCs and semi-volatile organic compounds above recommended cleanup levels. The OSP placed the site in the LTM program in 2000 and began a CAS in 2004.

Two groundwater probe events in 2005 investigated free product thickness offsite and levels of petroleum constituents remaining onsite. An SI in 2005 collected data from areas that had not been previously characterized. Most contamination is limited to the southern half of the site and areas directly east. This information was used to evaluate corrective action alternatives proposed in the 2004 CAS.

A Work Plan for a Focused CAS was prepared in May 2006. Additional investigations to be performed included limited hydraulic aquifer testing, hydraulic slug testing and groundwater sampling to assess in-situ bioremediation. The groundwater sampling for the focused CAS was performed along with the LTM event in December 2006. The analytical results from the groundwater samples collected indicate a continued presence of petroleum constituents in groundwater. Additional limited hydraulic aquifer testing has not been conducted. The work plan for the CAS was placed on hold due to financial restraints.

In 2012 KDHE had contacted the current property owner to encourage them to conduct remedial action at the site. This lead to a PRP search being conducted in 2013 for past operators/owners of the site property.

Monitoring results from February 2014 detected the continued presence of petroleum contaminants above RSK in the southeast and eastern portions of the site.

December 2015 Update: The site was transferred to the State Cooperative Program in January 2015.

McGraw Trucking

Location:	Frontenac, Crawford County
Contamination:	Heavy metals
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The McGraw Trucking site is located at 832 West McKay Street in Frontenac. Between 2004 and 2008, McGraw Trucking constructed a building on the property for the trucking business and constructed a parking lot pad from concrete rubble, bottom ash from Trigen's Kansas City power plant, and surplus black granular roofing feedstock from McCabe Industrial Minerals. Low pH runoff water and oxidized iron precipitates were observed at the site. KDHE first attempted to work with McGraw Trucking to stop the leachate from leaving the site; however; McGraw Trucking went bankrupt in 2009. In July 2009 the EPA brought in limestone and agricultural lime to neutralize acidic runoff, but this was not a permanent solution.

KDHE executed a Consent Order with Trigen, McCabe, and Mr. & Mrs. McGraw in April 2010 for an interim measure (IM) and removal site evaluation (RSE) scope of work. An IM work plan has been approved and onsite construction activities for the interim measure were completed in July 2010. The IM consists of a containment berm that surrounds the parking lot pad that is lined with limestone gravel. This IM is intended to prevent low pH runoff from leaving the former McGraw property and neutralize the pH of impacted surface water runoff. A RSE work plan was implemented in summer 2010 to characterize the nature of the material used to construct the parking lot pad and a report of investigation results was approved in December 2010. An evaluation of corrective action alternatives with a recommended remedy was presented to KDHE in the RSE report.

An Agency Decision Statement that described KDHE's selected remedy for the site was finalized in May 2011. KDHE negotiated a consent agreement to address contamination in 2012. Removal action activities in summer and fall 2012 removed a large majority of the parking lot to a landfill and the rest neutralized and stabilized. Approximately 15,000 tons of fill material potentially comingled with bottom ash was excavated and disposed of. An application for EUCs was submitted and approved in August 2012. The Removal Action reports were submitted and

subsequently approved in September 2013. The consent order was terminated on December 12, 2013.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Pittsburg Short Method Smelter

Location:	Pittsburg, Crawford County
Contamination:	Heavy metals
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The Pittsburg Short Method Smelter site was identified in 2003 through historical reviews and reconnaissance activities. The Pittsburg Short Method Smelter apparently operated as a silver and gold smelter rather than a lead and zinc smelter.

A Phase I FFSA completed in May 2004 confirmed smelting operations and smelter wastes onsite. After resolving access issues, KDHE performed a Phase II FFSA in 2005. Sample results confirmed arsenic, lead, and mercury in soil and shallow subsurface soil. There was no groundwater onsite. No PRP could be identified. Additional assessment and waste characterization is needed.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016. .

Webster/Miller Refinery

Location:	Humboldt, Allen County
Contamination:	Refinery waste including polynuclear aromatic hydrocarbons
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	EUC

Site Summary: The former refinery was built by the Webster Oil company and operated from 1904 to the late 1920s. The refinery was also named the Humboldt Refinery and the Miller Refinery. A Preliminary Assessment was completed by KDHE in April 1990. Soil/sludge samples were collected in an area that contained two sludge pits. Analytical results showed the soil was impacted by PAHs and petroleum hydrocarbons.

The site entered the OSP in 1997. A CI discovered VOCs, PAHs, pesticides, nitrate, and metals in soil and groundwater. Although the site posed minimal threat to human health, the exposed sludge pits posed an environmental problem for waterfowl.

A CAS in September 1999 considered excavating the waste sludge with offsite disposal or onsite stabilization.

In 2002 KDHE removed sludge material from two sludge pits and a "chemist pit" area, as well as a sludge breakout area discovered during the project. The cleanup excavated over 3,100 cubic yards of waste material, mixed it with cement kiln dust from a nearby cement plant to neutralize the low pH and make it less mobile, then encapsulated it at a waste treatment cell on the western portion of the property. Vegetation was established on a clay and soil cap.

The original access agreement signed by the property owner in 2002 prior to the Corrective Action activities noted that a deed restriction would be placed on the property in the area of the soil cap. However, the deed restriction was never completed. KDHE has tried to have the property owner enter the soil cap into the EUC Program, but to no avail. An EUC needs to be filed before the site can be reclassified as resolved.

December 2015 Update: The site will remain in the OSP with an unchanged status until the EUC process has been completed.

SMOKY HILL-SALINE RIVER DRAINAGE BASIN

Bird-Feldt Farms

Location: Hays, Ellis County
Contamination: Carbon tetrachloride
KDHE District: Northwest, Hays
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The City of Hays discovered carbon tetrachloride in groundwater during the drilling of a test well on the Bird Farm property in 1990. The sampling of the test well and subsequent sampling of the Bird and Feldt private wells indicated carbon tetrachloride concentrations well above RSK. Subsequent response by KDHE's Site Assessment Program identified a former seed-cleaning facility as a potential carbon tetrachloride source.

In 1994, KDHE completed a PA, which identified three potential source areas: the former seed-cleaning facility at the Bird Farm, the Feldt Farm, and a nearby railroad area where grain fumigation may have occurred. KDHE installed a whole house GAC filtration system for the Feldt residence in 1997. An effective water treatment system (reverse/osmosis) was already in place at the Bird residence. The site was transferred to the OSP.

In 1998, three groundwater monitoring wells were installed to evaluate the groundwater contamination. Also, a CI was conducted which identified a former dump, also considered a potential source area, in the northwest portion of the Bird property. During the CI, soil and groundwater samples were collected using direct-push sampling techniques in order to delineate the extent of the carbon tetrachloride contamination. Although carbon tetrachloride impacts were detected near the former seed-cleaning area, a definitive point source was not identified. Nine additional monitoring wells were then installed.

A CAS was conducted to evaluate remedial options; however, monitoring was determined to be an effective means of addressing the contamination. Five additional monitoring wells were installed.

The site is annually monitored and data has indicated that treatment systems have been effective and that carbon tetrachloride levels have decreased.

December 2015 Update: The site was sampled in April 2015. Carbon tetrachloride was detected under its RSK in all samples. OSP will continue to monitor groundwater at this site on an annual frequency.

Country View Mobile Park BTA

Location: Hays, Ellis County
Contamination: Volatile organic compounds
KDHE District: Northwest, Hays
Project Manager: Farve, S.
Status: Assessment

Site Summary: In October 2010 KDHE's Brownfields Program conducted a Phase I Brownfields Targeted Assessment (BTA). Recognized environmental conditions (RECs) were initially identified as hazardous substances and petroleum products associated with a former septic lagoon and discarded metal piping from an oil field service company that left the property in 2008 and 2009.

A Phase II BTA in February 2011 identified manganese (dissolved) in groundwater above RSK. It appeared that manganese potentially originated from an upgradient source. Elevated manganese detections near the former septic lagoon could have been attributed to substances disposed in the lagoon or reducing conditions created by the lagoon. The manganese and PCE detections were referred to KDHE's Site Assessment Program for further assessment and source identification. It was recommended that the owner file an EUC to restrict groundwater use.

KDHE's Site Assessment Program conducted a SE in August 2011 to identify possible upgradient sources of manganese and PCE. Groundwater samples collected using direct-push techniques and from existing wells did not identify a concentrated manganese plume. The elevated levels appeared to be naturally occurring in area sediments, and no further assessment was recommended for manganese. PCE was detected below RSK in a private company's domestic well, leading to additional investigation to determine the upgradient source of PCE.

The Site Assessment Program conducted a PA in November 2012 to collect groundwater using direct-push techniques and from monitoring wells. Personnel with KDHE's Northwest District Office collected groundwater samples from the Country View North PWS well and the Country View West PWS well in January 2013. PCE was detected below RSK in groundwater samples collected along Highway 40, downgradient of the APAC asphalt facility. There were no detections of PCE in any direct-push groundwater samples collected upgradient or side gradient of APAC. However, the PA did not identify a source for the PCE. The site was transferred to OSP in April 2013.

OSP reviewed agency files for APAC and identified a history of PCE detections in monitoring wells since 2009. These monitoring wells were installed in response to a 1992 fuel tank leak at what was then the Allied, Inc.-Asphalt Division property. APAC purchased Allied, Inc. in 1999. A Limited Risk Based Corrective Action Assessment in April 2009 identified PCE in two monitoring wells. The monitoring wells were subsequently plugged. APAC has filed a hazardous waste generator form with KDHE's Bureau of Waste Management which lists PCE as a waste produced onsite. All historic detections of PCE associated with the site have been below RSK, samples collected upgradient and side gradient of the APAC property have been non-detect and samples collected downgradient have had low levels of PCE. OSP plans a source investigation of

the APAC property to identify PCE source areas, subject to funding limitations and site priorities.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Fossil & Wichita Ave.

Location: Russell, Russell County
Contamination: Volatile organic compounds
KDHE District: Northwest, Hays
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The Fossil & Wichita Ave. site was identified in July 1999 after PCE was detected in a monitoring well at the former Kerr McGee UST site.

KDHE's Site Assessment Program conducted a SRE in January 2001. The investigation detected PCE above RSK in one temporary well but did not determine a source. A used car lot operated at the facility in 2002, but closed in January 2003.

In June 2003 KDHE performed a PA/SSI which confirmed PCE above RSK in one temporary well. Since the source of contamination could not be traced to a responsible party, the site was transferred to OSP's monitoring program in August 2003.

In July 2005 KDHE's UST Program plugged all monitoring wells. In November 2005 OSP installed four new monitoring wells and sampled these as the first monitoring sampling event. PCE was detected above RSK in one monitoring well. Two monitoring wells had detections of petroleum based hydrocarbons that were initially attributed to the former Kerr McGee UST site.

Annual monitoring events from 2006 to 2009 indicated PCE below RSK in one monitoring well. Petroleum constituents in two monitoring wells were attributed to the former Kerr McGee UST site.

In April 2010 OSP conducted annual monitoring sampling and also sampled three monitoring wells from the Sellens Auto Repair UST site. PCE was below RSK in one of the UST monitoring wells. Petroleum constituents were detected.

After reviewing the petroleum constituent data and UST Program files, KDHE determined that the petroleum constituents did not come from a known UST site. Groundwater samples collected in the vicinity in April 2010 supported this conclusion. Historical research identified several potential petroleum sources but no single source was identified. A SSI in April 2011 did not identify a source area for petroleum contamination east of the site.

December 2015 Update: OSP is monitoring groundwater at this site on a biennial frequency. The next monitoring event is scheduled for 2016. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Hope PWS #10 Site

Location:	Hope, Dickinson County
Contamination:	Carbon tetrachloride
KDHE District:	North Central, Salina
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: Carbon tetrachloride was detected above RSK in a groundwater sample collected from the Hope PWS #10 in 1986. KDHE completed a PA in 1987 followed by a SI in 1988. The site entered the OSP monitoring program in 1995.

In 1996 OSP conducted a CI and installed five shallow and five deep monitoring wells. KDHE has collected groundwater samples annually from 1996 to 2004 and from 2010 to present, and biannually from 2006 to 2010 from monitoring wells, two private wells, and the former PWS #10.

Groundwater results indicated carbon tetrachloride concentrations consistently exceeded RSK in two monitoring wells and one private well. Over time, carbon tetrachloride concentrations decreased significantly in the two impacted monitoring wells, but concentrations in the private well remained above RSK.

In January, June, and August 2009, KDHE collected nitrate and chloride samples. Nitrate samples, historical documentation, and previous analytical results identified the North Central Kansas Coop as the PRP for nitrate contamination. In January 2010 the Coop entered the VCPRP to address the nitrate contamination. The Kansas Geological Survey analyzed the chloride samples and attributed the high chloride levels to naturally occurring formation brines.

In February and March 2010, KDHE investigated the former USDA/CCC property to determine if carbon tetrachloride contamination was present at previously un-sampled locations. Analytical results confirmed the former USDA/CCC grain bins are probably not a significant source of carbon tetrachloride contamination.

In April 2010 the deep monitoring wells were plugged and abandoned. Additionally, one lawn and garden well, the previously impacted private well, and PWS #10 were removed from the monitoring sampling plan due to lack of significant detections of carbon tetrachloride, inoperability of the well pump, and the upgradient position of PWS #10 to the carbon tetrachloride plume.

Analytical results from the February 2014 monitoring sampling event indicated carbon tetrachloride below RSK in two monitoring wells. In cooperation with the VCPRP program,

VCPRP personnel collected carbon tetrachloride samples from monitoring wells associated with the North Central Kansas Cooperative site. Carbon tetrachloride was detected below RSK in two of the monitoring wells.

December 2015 Update: OSP sampled groundwater at the site in July 2015 with the next event scheduled for 2017. Carbon tetrachloride continues to be detected below its RSK.

Kanopolis Abandoned Salt Pile

Location:	Kanopolis, Ellsworth County
Contaminations:	Chloride
KDHE District:	North Central, Salina
Project Manager:	Wells, T.
Status:	Monitoring and PRP Identification

Site Summary: Kanopolis has historic activity of salt mining. Several salt mines have operated; only one remains in operation today. In the past salt companies disposed of their wastes on the surface and contaminated soil, surface water, and groundwater. The first documented complaint of contamination was in 1945 when a property owner adjacent to the Morton Salt Company Mine complained that seepage from the mine's impoundment pond was impacting his private well. The Kansas State Board of Health investigated. Another similar complaint was also investigated in 1947. Elevated levels of chloride above the Secondary Maximum Contaminant Level (SMCL) were detected.

In 1972 the Morton Salt Company Shaft #1 collapsed. Material around the shaft slumped into the shaft and continued to enlarge a pit at the surface.

The site entered the OSP in 1997, when KDHE's North Central District Office received a complaint that salt was leaching out of the abandoned salt pile and contaminating nearby fields. The ground surrounding the pile was devoid of vegetation. A Limited Phase I CI/CAS 1997 investigated impacts from salt mining activities to soil and groundwater. Two suspected sources of chloride included the abandoned salt pile and Shaft #1. KDHE installed nine monitoring wells and surveyed the pile, estimated to contain 6,694 cubic yards of material.

In 1998, a Phase II CI installed thirteen monitoring wells. Analytical results indicated that domestic wells downgradient of the former Morton Salt Company Mine were potentially impacted with chlorides. Salt leaching from the pile, Shaft #1, and possibly a nearby former waste salt pile appeared to be the primary sources of chloride contamination in the alluvial aquifer. Former surface impoundments associated with the mines may also have contributed chloride contamination.

In 1998 a CAS and Reclamation Field Test evaluated remedial options for the pile and determined whether the salt could be removed and used by the Kansas Department of Transportation (KDOT). The volume of salt below the cap was estimated at 2,227 cubic yards.

Corrective Action in 1999 excavated and stockpiled the non-engineered cap, then separated, graded, and screened 3,205 tons of salt to uniform size, adding an anti-caking agent. Workers placed the stockpiles in the footprint of the former pile and covered the material with plastic sheeting, 1,500 tons of unsalvageable salt, and a clay cap. They compacted and regarded the surface, leaving an earthen berm in place around the mound. Acme Brick did the final grading and seeding of the site as part of their landfill closure plan through KDHE's Bureau of Waste Management.

In 2000 Shaft #2 collapsed and vented, the blowout of air strong enough to throw bricks and dust several hundred feet in the air for 10-20 minutes. KDHE studied mine conditions to determine whether installing a vent hole would prevent additional air pressure from building up within the mine.

The site entered into monitoring from 2001 until 2008. In 2007 the State Cooperative Program site contacted Morton Salt Company as a PRP. Negotiations with Morton Salt Company failed to produce a Consent Agreement, and the site was transferred back to the OSP in 2011.

In 2012 OSP installed two new sentry wells between the site and PWS #1 and conducted a well sampling and survey to determine the extent of contamination prior to returning the site to monitoring. Groundwater samples from 21 private lawn and garden wells, 11 monitoring wells, and the 2 new sentry wells indicated that chloride contamination extends along the eastern side of Kanopolis from the site to at least the southeastern corner of the city. The new sentry wells indicated that the chloride plume was not influenced by the pumping of PWS #1.

Chloride plume delineation activities from April through September 2013 collected twenty-one groundwater samples from direct-push locations and seven surface water samples from streams receiving surface water runoff from the site and the Smoky Hill River. The data would delineate the southern and eastern extents of the chloride plume in the groundwater. Based on groundwater analytical data, the chloride plume appears to begin near the former abandoned salt pile, continues southwest where it has impacted at least three known private wells located in the southeastern portion of the city, and then appears to follow an unnamed stream's influence southeast to the Smoky Hill River. No chloride concentrations in surface water samples exceeded the surface water quality standard.

In June 2014 the OSP finalized a comprehensive report documenting the history of the site and an additional PRP search was completed. PRPs were identified with connections to operations of the historic salt mines.

December 2015 Update: OSP has placed this site into biennial sampling. The next sampling event is scheduled for 2017.

Kanopolis PCE

Location:	Kanopolis, Ellsworth County
Contaminations:	Tetrachloroethylene
KDHE District:	North Central, Salina
Project Manager:	Richards, G.
Status:	Remediation and Monitoring

Site Summary: In 2009 KDHE's Site Assessment Unit investigated the Kanopolis PCE site in response to PCE detections in PWS #1. The investigation identified the source of the PCE as a former City of Kanopolis power plant on the property. The OSP and the City of Kanopolis cooperated to install a treatment system on PWS #1 in order to provide safe drinking water. Due to lack of available funding from the City of Kanopolis, the OSP provided a used, two-tray aeration treatment system for the well and is currently operated by the City of Kanopolis.

December 2015 Update: The City of Kanopolis continues to use PWS #1. In November 2015 KDHE collected pre- and post-treatment water samples from PWS #1. PCE was not detected in either sample. The next groundwater sampling event is scheduled for late 2016.

Paris Corp (Fmr)

Location:	Salina, Saline County
Contamination:	Volatile organic compounds
KDHE District:	North Central, Salina
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: Various bread, flour, and grain-type businesses operated at the property from 1944 to 1975. KDHE's Bureau of Waste Management files indicate that the former Paris Corporation operated from 1978 to 1985 and generated waste solvents, solvent mix (xylene and TCE), paint sludge, and air filters from paint booths. Facility operations included assembly and manufacturing of electronic consumer products.

In 2001 KDHE's Site Assessment Program conducted an Expanded Site Inspection at the Salina PWS Well #11 site. Groundwater samples collected immediately downgradient of the former Paris Corp facility had detections of VOCs including 1,1-dichloroethylene (1,1-DCE) and 1,1,1-trichloroethane (1,1,1-TCA). Concentrations of 1,1-DCE exceeded RSK. From 2002 to 2004 KDHE identified past property owners and operators; and also attempted to identify any potentially responsible parties, but none were identified.

In January 2009 a SI concluded that 1,1-DCE and 1,1,2-TCA were detected in groundwater samples above RSK east of the former Paris Corp facility. An exact source area was not identified, but the deep soil and shallow groundwater analytical results indicated a likely source

area originating from the southwest corner of Bishop and 10th Streets. The groundwater plume had migrated eastward. In June 2009 KDHE installed and sampled three monitoring wells at the site as part of the first monitoring sampling event. Analytical results indicated 1,1-DCE concentrations exceeded RSK in two monitoring wells.

Since April 2010 a monitoring well from the Salina Fire Station UST site has been included in the annual monitoring sampling events. Annual monitoring sampling events have found concentrations of 1,1-DCE over residential RSK in two monitoring wells. 1,1,2-TCA was last detected in one monitoring well over residential RSK in 2011, and has since fallen below RSK.

Analytical results from the March 2014 monitoring sampling event detected 1,1-DCE above RSK in two monitoring wells.

December 2015 Update: The site has been placed in biannual monitoring with the next sampling event scheduled for 2017. 1,1-DCE was detected above RSK in groundwater. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Park PWS #1

Location: Park, Gove County
Contamination: Carbon tetrachloride
KDHE District: Northwest, Hays
Project Manager: Wells, T.
Status: Resolved

Site Summary: Since 1991 carbon tetrachloride and BTEX have been detected at trace levels in the City of Park's PWS system. In 1996 KDHE installed monitoring wells near potential carbon tetrachloride sources and detected carbon tetrachloride above RSK levels in one monitoring well near a grain elevator. The UST Program installed GAC filters on the PWS to remove BTEX compounds; the filters have also effectively removed carbon tetrachloride.

In 1999 an impacted monitoring well displayed a significant increase in carbon tetrachloride concentrations. A PI confirmed petroleum and carbon tetrachloride releases, warranting an additional site assessment.

In 2001 KDHE confirmed elevated carbon tetrachloride concentrations in groundwater at the former Collingwood Grain Elevator and identified the elevator as the likely source of carbon tetrachloride. The site entered KDHE's State Cooperative Program. Negotiations with the responsible party continued through 2006. In September 2006 the State Cooperative Program installed and sampled two new monitoring wells. Analytical results identified VOCs in groundwater but not carbon tetrachloride. Since a carbon tetrachloride contamination source could not be confirmed, the Park PWS #1 site reentered the OSP.

The site entered into monitoring in 2007 and was sampled semiannually. Sampling results indicated all VOCs below RSK, but nitrate was above MCL.

In March and April 2010, KDHE conducted a Nitrate Source Investigation in Park, identifying two separate elevator facilities as nitrate source areas. KDHE is currently working with the two elevator facilities to address the nitrate contamination through the State Cooperative Program.

In May 2012 KDHE's UST Program planned a final groundwater sampling event before closing out the UST site and removing the GAC filters from the PWS system. Carbon tetrachloride had not been detected in the PWS Well #1 since September 2007. A comprehensive groundwater sampling event was coordinated between KDHE's UST, OSP, and State Cooperative Programs, which sampled for VOCs, nitrate, and ammonia from nineteen monitoring wells, PWS #1, and three upgradient private wells. Carbon tetrachloride was not detected in any groundwater samples. In October 2012 a new monitoring well was installed nested to an older, dry monitoring well with historically high detections of carbon tetrachloride.

December 2015 Update: The site was reclassified as resolved on February 2, 2015.

West South Street

Location: Salina, Saline County
Contamination: Carbon tetrachloride
KDHE District: North Central, Salina
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The West South Street site was first identified in 1996 during an investigation of the Salina PWS Wells site. A plume of carbon tetrachloride had impacted Salina PWS #3. During an SRE in January 1997 and a PA/SSI from November 1997 through February 1998, KDHE's Site Assessment Program traced the groundwater plume from PWS #3 to an apparent source area in a small, undeveloped property in west Salina. Since no PRPs were identified, the site entered the OSP for further investigation in November 1998.

In a February 1999 CI, the OSP collected direct-push groundwater, soil, and soil gas samples and installed and sampled eleven monitoring wells. Groundwater data indicated an apparent source area in the parking lot of a motel, but it could not be confirmed by the soil data. The motel had no history of using carbon tetrachloride in their operations. The site was placed into monitoring in December 1999.

Annual monitoring has shown the carbon tetrachloride plume to be moving downgradient. The primarily impacted monitoring well was plugged and replaced in 2011 after it was discovered destroyed in 2010.

The OSP conducted a SSI in March 2014. Results indicated a carbon tetrachloride source on a property located north of the motel. Pesticides were also detected over RSK in the groundwater

in the same area. A PRP search identified a PRP in June 2014. KDHE encouraged the PRP to join the VCPRP in July 2014. The PRP conducted its own Phase II Site Assessment in September and November 2014, claimed KDHE's results could not be duplicated, and declined to the join the VCPRP.

December 2015 Update: The site was sampled in August of 2015, Carbon tetrachloride was detected above RSK in one monitoring well. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

SOLOMON RIVER DRAINAGE BASIN

Englehardt Grain Company

Location: Mingo, Thomas County
Contaminations: Nitrate
KDHE District: Northwest, Hays
Project Manager: Wells, T.
Status: Assessment

Site Summary: Private environmental evaluations performed in November and December 1990 collected and analyzed soil and groundwater samples for nitrate, petroleum hydrocarbons, carbon tetrachloride, atrazine, and pesticides, and identified nitrate, carbon tetrachloride, and TPH-DRO contamination in soil and/or groundwater. In January and February 1991 an environmental property assessment identified localized areas of soil contaminated with nitrate, atrazine, and TPH-DRO. Nitrate and TPH-DRO in soil was above RSK in certain areas. In 1992 the elevator owner filed for Chapter 7 bankruptcy. KDHE was notified of the contamination at this facility in 1993.

A KDHE SRE in May 1996 analyzed groundwater from six wells for nitrate, ammonia, VOCs, and pesticides and four surface soil samples for nitrate, ammonia, and pesticides. Three onsite soil samples had elevated nitrate above RSK, one sample had elevated ammonia, and some pesticides were detected below their respective RSK levels. Groundwater samples had nitrate below the MCL, and no VOCs in any sample. KDHE found atrazine above its RSK level in the Englehardt's domestic well and recommended that the well not be used for domestic purposes. Three abandoned pesticide containers were identified in the fertilizer building.

Between 1998 and 2000, KDHE attempted to identify a responsible party and enter the site into a state response program, but no viable responsible party was found. Since then, onsite storage tanks and other structures have been removed or demolished. The site was placed in the OSP in 2010.

In May 2012 OSP analyzed samples from monitoring and private wells for nitrate, ammonia, VOCs, pesticides, and herbicides. Nitrate was in all wells, but was over MCL in only one monitoring well; ammonia was detected in one monitoring well. No VOCs, pesticides, or herbicides above RSK levels were identified. In June 2012, KDHE conducted additional PRP research.

A SI in March 2014 evaluated nitrate and ammonia in onsite soils. Surface soil contamination over RSK values was identified in portions of the site. Subsurface soil contamination was identified primarily in the south-central portion of the site area. The soil contamination will require a complete delineation in order to determine the best required remedial action.

December 2015 Update: OSP did not address this site in 2015. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Former Krueger Refining Co.

Location:	Natoma, Rooks County
Contamination:	Total petroleum hydrocarbons, Chloride, Heavy metals
KDHE District:	Northwest, Hays
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: KDHE identified the Former Krueger Refining Co. site as part of an effort to identify and rank former oil refinery facilities in Kansas. The refinery operated from 1934 to 1939.

In January 2011 KDHE's then Sector Assessment Program conducted a UFA that collected and analyzed soil samples for radiation, VOCs, TPH-DRO, chloride, and metals. Analytical results detected TPH-DRO, chloride, and metals above RSK values.

The Former Krueger Refining Co. site entered the OSP in 2011 after a PRP search found no viable responsible parties. Plans include investigations to determine the extent of the TPH-DRO, chloride, and metal contamination.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Lebanon Nitrate Site

Location:	Lebanon, Smith County
Contaminant:	Nitrate
KDHE District:	Northwest, Hays
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: In May 1998, KDHE's Northwest District Office completed a private well sampling event for the former USDA/CCC Lebanon location. The well sampling included collecting samples from three monitoring wells and one private lawn and garden well. Elevated nitrate levels were detected in two monitoring wells associated with the City of Lebanon landfill and the Independent Oil Company LUST site. Since it wasn't immediately evident whether the elevated nitrate levels were the result of point or non-point source contamination, it was recommended for further assessment under KDHE's OSP.

In April 2005, the OSP conducted a site visit, where many potential sources for nitrate contamination were identified; however, these sources did not appear to be the cause of nitrate contamination found at the Independent Oil Company LUST site. In July 2005, OSP returned to the site and sampled four monitoring wells. Analytical results indicated groundwater samples collected at the Landfill and from the Independent Oil LUST site were non-detect for nitrate. The sample from the Lebanon Oil Co LUST site indicated a nitrate concentration above the MCL.

In March 2006, the OSP sampled two of Lebanon Oil Co LUST monitoring wells to confirm the elevated nitrate levels observed in July 2005. Nitrate was detected over the MCL in one well.

In December 2007, the Lebanon Oil Co LUST site obtained closure status and all its monitoring wells were plugged. In April 2011, the Independent Oil LUST site also obtained closure status and its monitoring wells were also plugged.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Royal Acid

Location: Hill City, Graham County
Contaminant: Chloride
KDHE District: Northwest, Hays
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The Royal Acid Site was discovered in April 1986 when a complaint was filed with KDHE's Northwest District Office regarding chloride contamination in a private domestic well. KDHE sampled the domestic well and discovered chloride concentrations above the SMCL. The chloride concentration continued to increase in the domestic well until it peaked in January 1988.

The elevated chloride concentrations were suspected to be from Royal Acid, Inc., a former industrial operation that used acids for petroleum production, located directly west of the impacted domestic well. Dumping and spillage of acid and acid rinse water into an earthen pit on the Royal Acid property were investigated as a possible source of pollution. There were complaints from the Hill City Chief of Police as early as March 1982 of acid spills at the facility.

In April 1987, during the process of removing a fiberglass acid tank from the Royal Acid property, L-K Acid/Wireline of Hays spilled approximately 50 gallons of acid into the earthen pit and was subsequently fined by KDHE. The neutralized acid waste sludge had a very high calcium chloride concentration, which produced high concentrations in the groundwater.

KDHE conducted periodic sampling of the area from 1987 to 1989, which indicated increasing concentrations of chloride in the wells east of the Royal Acid property. The Kansas Geological Survey completed a report in January 1989, concluding the chemistry of the groundwater was

such that the infiltration of hydrochloric acid from the surface was the cause of the high chloride concentrations. The earthen pit was determined to be the source area of contamination.

The NWDO completed a three-year investigation and report in February 1989 which also concluded that the chloride contamination was from hydrochloric acid spillage. Royal Acid operated at the site from 1982-1986. During that time, four domestic wells in the area had been contaminated with chloride over the SMCL.

From 1988 to 1992 KDHE sampled several domestic wells in the area to monitor the chloride plume. Sampling results indicated chloride levels in the original source area were decreasing, but other domestic wells located hydraulically downgradient of the source area were increasing. Based on these findings, the site was added into monitoring in September 1995.

Since 1995 around 26 private wells have been sampled on an annual basis to monitor chloride concentrations in the groundwater. From 1995 to 1998 it appeared that chloride concentrations across the site began to return to normal background concentrations. Then in 1998 chloride greatly increased in five wells located north of US Highway 24. The source of the contamination appeared to be emanating from the property with the first contaminated well. In 1999 the chloride source appeared to have stopped and the small chloride plume appeared to be moving downgradient. Then again in 2000 chloride concentrations became elevated once more, again appearing to be coming from the same property. Since 2000 chloride concentrations remained consistently and persistently over the SMCL, with the edges of the chloride plume fluctuating. Due to these observations, it appears the original source of chloride contamination from the Royal Acid activities has long since naturally attenuated; and a different chloride source is affecting the groundwater. Because chloride groundwater concentrations across the site have been observed below the SMCL, it cannot be concluded that the area is naturally elevated in chloride.

December 2015 Update: The site has been placed into biennial sampling with the next event scheduled for 2016. Elevated chloride concentrations continue to be detected in groundwater across the site.

Stockton PWS #10

Location:	Stockton, Rooks County
Contamination:	Chloride
KDHE District:	Northwest, Hays
Project Manager:	Wells, T.
Status:	Monitoring and Assessment

Site Summary: In September 2011, KDHE's Northwest District Office reported chloride and sodium contamination in the Stockton PWS #10. The well had not been used for more than ten years due to the elevated concentrations. The City of Stockton requested assistance from KDHE to determine the contamination source, hoping to restore the well. The site was assigned to the OSP.

In January 2012, OSP toured the PWS #10 well house and surrounding area, including the KDOT Stockton Subarea facilities and the City of Stockton water treatment plant. Personnel took note of road salt storage facilities (shed and dome) and salt brine mixing equipment and salt crystals, brine precipitation, and distressed vegetation on the ground at the KDOT facility.

In May 2012, OSP conducted a PSE which included collecting surface and subsurface soil samples and groundwater samples from direct-push sample locations and PWS wells #9 and #10. In places where the soil showed visible traces of salt spills and runoff, chloride contamination exceeded the soil-to-groundwater pathway concentration. Chloride concentrations in groundwater were above the SMCL near the KDOT facility. Elevated chloride concentrations in PWS #10 and samples collected upslope and upgradient of the KDOT facility and water treatment plant suggest a separate source of contamination.

Subsequent research identified a water softening business and oil production activities in and around Stockton. In April 2013, the Northwest District Office sampled monitoring wells from an UST site upgradient from PWS #10. Only the deepest monitoring well had chloride concentrations above the SMCL. Shallower groundwater adjacent to the water softening business was not impacted; the business does not appear to be a source.

A SSE in May 2013 installed four monitoring wells, one upgradient of PWS #10. All four monitoring wells had detections of chloride above the SMCL. Six surface water samples were collected from a nearby creek and in areas receiving surface water runoff from a road salt storage facility. One surface water sample had chloride concentrations above the surface water quality standard value. The sampling event confirmed that contaminated soil and surface water runoff from the salt storage facility is impacting soil and vegetation on site and threatens the surface water quality of the nearby stream and the South Fork of the Solomon River.

OSP conducted a SI in September and October 2013 in order to determine the source area(s) of the chloride groundwater contamination found in the deeper portion of the alluvial aquifer. Groundwater samples were collected with direct-push techniques from locations across Stockton; PWS wells #5, #9, and #10; and monitoring wells. The SI concluded that chloride was elevated above the SMCL across Stockton as a result of historical oil field drilling activities. The soil and groundwater in the area immediately between PWS #10 and the KDOT facility was additionally contaminated by chloride as a result of surface runoff from KDOT's road salt storage and handling practices. Due to PWS #10's construction, the well is more susceptible to groundwater contamination from both the shallow and deep portions of the alluvial aquifer. Elevated concentrations of chloride were detected in UST monitoring wells located upgradient of the KDOT facility.

KDOT entered into a Memorandum of Agreement with KDHE's State Cooperative Program in June 2014 for their portion of the chloride contamination. The Stockton PWS #10 site was placed into annual monitoring in October 2014.

December 2015 Update: This site is monitored annually. The most recent sampling event was completed in April 2015. Chlorides continue to be detected at elevated concentrations, OSP plans to conduct an investigation in 2016 in order to identify potential sources.

UPPER ARKANSAS RIVER DRAINAGE BASIN

Alamota Elevator

Location: Alamota, Lane County
Contamination: Nitrate, 1,2-dichloroethane
KDHE District: Southwest, Dodge City
Project Manager: Farve, S.
Status: Assessment

Site Summary: The Alamota Elevator began as the Farmer's Coop Elevator. In 1966 Garvey, Inc., purchased the elevator and operated it until 1994. Garden City Coop, Inc., purchased the elevator from Garvey in early 1994 and has been the owner/operator ever since. Garvey, Inc., had a history of purchasing and using carbon tetrachloride at its other grain elevators and carbon tetrachloride has been detected in groundwater at other former Garvey grain elevators.

A 2008 SRE at the Alamota Elevator did not find carbon tetrachloride in groundwater from area domestic wells or collected by direct push techniques. One sample had 1,2-DCA above RSK. Trace levels of fluorotrichloromethane, chloromethane, ethylbenzene, toluene, and xylene were detected below their respective RSKs. Nitrate was detected in all groundwater samples and ranged from below MCL to above MCL in the samples collected downgradient and upgradient of the elevator. Chloromethane in groundwater samples may be attributed to the degradation of carbon tetrachloride. All other VOC detections may come from a former fueling station upgradient of the elevator, which has been referred to KDHE's Storage Tank Section. Nitrate above the MCL in groundwater may come from the elevator; however, there is not enough evidence for an enforcement program to negotiate a cleanup agreement.

December 2015 Update: This site was not addressed in 2015. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Bazine Groundwater Contamination

Location: Bazine, Ness County
Contamination: Nitrate
KDHE District: Northwest, Hays
Project Manager: Farve, S.
Status: Monitoring

Site Summary: The Bazine Groundwater Contamination site entered the OSP in early 1997 after the City of Bazine reported carbon tetrachloride and nitrate contamination in PWS wells above drinking water standards.

A 1997 Phase I CI did not identify a carbon tetrachloride source and the investigation concluded there may be residual impact from a contaminant plume no longer present. Elevated nitrate levels were detected near an area Coop and adjacent railroad tracks.

A 1998 Phase II CI assessed potential nitrate source areas, specifically the nearby Coop, and found elevated nitrate and ammonia in the soil along the railroad tracks, near the sanitary sewer line, and southwest of the Coop grain elevators. Elevated ammonia levels suggested a release of urea or other ammonia-containing fertilizer. None of the subsurface soil samples tested positive for fecal coliform bacteria. Groundwater south of the Coop along the sanitary sewer line and in four monitoring wells contained elevated phosphorous and boron. The contamination appeared to come from the old cast iron sewer line underneath the railroad south of the Coop. The sewer line passed a smoke test; however, precipitation around a leak can invalidate test results. Historical nitrate results for the PWS wells indicate that nitrate concentrations have gradually increased since 1994, suggesting either non-point source contamination or a continuous point source with low to moderate concentrations.

The City of Bazine and the OSP applied for and received a Community Development Block Grant for the City to locate and install a new PWS well in an area without nitrate impact.

The site entered the OSP's monitoring program in 1999. The nitrate levels in the monitoring wells continued to decline. During the 2005 monitoring sampling event, the groundwater sample from a monitoring well located along the sewer line was the only sample with nitrate detections above MCL.

In 2006 KDHE collected soil samples when the City of Bazine replaced a sewer line running under the railroad tracks, finding no ammonia and only low levels of nitrate. KDHE has since discounted the sewer line as a source. Later in 2006 the City of Bazine and KDHE collected water samples for nitrate analysis. One monitoring well, apparently placed in a concentration of nitrate in the soil, contained increasing levels of nitrate that exceeded MCL. This monitoring well is nearby and upgradient of PWS Well #1. All other wells sampled contained nitrate concentrations below the drinking water standard.

Nitrate is present in all monitoring wells and some private lawn and garden wells every year.

December 2015 Update: OSP is considering potential closure options as a path forward at this site.

Dodge City Cooperative Exchange

Location:	Dodge City, Ford County
Contamination:	Nitrate
KDHE District:	Southwest, Dodge City
Project Manager:	Farve, S.
Status:	Assessment

Site Summary: In 1905 the Farmers Elevator and Supply Company built a grain elevator on the site property. The Dodge City Cooperative Exchange took over the grain elevator facility in 1914.

In January 1990 seven USTs were removed from the service station located northwest of Trail Street and Santa Fe Avenue. A remedial system to address soil contamination was designed for the facility. The site entered KDHE's Storage Tank Section as the Dodge City Cooperative site; and the site was closed out in April 2008.

The Southwest District Office sampled three UST monitoring wells where nitrate had been elevated above its MCL. The Dodge City Cooperative Exchange site was referred to KDHE's Site Assessment Unit in July 2008.

An SRE from August 2008 to January 2009 collected groundwater samples from five existing monitoring wells and one direct-push sample location. All groundwater samples contained nitrate above RSK. The highest detection of nitrate was in a monitoring well located at the Coastal Mart #2536 UST site, north and sidegradient of the site. The limited data generated from the SRE did not confirm a release from the Dodge City Cooperative Exchange facility. It is unclear if the nitrate levels represent discrete releases or a regional problem.

The site entered the OSP in 2013. A SI has been recommended to confirm whether nitrate concentrations in the groundwater are naturally elevated due to sporadic non-point sources, or if the Dodge City Cooperative Exchange facility and its historical use as a grain elevator has contributed to the nitrate contamination as a point source.

December 2015 Update: OSP did not address this site in 2015. OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Garden City VOCs

Location:	Garden City, Finney County
Contamination:	Volatile organic compounds
KDHE District:	Southwest, Dodge City
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The Garden City VOCs site was referred to the OSP in May 2002 by the Storage Tank Program after finding PCE, TCE, acetone, and methyl ethyl ketone at an UST site. A PSE completed in July 2003 collected soil and groundwater samples to identify potential source areas. Adjacent properties have contained businesses that may have used PCE, including a former laundry facility and a machine shop.

A January 2006 investigation collected soil samples from near sewer lines and potential source areas and installed seven permanent monitoring wells. Soils did not contain detectable amounts of the contaminants of concern but groundwater contained PCE above the RSK level. In February 2006 the site entered the monitoring program.

In February 2009 a limited site investigation collected soil and groundwater samples from monitoring wells and direct-push sampling to determine the source area. The investigation included onsite laboratory sample analysis using a mobile gas chromatograph, and found PCE in shallow soil samples near a building which may have been a former dry cleaner. In December 2009 KDHE sent an information request letter to the company that was involved with the former dry cleaner, but no response was ever received.

Since 2009 many of the monitoring wells at the site have been dry. Only one monitoring well had water present during the April 2014 monitoring sampling event. PCE was elevated above RSK in the monitoring well. It has been recommended to plug the dry monitoring wells, and drill deeper wells.

December 2015 Update: The site is currently in a biennial monitoring schedule with the last event taking place in July of 2015. PCE continues to be detected in groundwater at concentrations exceeding RSK.

Great Bend Former Refinery Site (Falcon Refinery)

Location:	Great Bend, Barton County
Contamination:	Total petroleum hydrocarbons
KDHE District:	Northwest, Hays
Project Manager:	Farve, S.
Status:	Monitoring

Site Summary: The Great Bend Former Refinery (Falcon Refinery) site was identified in 1991 when the site was being assessed as a former UST location. KDHE's Site Assessment Program performed several investigations between 1992 and 1994 to assess petroleum impacts and discovered that the site had once been the location of a refinery from 1932 to 1942. Likely contaminant sources include former containment lagoon and refinery plant areas. Storm sewer excavations in 1996 encountered low levels of petroleum near a former refinery processing area. Soils contaminated above RSK were excavated and treated offsite.

Monitoring wells were installed onsite in January 1997. A CAS also conducted in 1997 recommended monitoring and the site was placed in the KDHE's OSP monitoring program in 1998. Recent monitoring analytical results indicate TPH-DRO concentrations are below RSK levels and are declining. TPH-GRO, VOCs, and metals concentrations remain below RSK levels.

December 2015 Update: The site is scheduled for biennial monitoring in 2016.

Holcomb Garden City Company Site

Location:	Holcomb, Finney County
Contamination:	Carbon tetrachloride
KDHE District:	Southwest, Dodge City
Project Manager:	Farve, S.
Status:	Resolved

Site Summary: Carbon tetrachloride was discovered at the site in April 1998 by KDHE Southwest District Office as part of a program to sample private wells adjacent to former USDA/CCC grain storage facilities. In April and May 1998, the Garden City Company onsite well and three other nearby wells were sampled for VOCs. The Garden City Company well is used for non-drinking purposes. Carbon tetrachloride was detected over RSK in April and in May 1998. Two domestic wells had no detections of VOCs. Carbon tetrachloride was detected below RSK in the Garden City Coop-Lowe Facility well, located approximately 400 feet northeast of the site. The Garden City Coop-Lowe facility well is also used for non-drinking purposes. The Garden City Coop-Lowe facility provides bottled water for its employees. It was recommended that KDHE's Site Assessment Unit investigate possible sources for carbon tetrachloride contamination. The former USDA/CCC grain bit site was identified as the most likely source area.

A SRE in June and July 1998 included subsurface soil sample collection. No significant detections of carbon tetrachloride were detected in the soil samples, but the onsite well continued to indicate carbon tetrachloride levels above RSK. The Garden City Company declined an offer from the USDA to supply a clean source of drinking water to their facility. Since no source area was identified during the SRE, the site was transferred to the OSP.

A CI was completed in February 2002. Groundwater samples were collected from the Garden City Company well, the Garden City Coop-Lowe facility well, and two domestic wells. Carbon tetrachloride was not detected in the groundwater samples. The site was placed into the monitoring program in 2002.

Monitoring since 2003 for the Garden City Coop-Lowe facility well resulted in non-detections of carbon tetrachloride until the 2009 monitoring sampling event. From 2009 to 2014, carbon tetrachloride has increased but has remained below RSK. The Garden City Company well has historically fluctuated between non-detection to above RSK.

December 2015 Update: This site was reclassified as resolved December of 2015.

Ingalls PWS

Location: Ingalls, Gray County
Contamination: Carbon tetrachloride
KDHE District: Southwest, Dodge City
Project Manager: Wells, T.
Status: Monitoring and Assessment

Site Summary: The Ingalls PWS site was assigned to OSP after the City of Ingalls PWS #3 had low levels of carbon tetrachloride and atrazine in December 2003.

A PSE in April 2004 found impacted groundwater in the eastern and southeastern portions of the investigation area which included the surveying and sampling of 19 wells. Nitrate concentrations exceeded the MCL in five wells. Carbon tetrachloride and atrazine concentrations were below RSK.

A phased CA in July 2004 installed five monitoring wells around the Dodge City Cooperative Exchange, collected groundwater samples from 17 previously existing PWS and private wells, and collected soil samples from locations at the Dodge City Cooperative Exchange. Analytical results identified carbon tetrachloride in two wells and atrazine in three wells below RSK, but did not identify source areas for these contaminants. The investigation also identified elevated nitrate concentrations above RSK in soil and above MCL in groundwater. Elevated nitrate in the soil was traced to a release of liquid nitrogen fertilizer from the Dodge City Cooperative Exchange in the 1980s. The Dodge City Coop Site entered KDHE's State Cooperative Program to address the nitrate contamination.

The VOC portion of the site entered into monitoring in 2006 to track the atrazine and carbon tetrachloride in groundwater below RSK. Annual monitoring events have included sampling PWS #2, PWS #3, PWS #4, PWS#3/PWS #4 blend sample, and two private wells.
A PRP search was completed in March 2014.

December 2015 Update: A Source Investigation and six monitoring wells were installed in March-April 2015. Carbon tetrachloride was detected at concentrations below its RSK.

Mid-Kansas Aerial, Inc.

Location:	Larned, Pawnee County
Contaminant:	Pesticides, Nitrate
KDHE District:	Southwest, Dodge City
Project Manager:	Farve, S.
Status:	Assessment

Site Summary: The Mid-Kansas Aerial, Inc. site was identified through the investigation of an AST located at the Larned-Pawnee County Airport. The contamination was addressed by KDHE's Storage Tank Section under the Mid Kansas Aerial AST site and the contaminated soil was excavated. Two other areas of concern were identified during the cleanup: 1) a liquid nitrogen fertilizer spill; and 2) an area impacted by pesticide runoff from the curbed concrete loading pad. The liquid nitrogen fertilizer spill occurred sometime in 2001 when a vandal opened a valve on a nurse tank, releasing several hundred gallons of fertilizer and contaminating and staining the soil. The pesticide runoff came from the curbed concrete pad where airplanes had been loaded with pesticides.

KDHE's Southwest District Office collected a soil sample from each area in 2002. The sample near the nurse tank contained elevated nitrate and ammonia. The soil sample from the concrete pad runoff area contained no reportable concentrations of pesticides. The water well (north well) adjacent to the areas of concern was also sampled, but contained no reportable concentrations of pesticides and nominal concentrations of nitrate and ammonia.

A draft Consent Order was prepared by KDHE's State Cooperative Program and sent to the owner of Mid-Kansas Aerial, Inc. to address the stained soil as part of a removal action. The owner was unresponsive.

In April 2003 the site was referred to KDHE's Site Assessment Program. A PRE was conducted in June 2003 and soil samples were collected from the liquid nitrogen fertilizer spill area and the concrete pad runoff area. The two water supply wells (north and south) were sampled for ammonia, nitrate, and pesticides. The liquid nitrogen fertilizer spill area contained high concentrations of ammonia. The concrete pad runoff contained trace amounts of pesticides below RSK, except for toxaphene which was detected over RSK. Groundwater samples collected contained no detectable concentrations of pesticides or ammonia, and nominal concentrations of nitrate. Based on the sampling results, the site was referred to the OSP in October 2004.

A PSE of the nitrogen spill area in December 2004 found nitrate and ammonia over RSK in the soil up to a depth of 12 feet. Ammonia and nitrate were identified in groundwater samples, but concentrations were below the MCL. Activities in the loading pad runoff area identified dieldrin, DDE, DDT, and toxaphene in the soils below RSK.

A CA was conducted in May 2006 and activities consisted of collecting direct-push samples from the concrete pad runoff area, excavating the nitrate spill area, and collecting a groundwater sample from the north well. Approximately 3,170 cubic yards of contaminated soil was removed from the nitrogen spill area to depths of 15 feet and land-applied on approved areas at the airport. Nitrate-contaminated soils remained to a depth of at least 13 feet along the southern extent where excavation was restricted by the 10,000-gallon AST containing aviation fuel and part of the western extent where the excavation was restricted by a groundwater well. Soil samples were collected from locations in the concrete pad runoff area down to two feet. The pesticides dieldrin, DDT, endrin, heptachlor epoxide, and toxaphene were detected in soil samples above RSK. Numerous other pesticides were detected below RSK. It was recommended to further delineate the pesticide soil contamination in order to excavate the impacted material. Also, due to the nitrate/ammonia impacted soil left in place onsite, it was also recommended to sample the two water supply wells and place an EUC on the area.

Since 2006 the north and south well have been sampled in 2007, 2010-2012, and 2014. Nitrate concentrations in the north well have been below the MCL. Nitrate in the south well ranged from below to at the MCL. Concentrations of ammonia have been below detection limits since 2007. The north well was only sampled for pesticides in 2012, with all contaminants being below detection limits. The south well has not been sampled for pesticides since 2004.

December 2015 Update: Due to a lack of pesticide and nitrate detections from historic sampling events, the site was removed from the monitoring program in 2014. Recommendations are to either reassess nitrate, ammonia, and pesticides in the soils to determine if concentrations are still over RSK, or to place an EUC on the property to cover both the nitrate spill area and the pesticide runoff area. OSP did not work at the Mid-Kansas Aerial, Inc. site in 2015.

Ness City PWS

Location:	Ness City, Ness County
Contamination:	Nitrate, Volatile Organic Compounds
KDHE District:	Northwest, Hays
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The Ness City PWS Site was identified in 1986 during statewide sampling of PWS systems when 1,2-DCA was detected in PWS #3, #9, and #14. Subsequent sampling confirmed the 1,2-DCA contamination and also found carbon tetrachloride impacting PWS #19 at concentrations below RSK. KDHE required the City to sample and analyze PWS #3, #9, #14, and #19 for 1,2-DCA and carbon tetrachloride semi-annually. PWS #9 was abandoned in 1990 due to a well-screen failure; and PWS #14 was declared inoperable due to low yield. By the end

of 1991, concentrations of carbon tetrachloride within the PWS #19 had declined to below the detection limit.

In 1996 KDHE's Storage Tank Section conducted an investigation at the Home Oil #2, Ness City LUST site. As part of the investigation, three private wells and PWS #19 were sampled for VOCs. Carbon tetrachloride was detected below RSK in all three private wells. Carbon tetrachloride has not been detected in PWS well #19.

A CI was conducted in 1997. Carbon tetrachloride was detected below RSK in seven private lawn and garden wells. EDB was detected above RSK in one private lawn and garden well and below RSK in three lawn and garden wells. Carbon tetrachloride and EDB were not detected in PWS #19. The site was placed in the OSP monitoring program in 1998.

By 2005 many of the private lawn and garden wells that had been historically sampled and had contained elevated concentrations of EDB were disconnected and no longer accessible for sampling.

Site reconnaissance and interviews with facility owners and operators were conducted in January 2006. Historic use of carbon tetrachloride as a grain fumigant was reported at grain storage facilities in the northern portion of the site. Past use of grain fumigants and former storage of nitrogen fertilizers were reported at a farmer's cooperative facility northeast of the site. Split groundwater samples were collected in February and April 2006 during post-remediation monitoring activities at two former LUST sites (Home Oil #2 and Paul's 66 Service). In addition to gasoline constituents, low levels of carbon tetrachloride and EDB were detected at the former Home Oil #2 facility.

Historical groundwater monitoring of the site has indicated that VOC contamination is declining. The nitrate groundwater contamination needs to be determined if the elevated levels are the result of non-point or point sources.

December 2015 Update: The annual monitoring event was completed in October 2015. VOC analysis has been suspended due to VOCs not being detected during previous sampling events. Nitrate concentrations continue to be detected at elevated levels.

Ness Crude Oil #2

Location:	Ness City, Ness County
Contamination:	Total petroleum hydrocarbons, Volatile organic compounds
KDHE District:	Northwest, Hays
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The Ness Crude Oil #2 site was identified following a complaint filed with the Kansas Corporation Commission in 1997. Ness Crude Oil, Inc. had two inactive and abandoned crude oil reclamation facilities located in Ness City, but filed for bankruptcy in 1993. Both sites

had ASTs that were in poor condition and leaking. Sludge had escaped and spread out on the ground surface and neither site had adequate containment structures.

In July 1997, KDHE forwarded the information it had gathered to the EPA. In December 1997 the EPA investigated both facilities and determined they posed a threat to navigable waters of the United States. EPA stated removal actions at both sites were warranted.

During a file review in 2004, KDHE determined it had no information regarding the disposition of the Ness Crude Oil #2 site. The EPA was contacted and responded it had conducted removal/clean-up actions only at the Ness Crude Oil #1 site in July 1998, and not at the Ness Crude Oil #2 site.
Since the site visit in 1997, the abandoned ASTs had been cleaned and moved to the northwest corner of the property. A new crude oil storage facility had been installed in the northeast portion of the property, consisting of four ASTs enclosed by a containment structure. Surface soils at the original Ness Crude Oil #2 facility appeared to have been cleaned up and vegetation was growing with no sign of stress. There were no visible areas of staining or oil spillage. However, no records were available to document past clean-up actions.

KDHE investigated in 2005 to determine if petroleum products were present at the original locations of the petroleum ASTs. Results indicate sludge wastes and soils impacted by petroleum contamination above RSK extended approximately 6,500 square feet and eight feet deep.

A CAS in April 2006 indicated that sludge wastes and soil contamination were limited to the original Ness Crude Oil #2 operations area. Sludge wastes and impacted soils contained TPH-GRO, TPH-DRO and 1,2,4-trimethylbenzene above RSK. The contamination was estimated to be 5,400 square feet and up to ten feet deep. Groundwater was not encountered in probe holes, trenches, or test pits during either the PSE or the CAS investigations.

Corrective action options include the use of waste material for road construction, onsite stabilization/treatment, and landfill disposal. The recommended corrective action entails the excavation of approximately 2000 cubic yards of sludge and impacted soil.

December 2015 Update: OSP plans to conduct a comprehensive file review of site history and analytical data in order to identify and address data gaps FY 2016.

Stafford County Oil Reclaiming Company (Former)

Location:	Stafford County
Contamination:	Total petroleum hydrocarbons, Volatile organic compounds, Chloride
KDHE District:	Southwest, Dodge City
Project Manager:	Farve, S.
Status:	Monitoring and Assessment

Site Summary: The oil reclaiming facility now identified as the Stafford County Oil Reclaiming Company site started operating during or before 1975 and was closed and abandoned in 1995. Sludge was disposed in three pits, while brine was injected into a salt-water disposal well.

The site came to KDHE in 2002 in response to U.S. Fish and Wildlife Service concerns that the sludge pits were a danger to migratory birds. The site is located about 10 miles west of the Quivira National Wildlife Refuge, a designated Wetland of International Importance. A Removal Site Evaluation in June 2002 found that tanks onsite contained around 41,118 gallons of oil reclaiming waste. The disposal sludge pits contained an estimated 1,780 cubic yards of material. The groundwater at the site was contaminated with petroleum and chlorinated hydrocarbons. The site was transferred to OSP in October 2003.

A PSE in February 2004 identified VOC, TPH-DRO, and TPH-GRO concentrations in soil above RSK and barium, cadmium, and lead in groundwater above RSK. Because groundwater was not readily accessible due to subsurface conditions, the groundwater plume was not defined.

A CA from February to October 2005 detected TPH-GRO, TPH-DRO, and VOCs above RSK in soils from the AST area. Soil samples collected from the former salt-water disposal area exhibited high chloride concentrations that decreased with depth. Testing indicated that the sludge could be treated using solidification/stabilization treatment. The investigation identified two additional sludge pits near the site, installed four monitoring wells at the AST area and installed and sampled four monitoring wells at the three sludge pits. Groundwater contained VOCs, arsenic, lead, TPH-GRO, and TPH-DRO at concentrations above RSK and chloride at concentrations above the SMCL.

Circle T Oil purchased the former oil reclaiming facility and applied an EUC to the deed in March 2007.

Corrective action to remediate the five sludge pits was conducted from March through April 2008. Sludge from the two smaller pits was excavated and transported to the three main sludge pits, where the combined total of 3,952 tons of sludge was stabilized with cement kiln dust, mixed with soil, and compacted. The landowner applied for an EUC for the stabilized sludge area and the EUC was approved and recorded to the deed in April 2008.

Since 2008 the OSP has been conducting annual monitoring events at the site. Groundwater samples were collected from the eight monitoring wells and from the North and South wells and analyzed for VOCs, TPH-DRO, TPH-GRO, and chloride. In 2012 the North and South wells

were removed from the sampling plan on account of contaminants of concern being below RSK or non-detect for four consecutive sampling events. In 2013 the scale of TPH-DRO and TPH-GRO sampling was scaled back to only include one impacted well for TPH-GRO and one impacted well for TPH-DRO, since these wells were the only monitoring wells with persistent detections of these contaminants. Only one well continues to have detections of benzene and vinyl chloride over RSK. Chloride concentrations over the SMCL have continued to be observed in five monitoring wells.

December 2015 Update: The site has been placed into biennial sampling and will be sampled again in 2017.

UPPER REPUBLICAN RIVER DRAINAGE BASIN

Ace Services, Inc.

Location: Colby, Thomas County
Contamination: Chromium
KDHE District: Northwest, Hays
Project Manager: Haring, B.
Status: Remediation and Monitoring

Site Summary: A chromium plating facility operated onsite from 1954 to 1990. KDHE first identified the site for investigation by the Superfund program in 1980 after the nearby City of Colby PWS Well #8 became contaminated with chromium and was taken offline. KDHE performed a PA and SSI in 1989 and a LSI in 1991. KDHE removed the plating solutions and vats in 1992. EPA removed residual contamination from the building interior, excavated a concrete trough and underlying soils, removed additional building support columns, demolished the facility wastewater treatment building, excavated underlying soils, and excavated and stabilized/treated lagoon soil in 1994. EPA initiated a remedial investigation and feasibility study in 1996. Additional hazardous material was removed from the buildings from 1999 to 2000.

Remedial design efforts for remediation of groundwater were initiated in June 1999 and were completed January 2002. All plating facility buildings were removed. Construction of the Groundwater Treatment Plant and System (GWTS) onsite was completed in 2003. The GWTS included 13 extraction wells and an ionic exchange treatment system capable of treating 1,000 gallons per minute. The system began processing extracted contaminated groundwater in August 2003.

In early 2011 an impermeable geotextile cap was constructed over the eastern portion of the site to prevent rainwater from infiltrating and transferring chromium contamination into groundwater. EPA's schedule for the 10-year Federal-funded Long Term Response Action ended on April 16, 2014, and KDHE became as the lead agency for the Kansas-funded O&M phase. The City of Colby was retained to operate the GWTS.

December 2015 Update: Two semi-annual groundwater monitoring events in June and November 2015 discovered chromium contamination upgradient from the site. Further investigation will be conducted by KDHE’s Site Assessment Program. Two extraction wells downgradient of PWS #8 were turned off and the GWTS is running in batch mode to increase the efficiency of the resin. The GWTS will continue to operate until remedial objectives for groundwater have been achieved.

Norton Carbon Tetrachloride

Location: Norton, Norton County
Contamination: Carbon tetrachloride
KDHE District: Northwest, Hays
Project Manager: Wells, T.
Status: Monitoring, Assessment, and PRP Identification/Negotiation

Site Summary: The Norton Carbon Tetrachloride site, also known as the Gil's Barber Shop site, was referred to the OSP in 2003 by KDHE's Storage Tank Section when carbon tetrachloride had been consistently encountered in a private lawn and garden well over RSK.

A PSE conducted in December 2003 included groundwater sampling of 12 monitoring wells and soil and groundwater sampling in direct-push locations near potential carbon tetrachloride sources. The highest carbon tetrachloride concentrations were detected immediately downgradient from the former Garvey Grain Elevator.

In February 2004, the site was transferred to KDHE's State Cooperative Program. In 2006 KDHE conducted an information request concerning carbon tetrachloride use at PRP properties. After internal discussions concerning PRPs, the site was transferred back to the OSP for additional investigative work in January 2007.

In May 2010, a SI looked into multiple source areas; and the former Garvey Grain Elevator liquid fumigant storage area was identified as the sole source of carbon tetrachloride contamination. The carbon tetrachloride plume was delineated and found to extend approximately 2,500 feet downgradient from the source area.

In April 2012, the site was placed into annual monitoring. In April and May 2012, the OSP installed seven new monitoring wells. Five monitoring wells from the closed Norton Hardware & Appliance site from the Storage Tank Section were transferred to the Norton Carbon Tetrachloride site. PRP research and legal negotiations began in December 2012.

December 2015 Update: A Remedial Assessment was awarded to a consultant in November 2015 with the goals of delineating the soils in the source area, and determining the extent of the groundwater contaminant plume.

Selden Carbon Tetrachloride

Location: Selden, Sheridan County
Contamination: Carbon tetrachloride
KDHE District: Northwest, Hays
Project Manager: Farve, S.
Status: Monitoring, Assessment, and PRP Identification/Negotiation

Site Summary: The Selden Carbon Tetrachloride site entered the OSP in October 2000 after KDHE's Storage Tank Section detected carbon tetrachloride in several monitoring wells at the

Home Oil Bulk Plant site. Carbon tetrachloride has historically been detected in several monitoring wells at the Home Oil Bulk Plant site at concentrations ranging from non-detect to above RSK.

A Phase I CI in January 2001 sampled existing wells and collected soil samples near several source areas. The Phase II CI installed monitoring wells in August and November 2001. The investigations evaluated soil and groundwater conditions; soil samples collected near potential source areas did not contain VOCs, but the groundwater had carbon tetrachloride over RSK. The analytical data identified three separate grain storage facilities as potential source areas for carbon tetrachloride. Garvey Elevator, Inc., was identified as a PRP. The site entered KDHE's State Cooperative Program.

In 2007 after an administrative appeal, the Secretary of KDHE signed a final order requiring Garvey Elevator, Inc., to investigate and clean up the Selden Carbon Tetrachloride site. Garvey Elevator, Inc., appealed the order to state district court, but then filed for Chapter 7 bankruptcy in March 2008. KDHE filed a claim in October 2008. In July 2009 the site was transferred from the State Cooperative Program back to OSP for monitoring.

OSP monitoring wells have been sampled quarterly by KDHE's Storage Tank Section as part of the air-sparge remedial sampling at the Home Oil Bulk Plant Site. Carbon tetrachloride concentrations continue to exceed RSK value in three monitoring wells.

In May 2013 OSP sampled 13 monitoring wells and PWS #2 for VOCs. One monitoring well was plugged with corn and another monitoring well had a broken casing. Carbon tetrachloride was detected above RSK in five of the monitoring wells, but was not detected in PWS #2. The most downgradient monitoring well continues to have elevated carbon tetrachloride. A PRP has been encouraged to address the site.

December 2015 Update: Beginning in 2014, the site has been placed on a biennial sampling frequency. The next event is scheduled for 2016.

VERDIGRIS RIVER DRAINAGE BASIN

Coffeyville Ind Park-Dixon Industries

Location: Coffeyville, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The United States Army constructed the Coffeyville Army Airfield (CAAF) in 1942, which was used a training facility for air cadets until its deactivation in 1946. The Coffeyville Industrial Park now occupies the former air field.

Dixon Industries, Inc. operated a zero-turning radius lawn mower manufacturing plant at the site from 1974 until 2006. In August 1983, a KDHE Bureau of Waste Management RCRA inspection was conducted at the facility determined that the facility was classified as a small quantity generator exempt from full regulation under RCRA. Some chemicals being used were discharged into the city's sewer system. The City of Coffeyville had approved of Dixon's disposal into the system and established a pretreatment program. Analytical testing of sludge and cleaning tank water in 1989 showed the materials to be non-hazardous.

The resolved Coffeyville Industrial Airport site was also known as the Dixon Industries site. A PA was initially scheduled in December 1989 to determine if contamination was present. Background search and site reconnaissance did not indicate the presence of hazardous materials and the PA was cancelled. With no known releases, the site was resolved in 1991.

In March 1994, Dixon Industries, Inc. notified KDHE that they were no longer generating any waste classified as hazardous.

In 2007, the building was sold to Prestige Cabinets, a wooden cabinet manufacturer. Prestige conducted a Phase I ESA upon purchase of the property. The January 2007 Phase I concluded that chemical spills and releases at adjacent sites and the site itself could have impacted the soil and groundwater. A Phase II ESA was conducted in September 2007 found PCE contamination above RSK levels in two of six temporary monitoring wells placed on the property. Additionally, metallic dust samples in the metal prep and general welding areas were found to be environmental impairments that should be addressed. Geophysical subsurface investigations revealed anomalies that should be further researched. According to correspondence from Prestige Cabinets in September 2007, a Phase III ESA was conducted in 2007 as well. The inside of the building was decontaminated and confirmation samples had indicated metals were below detection limits. The previously identified geophysical anomalies were discovered to be abandoned oil wells. The Kansas Corporation Commission was contacted to address plugging the wells.

In September 2008, KDHE's Site Assessment Program conducted a SRE after an investigation for the adjacent Fiberglass Corp of America (FCA) site revealed VOC contamination near the former Dixon Industries building. The Dixon Industries facility did not appear to be a significant source area for PCE contamination, as the higher PCE concentrations appeared to be migrating onsite from known source areas upgradient. Additional work for the site was not recommended, as the upgradient source areas would be further investigated as part of the Coffeyville Industrial Park-South Hangar site.

The site was transferred to the OSP in 2014.

December 2015 Update: OSP did not work at the Coffeyville Ind Park-Dixon Industries site in 2015.

Coffeyville Industrial Park-Middle Hangar

Location: Coffeyville, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The United States Army constructed the CAAF in 1942, which was used a training facility for air cadets until its deactivation in 1946. The Coffeyville Industrial Park now occupies the former air field.

KDHE's Site Assessment Program conducted an SRE in August 2008 after an investigation for the adjacent FCA site in 2007 revealed VOC contamination near the hangar. Groundwater samples were taken from around the hangar. Multiple VOCs were found in the groundwater with concentrations of PCE, TCE, cis 1,2-DCE, and vinyl chloride above RSK. A PRP search was completed from the Coffeyville Industrial Park in September 2011.

The site was transferred to the OSP in 2014.

December 2015 Update: OSP did not work at the Coffeyville Industrial Park-Middle Hangar site in 2015.

Coffeyville Industrial Park-North Hangar

Location: Coffeyville, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The United States Army constructed the CAAF in 1942, which was used a training facility for air cadets until its deactivation in 1946. The Coffeyville Industrial Park now occupies this former air field.

KDHE's Site Assessment Program conducted an SRE in August 2008 after an investigation for the adjacent FCA site in 2007 revealed VOC contamination near the hangar. Groundwater samples were taken from around the hangar. Multiple VOCs were found in the groundwater with concentrations of PCE, TCE, cis 1,2-DCE, and MTBE were RSK. A PRP search was completed from the Coffeyville Industrial Park in September 2011.

The site was transferred to the OSP in 2014.

December 2015 Update: OSP did not work at the Coffeyville Industrial Park-North Hangar site in 2015.

Coffeyville Industrial Park-South Hangar

Location: Coffeyville, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The United States Army constructed the CAAF in 1942, which was used a training facility for air cadets until its deactivation in 1946. The Coffeyville Industrial Park now occupies this former air field.

KDHE's Site Assessment Program conducted an SRE in August 2008 after an investigation for the adjacent FCA site in 2007 revealed VOC contamination near the hangar. Groundwater samples were taken from around the hangar. Multiple VOCs were found in the groundwater with concentrations of PCE above RSK.

A Supplemental Sampling Assessment (SSA) was conducted in July 2009 to further characterize the chlorinated solvent plume between the South Hangar site and the Dixon Industries site. PCE and TCE were detected in the groundwater above RSK. The highest concentration of PCE was in the center of the field between the two sites, adjacent to a sewer pipe manhole.

The Site Assessment Program conducted a PA in March of 2010 to further delineate a PCE source area. Soil and groundwater samples were collected from locations surrounding a sewer pipe manhole in the center of the field. All of the groundwater concentrations exceeded the RSK. TCE concentrations exceeded RSK in two of the groundwater samples. Cis 1,2-DCE was detected below RSK in two groundwater samples.

A PRP search was completed from the Coffeyville Industrial Park in September 2011.

A Site Inspection in March 2014 collected groundwater and soil samples from around the South Hangar and the grassy field to the west. PCE was detected above RSK in all but four groundwater samples. The highest detection was on the eastern edge of the concrete pad within the grassy field west of the hangar. PCE was detected in soil samples south of a sewer manhole in the field west of the hangar, off the southwest corner of the hangar, off the northwest corner of the hangar, and near the sewer line under the road west of the hangar. An upgradient source to the east appears likely as well. The site was transferred to the OSP in 2014.

December 2015 Update: The OSP did not work at the Coffeyville Industrial Park-South Hangar site in 2015.

Crescent Oil Company, Independence

Location: Independence, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Farve, S.
Status: Assessment

Site Summary: The Crescent Oil Refining Company was a bulk storage facility with ASTs for kerosene, diesel, oils, and solvents. A diesel fuel spill from an AST was reported to KDHE in 2001. The site entered KDHE's Storage Tank Section, and ten monitoring wells were installed. A 2005 pre-closure monitoring event found TCE in a monitoring well. The monitoring wells were subsequently plugged and abandoned or covered with crushed limestone. The site entered KDHE's Site Assessment Program in 2007.

An SRE in 2008 detected TCE and carbon tetrachloride above their respective RSK values in some of the monitoring wells. The SRE did not positively identify a source area, and recommended a Preliminary Assessment.

Crescent Oil Refining Company filed for bankruptcy in 2009. In response, KDHE collected samples to determine whether to file a claim under the bankruptcy and found VOCs above and below RSK levels in the groundwater.

In March 2011 a Preliminary Assessment was conducted. The assessment detected TCE, 1,2-DCE, and vinyl chloride above RSK and other VOCs associated with a known fuel spill, and

found source areas for TCE, PCE, and carbon tetrachloride. A PRP search did not identify any viable PRPs. The site was transferred to the OSP in December 2011.
The OSP conducted a removal action in early January 2013, excavating 300 cubic yards of TCE contaminated soil. The site was backfilled with clean soil and gravel and then restored to its original grade.

December 2015 Update: A monitoring well network needs to be established to monitor the remaining impacted groundwater from the site as well as to assess any potential vapor intrusion issues. The OSP did not work at the Crescent Oil Company, Independence site in 2015.

Fiberglass Corp of America (FCA)

Location: Coffeyville, Montgomery County
Contamination: Volatile organic compounds
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: The United States Army constructed the CAAF in 1942, which was used a training facility for air cadets until its deactivation in 1946. The Coffeyville Industrial Park now occupies this former air field.

The FCA began operations in August 1971. Operations at the facility consisted of the manufacturing of cultured marble tops, skylights, and fiberglass tubs and shower stalls. From 1982 to 1989, RCRA inspections conducted by KDHE's Bureau of Waste Management identified waste acetone at the facility that was being improperly disposed and dumped onto the ground along with other solid wastes included waste resins, gels, and fiberglass. Groundwater and soil samples collected onsite had concentrations of ethylbenzene and styrene over RSK. Soil samples also had elevations of cadmium and total chromium over RSK. The cadmium soil samples also failed TCLP analysis. The surface debris was removed. An attempt was made to remove the top layer of the surface soil, but excavation work ceased when groundwater began to drain into the excavation. One surface soil composite sample was collected from the area west of the excavation area, which contained paint residue. The sample was analyzed for heavy metals and TCLP. Cadmium, chromium, copper, and lead were above their respective RSK. Both cadmium and lead failed TCLP analysis.

In 1992, KDHE informed FCA to make arrangements to finish excavating visually-contaminated soil. During the excavation paint wastes, old metal turnings, salt-like materials, and soil colored blue, red, green, and yellow were observed. Excavating activities were halted and the excavated soil was covered with plastic sheeting. The site was then referred to KDHE's BER in 1993 for further investigation.

In May 1994, KDHE's Site Assessment Program visited the site as a PA. At the time of the PA, the previously excavated soils remained onsite and were covered with plastic sheeting. The contamination in the soils appeared to include contamination unrelated to past or present

activities at the FCA facility and may predate its construction in 1971. The extent of the contamination was unknown.

In September 1995, the Site Assessment Program conducted a SSI. Laboratory analysis identified arsenic, cadmium, PCE, TCE, 1,1-DCE, 1,1,1-TCA, and 1,1-DCA above RSK groundwater values. In the soil samples, acetone and dichloromethane were detected below RSK. Arsenic and chromium were detected over RSK in soils. In the surface water samples, only dichloromethane and chromium were detected below their respective surface water quality standard values. A magnetometer survey was also conducted. The survey results indicated an anomalous trend with a magnetic high in the area that corresponded to the highest VOC detections in groundwater, indicating the potential for buried containers. Surface water analytical results indicated that operational practices by Coffeyville Paint (also known as Coffeyville Aircraft, Inc.) had impacted the surface water. This lead to the discovery of the Coffeyville Aircraft Inc site which was addressed by KDHE's VCPRP. Other sources of VOCs in groundwater were present upgradient of the FCA site near the areas of the former CAAF hangars, but these other detected groundwater plumes had not yet migrated beneath the FCA facility.

In May and June 2007, the Site Assessment Program conducted an ESI/Preliminary Removal Site Evaluation. Laboratory analysis detected lead, PCE, TCE, cis 1,2-DCE, vinyl chloride, and 1,1-DCE in groundwater samples over RSK. No VOCs or metals were detected in the four surface water samples. In the sediment samples, cadmium, chromium (total) and lead were found over their respective threshold effect concentrations (TECs). A geophysical survey was conducted to determine if a significant area of buried containers remained at the FCA site. The ESI results indicated that multiple VOC source areas are affecting the site including the hangars, sewer lines connected to the hangars, and potentially buried wastes in the southern parcel of the FCA property.

In September 2008, the Site Assessment Program conducted a SRE at the Coffeyville Ind Park-Dixon Industries site after former investigations at the FCA site revealed VOC contamination near the former Dixon building. The highest detection of PCE in groundwater was found near the former CAAF sewer line. The Dixon facility did not appear to be a significant source area for PCE contamination, as the higher PCE concentrations appeared to be migrating onsite from known source areas upgradient.

December 2015 Update: The City of Coffeyville had purchased the site property in order to redevelop the land as the new location for an electrical power plant. A Phase I & Phase II BTA was completed through KDHE's Brownfields Program in March 2015. Groundwater samples and soil samples were collected and analyzed for metals and VOCs. The highest detections of VOCs in groundwater were collected upgradient and downgradient of the magnetic anomaly area. Barium was detected in all groundwater samples with concentrations below RSK. Soil samples resulted in non-detections for VOCs. Arsenic, barium, chromium, and lead were detected across the site in most of the soil samples, but all concentrations were below RSK.

The site was then transferred to the OSP. The OSP conducted trenching activities at the site in July 2015 in order to determine whether or not buried waste was present and causing the

magnetic anomaly and elevated VOC groundwater contamination in the immediate area. Trenching activities revealed the soils in the magnetic anomaly area to be native and undisturbed with no buried wastes present. Soil samples were collected and analyzed for VOCs, but VOCs were not detected above detection limits.

Former Kanotex Refinery

Location:	Caney, Montgomery County
Contamination:	Heavy metals, Total petroleum hydrocarbons
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The Former Kanotex Refinery was built in 1907 and operated from 1909 to about 1919. KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities.

In 2006, a Phase I FFRA confirmed the historical refinery's presence and recommended sampling. A 2009 Phase II FFRA identified impacts from former refinery operations, including metals and TPH-GRO in soils and sediments exceeding RSK.

In May 2010, KDHE began a SSA at the site. The SSA is a phased investigation to determine the magnitude, extent, and volume of metals contamination in soil, TPH-GRO contamination in soil, and metals contamination in sediment. The first phase, determining the extent of metals contamination in soil, is still in progress.

December 2015 Update: OSP did not work at the Former Kanotex Refinery site in 2015.

Former Uncle Sam Oil Refinery

Location:	Cherryvale, Montgomery County
Contamination:	Heavy metals, Total petroleum hydrocarbons, Polynuclear aromatic hydrocarbons
KDHE District:	Southeast, Chanute
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities. Current site use includes a pasture and two livestock ponds.

A Phase I FFRA in April 2006 concluded that former use of the property was as a petroleum refining facility. A site visit in October 2006 found remnant structures and waste materials potentially associated with the former refinery, such as sludge-like material below dry sediment in an apparent former sludge pit.

In September 2008 a Phase II FFRA collected samples of soil, sediment, surface water, and waste and found heavy metal and TPH contamination in areas associated with former refinery operations, including the sludge pit, AST, facility structures and railroad spurs. Dissolved concentrations of PAHs were above RSK in groundwater.

December 2015 Update: OSP did not address the Former Uncle Sam Oil Refinery site in 2015.

Mosaic Coffeyville

Location:	Coffeyville, Montgomery County
Contamination:	Heavy metals
KDHE District:	Southeast, Chanute
Project Manager:	Farve, S.
Status:	Assessment

Site Summary: In September 2011, BER received an application from Mosaic to enter into the VCPRP. The Voluntary Agreement was signed by KDHE's Secretary on November 14, 2011.

A Phase I ESA was completed in June 2011. Historically the site and adjacent properties were used for residential purposes and some commercial and industrial purposes.

Site reconnaissance discovered one 55-gallon barrel containing used oil and solvent, automotive fluid stains were observed on the concrete floor of the 1211 S. Elm St. garage, and cisterns and septic tanks were found on the northeast corner properties. The cisterns and septic tanks were later removed and backfilled with clean fill. The barrel was later removed for off-site disposal by the Coffeyville Fire Department. Upon the completion of the Phase I ESA, it was concluded that there was no evidence of recognized environmental conditions except for battery manufacturing.

Historical records indicate that two buildings behind the residences at 1211 and 1209 Elm St. were used as workshops for Dor-Et Manufacturing Co. between 1962 and 1983. Analytical results from the October 2012 Voluntary Cleanup Investigation (VCI) Report Supplemental Revision identified lead in surface soils above non-residential RSK near the rear buildings' locations, and in surface soils above residential RSK in another location.

Based on analytical results from the Limited Subsurface Investigation conducted in August 2011, arsenic was detected above RSK. No VOCs were detected in the samples collected, and pH levels were normal. Lead was detected below RSK.

KDHE approved the VCI work plan in March 2012 and fieldwork was conducted in April 2012. KDHE received a letter from Mosaic requesting termination from the VCPRP in March 2013. KDHE agreed to the mutual termination in December 2013.

December 2015 Update: The site was transferred to the OSP in July 2015. OSP is currently reviewing file information to determine the next best course of action.

South 5th Street

Location: Neodesha, Wilson County
Contamination: Trichloroethylene
KDHE District: Southeast, Chanute
Project Manager: Farve, S.
Status: Monitoring and Assessment

Site Summary: The South 5th Street site was referred to KDHE's Remedial Section from KDHE's Storage Tank Section after a sampling event at the Neodesha Fire Dept UST site at 113 South 5th Street identified cis 1,2-DCE and TCE in October 2000 in two monitoring wells.

KDHE's Site Assessment Program conducted a SRE in January 2007. TCE was detected in all six monitoring wells and in two boreholes over RSK. The maximum concentration of TCE was located in front of 413 Main Street. PCE was also detected, but was below RSK.

In April 2008 the Site Assessment Program conducted a PA. TCE was detected in five of the monitoring wells. TCE was only detected in one borehole, located on the southeastern corner of 4th Street and Indiana Street. Cis 1,2-DCE and PCE were also detected, but were below RSK.

A Site Inspection from September 2012 through February 2013 detected TCE in groundwater above RSK. The highest concentration was found in a sample collected from a borehole at 410 Main Street. During subsequent site visits, KDHE collected subsurface soil samples from locations near current or former businesses likely to have used TCE. None of the soil samples had detections of TCE above reporting limits. The source of TCE was not discovered and it was recommended for the site to be transferred to the OSP in 2013.

December 2015 Update: The site was placed into monitoring in 2015. A work request was issued late 2015 to delineate the groundwater contamination at this site. Work will be completed FY 2016

Superior Refinery

Location: Longton, Elk County
Potential Contamination: Refinery waste including polynuclear aromatic hydrocarbons
KDHE District: Southeast, Chanute
Project Manager: Wells, T.
Status: Assessment

Site Summary: KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities.

A Phase I FFRA in April 2006 confirmed the historical refinery's presence. Phase II activities were scheduled to begin July 2006 but funding limitations prevented their completion.

December 2015 Update: OSP did not address the Superior Refinery site in 2015.

WALNUT RIVER DRAINAGE BASIN

Bill's Engine Service

Location: El Dorado, Butler County
Contamination: Tetrachloroethylene
KDHE District: South Central, Wichita
Project Manager: Farve, S.
Status: Assessment

Site Summary: The Bill's Engine Service site was created from the El Dorado Salvation Army BTA site that was transferred into the OSP in 2013. The El Dorado Salvation Army BTA site located at 207 W. First Street was entered into the KDHE's Brownfields Program Brownfields. A Phase I BTA was completed in July 2008 and identified recognized environmental conditions (RECs) at the site related to the historic presence of a filling station onsite, as well as multiple facilities (laundry cleaning, auto repairs shops) nearby. A Phase II conducted in November 2008; and a Phase III conducted in February 2009 identified PCE in groundwater samples onsite. In July 2009, the site was transferred to KDHE's Site Assessment Program

In August 2009, a SE identified PCE in groundwater samples collected offsite. One elevated concentration was discovered near the property of the Former Bill's Engine Service.

In September and December 2010, a PA identified PCE in groundwater. It appeared that a coin-operated laundry facility located directly south of the Salvation Army property was the PCE source area.

A SI was conducted in November and December 2012 to collect groundwater and subsurface soil samples offsite from the Salvation Army BTA site. The highest PCE concentration in groundwater was located south of the El Dorado Salvation Army BTA site and in front of the Super Sudz Laundromat facility. The SI concluded two releases of PCE: the first release is in the alley west of the Super Sudz Laundromat 139 N. Gordy Street and attributable to historical dry cleaning operations on the property; and the second release occurred north of 1st Street in the alley way. Bill's Engine Service was located at 212 W. 1st Street from 1958 to 1973, and may have used PCE as a parts degreaser.

The PRP search conducted in 2013 did not identify any successors for Bill's Engine Service, who was identified as being the most likely occupant of the property to have handled or released PCE.

The El Dorado Salvation Army BTA site was resolved in 2014 since it was not an actual source of contamination. The Bill's Engine Service site was created to separately address the isolated source of PCE.

December 2015 Update: OSP did not work at the Bill's Engine Service site in 2015. A SA has been proposed in order to delineate the source area.

Former Empire Fuel and Gas Company

Location:	El Dorado, Butler County
Potential Contamination:	Refinery waste including polynuclear aromatic hydrocarbons
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities. In 2010 through historical research, KDHE positively identified the location of the former Empire Fuel and Gas Company facility.

December 2015 Update: OSP did not address the Former Empire Fuel and Gas Company site in 2015.

Former Reliance Refining Company

Location:	El Dorado, Butler County
Contamination:	Heavy metals, Total petroleum hydrocarbons, Polynuclear aromatic hydrocarbons
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: The site property was originally farmland owned by the Pipers from 1916-1935. In 1916 and 1918, the Pipers leased part of the property to pipeline companies to transport crude petroleum. In 1917, the Pipers leased the property to John M. Alexander for the purpose of building the Reliance Refining Company with a planned capacity of 1,500 barrels. Historic oil and gas journals noted that as of Jan. 1920, the refinery was being built. A KGS Bulletin from 1921 listed Reliance Refining Company with a status of "building" but with no listed operating or production capacity. By March 1921, it was reported as being closed.

In 2005, KDHE's BER identified several former refinery facilities across the state. The site was assigned to OSP in May 2006.

A Phase I FFRA was completed in June 2007. Interviews with personnel at the Butler County Historical Society and Kansas Oil Museum, the El Dorado Library, and the Butler County Courthouse revealed they were not familiar with the refinery. Site reconnaissance did not identify any physical evidence of a former refinery.

A Phase II FFRA was conducted in July 2009. Site activities included site reconnaissance, sampling a sump pump from a nearby residence for groundwater, and using direct-push technology to collect groundwater and soil samples. Samples were analyzed for TPH-DRO, TPH-GRO, VOCs [groundwater only], polycyclic aromatic hydrocarbons (PAHs), and metals. Interviews with property owners revealed historic foundations in the back yard of 516 W. 6th Ave, confirmed by a 1938 aerial photograph. The sump pump was located at a residence at 526 W. 14th Ave. A groundwater sample was collected from the sump in the basement of the home for laboratory analysis, no contaminants were detected. Four groundwater samples were collected. TPH-DRO, TPH-GRO, PAHs, and arsenic were found in concentrations over their respective RSKs. TPH-DRO was detected in four soil samples above its RSK. The highest contaminated groundwater was identified from sample location located north-northwest and upgradient of the site. The four soil samples with elevated TPH-DRO contamination were collected within the area of the former building foundations onsite, but were limited to the subsurface. Refinery wastes were not identified at the site. Fluctuations in groundwater appear to have impacted the subsurface soils in the site area. Aside from the observed foundations, no additional structures or features were identified at the site.

In November 2010, the OSP collected groundwater samples from three monitoring wells belonging to the nearby Coastal Refinery, El Dorado site. The wells are located upgradient and side gradient of the former building foundations. Samples were analyzed for TPH-DRO, TPH-GRO, VOCs, and PAHs. TPH-DRO and TPH-GRO were not detected. Only MTBE was detected over its RSK. The majority of the VOC and PAH detections were found in one monitoring well located closest to the former building foundations, east of a residence in a vacant lot filled with brush and trees.

December 2015 Update: Due to its priority ranking and limited resources, funds, and staff, the OSP did not work at the Former Reliance Refining Company site in 2015.

Lakeside Refining Company

Location:	Augusta, Butler County
Potential Contamination:	Refinery waste including polynuclear aromatic hydrocarbons
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities. A Phase I FFRA Report in May 2006 confirmed the historical presence of the Lakeside Refining Company oil refinery.

December 2015 Update: Due to its priority ranking and limited resources, funds, and staff, the OSP did not work at the Lakeside Refining Company site in 2015.

Walnut River Refining Company

Location:	Augusta, Butler County
Potential Contamination:	Refinery waste including polynuclear aromatic hydrocarbons
KDHE District:	South Central, Wichita
Project Manager:	Wells, T.
Status:	Assessment

Site Summary: KDHE identified several refineries in 2005 through historical reviews and reconnaissance activities. A Phase I FFRA in May 2006 confirmed the historical presence of the Walnut River Refining Company.

December 2015 Update: Currently, no further information is available for this site. OSP plans to conduct additional research FY 2016.

LISTING OF ORPHAN SITES AND SUPERFUND PROGRAM SITES

Sites Table: The Site Table lists the 2015 sites in alphabetical order and provides the project status, the name of the project manager, the name of the river basin in which the site is located, and the page number of the site activities update.

Orphan Sites and Superfund Programs Sites Listed Alphabetically				
Site Name, City	**Site Status**	**Project Manager**	**River Basin**	**Page**
2nd & General Welch, Liberal	Monitoring and Assessment	Farve, S.	Cimarron	27
2nd & Leonard, Onaga	Monitoring and Assessment	Farve, S.	Kansas-Republican	29
4th Ave & Merchant St., Emporia	Monitoring and Assessment	Farve, S.	Neosho	63
8th & Country Estates, Liberal (Former National Beef), Liberal	Remediation and Monitoring	Richards, G.	Cimarron	28
Ace Services, Inc., Colby	Remediation and Monitoring	Haring, B.	Upper Republican	101
Alamota Elevator, Alamota	Assessment	Farve, S.	Upper Arkansas	89
Arkansas City Refinery Site, Arkansas City	Assessment	Wells, T.	Lower Arkansas	37
Armourdale Refinery, Kansas City	Assessment	Wells, T.	Kansas-Republican	29
Axtell PWS Well #2, Axtell	Monitoring and Assessment	Farve, S.	Kansas-Republican	30
Bazine Groundwater Contamination, Bazine	Monitoring	Farve, S.	Upper Arkansas	89
Belle Plaine GW Contamination, Belle Plaine	Monitoring and Assessment	Farve, S.	Lower Arkansas	37
Bill's Engine Service, El Dorado	Assessment	Farve, S.	Walnut	115
Bird-Feldt Farms, Hays	Monitoring and Assessment	Wells, T.	Smoky Hills-Saline	73
Bruce Mining and Smelting Company, Cherokee	Assessment	Wells, T.	Neosho	63
Canada Carbon Tetrachloride, Canada	Monitoring and Assessment	Wells, T.	Neosho	65
Cherokee Mining and Smelting, Cherokee	Remediation	Wells, T.	Neosho	66
Clearwater PCE, Clearwater	Remediation, Monitoring, and Assessment	Farve, S.	Lower Arkansas	38
Coffeyville Ind Park-Dixon Industries, Coffeyville	Assessment	Wells, T.	Verdigris	105
Coffeyville Industrial Park-Middle Hangar, Coffeyville	Assessment	Wells, T.	Verdigris	106
Coffeyville Industrial Park-North Hangar, Coffeyville	Assessment	Wells, T.	Verdigris	107
Coffeyville Industrial Park-South Hangar, Coffeyville	Assessment	Wells, T.	Verdigris	107
Concreto Smelter, Gas	Assessment	Wells, T.	Neosho	67
Country View Mobile Park BTA, Hays	Assessment	Farve, S.	Smoky Hills-Saline	74

Orphan Sites and Superfund Programs Sites Listed Alphabetically				
Site Name, City	**Site Status**	**Project Manager**	**River Basin**	**Page**
Crescent Oil Company, Independence	Assessment	Farve, S.	Verdigris	108
Dodge City Cooperative Exchange, Dodge City	Assessment	Farve, S.	Upper Arkansas	91
Elm & SW 3rd, Newton	Monitoring and Assessment	Wells, T.	Lower Arkansas	39
Englehardt Grain Company, Mingo	Assessment	Wells, T.	Solomon	83
Fiberglass Corp of America (FCA), Coffeyville	Assessment	Wells, T.	Verdigris	109
FMGP – Wellington, Wellington	Monitoring and Assessment	Wells, T.	Lower Arkansas	40
Former Cusco Oil and Refining, Chase	Assessment	Wells, T.	Lower Arkansas	41
Former Empire Fuel and Gas Company, El Dorado	Assessment	Wells, T.	Walnut	116
Former Kanotex Refinery, Caney	Assessment	Wells, T.	Verdigris	111
Former Krueger Refining Co., Natoma	Assessment	Wells, T.	Solomon	84
Former Reliance Refining Company, El Dorado	Assessment	Wells, T.	Walnut	116
Former Uncle Sam Oil Refinery, Cherryvale	Assessment	Wells, T.	Verdigris	111
Former Wichita Independent Oil Storage, Wichita	PRP ID	Wells, T.	Lower Arkansas	42
Fossil & Wichita Ave., Russell	Monitoring and Assessment	Farve, S.	Smoky Hills-Saline	75
Garden City VOCs, Garden City	Monitoring and Assessment	Farve, S.	Upper Arkansas	92
Gilmore-Tatge, Clay Center	Monitoring and Assessment	Farve, S.	Kansas-Republican	31
Great Bend Former Refinery Site (Falcon Refinery), Great Bend	Monitoring	Farve, S.	Upper Arkansas	93
Holcomb Garden City Company Site, Holcomb	Resolved	Farve, S.	Upper Arkansas	93
Hope PWS #10 Site, Hope	Monitoring and Assessment	Farve, S.	Smoky Hills-Saline	76
Hudson Carbon Tetrachloride, Hudson	Monitoring and Assessment	Wells, T.	Lower Arkansas	43
Hutchinson Air Base Industrial Tract (HABIT), Hutchinson	Monitoring and Assessment	Richards, G.	Lower Arkansas	44
Ingalls PWS, Ingalls	Monitoring and Assessment	Wells, T.	Upper Arkansas	94
Kanopolis Abandoned Salt Pile, Kanopolis	Monitoring and PRP ID	Wells, T.	Smoky Hills-Saline	77

Orphan Sites and Superfund Programs Sites Listed Alphabetically				
Site Name, City	**Site Status**	**Project Manager**	**River Basin**	**Page**
Kanopolis PCE, Kanopolis	Remediation and Monitoring	Richards, G.	Smoky Hills-Saline	79
Kiowa PWS Well #2, Kiowa	Monitoring and Assessment	Wells, T.	Lower Arkansas	45
Konza Valley RWD #1, Manhattan	Monitoring and Assessment	Farve, S.	Kansas-Republican	32
Lakeside Refining Company, Augusta	Assessment	Wells, T.	Walnut	117
Lanham Grain Bins, Lanham	Monitoring	Farve, S.	Kansas-Republican	33
Latimer Groundwater Contamination, Latimer	Monitoring and Assessment	Farve, S.	Kansas-Republican	34
Lebanon Nitrate Site, Lebanon	Assessment	Wells, T.	Solomon	84
Lyons Chloride Site, Lyons	Remediation/ Monitoring/ PRP ID	Wells, T.	Lower Arkansas	47
Lyons VOC Site, Lyons	Monitoring and Assessment	Farve, S.	Lower Arkansas	48
MARCO (Mid America Refining Co.), Chanute	Transferred	Wells, T.	Neosho	68
Mayberry Middle School, Wichita	Monitoring and Assessment	Farve, S.	Lower Arkansas	49
McGraw Trucking, Frontenac	Assessment	Wells, T.	Neosho	69
McPherson PWS #7, McPherson	Monitoring and Assessment	Wells, T.	Lower Arkansas	50
Mercier Carbon Tetrachloride, Mercier	Monitoring and Assessment	Farve, S.	Kansas-Republican	35
Mid-Kansas Aerial, Inc., Larned	Assessment	Farve, S.	Upper Arkansas	95
Mosaic Coffeyville, Coffeyville	Assessment	Farve, S.	Verdigris	112
Ness City PWS, Ness City	Monitoring and Assessment	Farve, S.	Upper Arkansas	96
Ness Crude Oil #2, Ness City	Assessment	Wells, T.	Upper Arkansas	97
Norton Carbon Tetrachloride, Norton	Monitoring/ Assessment/ PRP ID and Negotiation	Wells, T.	Upper Republican	102
Oak Knoll Site, Wichita	EUC	Wells, T.	Lower Arkansas	51
Ottawa FMGP, Ottawa	PRP ID/ Negotiation	Wells, T.	Marais des Cygnes	59
Paola Refining Co.—Former, Paola	Assessment	Wells, T.	Marais des Cygnes	59
Paris Corp (Fmr), Salina	Monitoring and Assessment	Farve, S.	Smoky Hills-Saline	79
Park City DRO, Park City	Assessment	Farve, S.	Lower Arkansas	52
Park PWS #1, Park	Resolved	Wells, T.	Smoky Hills-Saline	80

Orphan Sites and Superfund Programs Sites Listed Alphabetically				
Site Name, City	**Site Status**	**Project Manager**	**River Basin**	**Page**
Pittsburg Short Method Smelter, Pittsburg	Assessment	Wells, T.	Neosho	70
Pratt Ag Aviation, Inc., Pratt	Monitoring and Assessment	Wells, T.	Lower Arkansas	53
Pratt Army Airfield/Pratt PWS Well #2, Pratt	Monitoring and Assessment	Wells, T.	Lower Arkansas	54
Richardson Property Site, Hutchinson	Assessment	Farve, S.	Lower Arkansas	56
Royal Acid, Hill City	Monitoring and Assessment	Wells, T.	Solomon	85
Selden Carbon Tetrachloride, Selden	Monitoring/ Assessment/ PRP ID and Negotiation	Farve, S.	Upper Republican	102
South 5th Street, Neodesha	Monitoring and Assessment	Farve, S.	Verdigris	113
Stafford County Oil Reclaiming Company (Former), Stafford County	Monitoring and Assessment	Farve, S.	Upper Arkansas	99
Stockton PWS #10, Stockton	Monitoring and Assessment	Wells, T.	Solomon	86
Superior Refinery, Longton	Assessment	Wells, T.	Verdigris	113
Uncle Sam Oil Refinery (Former)—Atchison, Atchison	Assessment	Wells, T.	Missouri	61
Walnut River Refining Company, Augusta	Assessment	Wells, T.	Walnut	118
Warren Petroleum Plant, Galva	Assessment	Wells, T.	Lower Arkansas	57
Webster/Miller Refinery, Humboldt	EUC	Wells, T.	Neosho	70
West South Street, Salina	Monitoring and Assessment	Wells, T.	Smoky Hills-Saline	81
Yoder, Village of (Yoder VOCs), Yoder	Monitoring and Assessment	Richards, G.	Lower Arkansas	57