

JAN 31 2011



KOCH NITROGEN COMPANY LLC

January 28, 2011

Via UPS Tracking #**1Z 693 661 03 9338 7962**

Chief, Hazardous Waste Permits Section
Bureau of Waste Management
Kansas Department of Health and Environment
1000 SW Jackson, Suite 320
Topeka, Kansas 66612-1366

Via UPS Tracking #**1Z 693 661 03 9291 9979**

Attn: Director, RCRA Corrective Action and Permits Branch
Air, RCRA, and Toxics Division
U.S. Environmental Protection Agency Region VII
901 North Fifth Street
Kansas City, Kansas 66101 (2 copies)

Re: RCRA Part I Permit: Midterm Review
Koch Nitrogen Company, LLC, Dodge City Nitrogen Plant
Hazardous Waste Management Facility Permit
EPA ID. No. KSD044625010

To Whom It May Concern:

In accordance with discussions between Koch Nitrogen Company, LLC (KNC) and the Kansas Department of Health and Environment (KDHE), KNC is transmitting the enclosed RCRA Part I Permit: Midterm Review for the Dodge City Nitrogen Plant. This report summarizes previous evaluations of the Permit and the Groundwater Corrective Action Program in accordance with guidance from KDHE and EPA.

If you have any questions regarding this report or attachments, please contact Elise Stucky-Gregg at (620) 227-8631, Ext. 350.

Sincerely,

Gary J. LeRock
Plant Manager

620.227.8631 Tel
620.227.6016 Fax

11559 U.S. Highway 50
P.O. Box 1337
Dodge City, Kansas 67801-1337

514096



RCRA

Encs: RCRA Part I Permit: Midterm Review

CC w/attachments:

Elise Stucky-Gregg, Koch Nitrogen Company, LLC, Dodge City, Kansas
Tom Siegrist, Koch Fertilizer, Wichita, Kansas (electronic copy)

A. Stone

RCAP RECEIVED

JAN 31 2011



KOCH NITROGEN COMPANY LLC

P.O. Box 1337

Dodge City, Kansas 67801

RCRA Part I Permit: Midterm Review

January 28, 2011



KOCH NITROGEN COMPANY LLC

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Dodge City, Kansas 67801

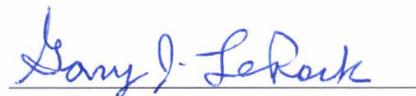
Phase II RFI Work Plan Addendum:
Groundwater Characterization

Dodge City Nitrogen Facility

January 28, 2011

As provided by 40 CFR 270.11(d), I certify under penalty of law that this document was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

KOCH NITROGEN COMPANY, LLC



Gary J. LeRock
Facility Manager



Date

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1.0 INTRODUCTION

This Hazardous Waste Management Permit Part I: Midterm Review has been prepared to provide a detailed evaluation of the effectiveness of the Groundwater Corrective Action Program that Koch Nitrogen Company, LLC (KNC) is implementing pursuant to a Hazardous Waste Management Facility permit at the Dodge City, Kansas nitrogen facility (Facility). During the implementation of the permit, KNC has periodically provided the Kansas Department of Health and Environment (KDHE) and Environmental Protection Agency (EPA) with evaluations of the permit and Groundwater Corrective Action Program through routine reports and work plan reviews. Annually, KNC provides permit and program evaluations in an Annual Groundwater Corrective Action Report. In August 2007, KNC submitted a Resource Conservation and Recovery Act (RCRA) Field Investigation (RFI) Interim Status Report to provide an update on the work plan progress and to discuss measures to improve the groundwater recovery system. The RFI Interim Status Report was the basis for a broader discussion in 2008 between EPA, KDHE, and KNC that led to preparation and submittal of the Initial Interim Measures Work Plan – Groundwater Recovery System Optimization in December 2008. The Groundwater Recovery System Optimization provided an evaluation of the groundwater recovery system with proposed actions to optimize the system. The outcome of the proposed optimization work plan was a discussion in 2009 between EPA, KDHE, and KNC in which the agencies expressed a preference to first conduct additional delineation of the aquifer, and only then consider optimization of the groundwater recovery system.

After discussions with KDHE and EPA it was agreed that this report should consist of a brief history of activities associated with the permit, a permit review, and a discussion of potential changes that may be requested during the re-permitting process as the permit reaches the end of its term and a permit renewal application is filed. This Midterm Review connects the 2007 and 2008 proposals and discussions to the viable improvement options to be included in the permit renewal application to be submitted in 2012.

2.0 BACKGROUND AND HISTORY

2.1 Site Description

The KNC Facility manufactures anhydrous ammonia and urea ammonium nitrate fertilizers. The facility began operation in 1968 and was owned and operated by Farmland Industries until the facility was purchased by a predecessor to KNC in May 2003. The facility is located in the north half of Section 22,

Township 26 South, Range 24 West, in Ford County, Kansas. The facility is located approximately 3 miles east of Dodge City, Kansas and is located in a rural agricultural area.

2.2 Geology

The site is underlain by Tertiary deposits commonly referred to as the Ogallala Formation. The deposits are primarily clay with lesser amounts of caliche, sand, silt and gravel. At depths below approximately 30 feet, the clay deposits become interbedded with lenses of sand, silt, and gravel. The sand lenses are primarily composed of very fine to medium grained sand, and commonly contain silt and clay. The silt lenses are not very common, and only a few gravel lenses have been identified. Caliche is common in the upper portion of the unconsolidated deposits, and most frequently is encountered at depths ranging from approximately 40 to 100 feet.

The unconsolidated deposits are underlain by the Graneros Shale at depths ranging from approximately 100 to 165 feet. The Graneros Shale is relatively thin (less than 60 feet) and contains thin sandstone lenses. The Graneros Shale consists of bluish to gray, noncalcareous claystone and shale and is an aquitard between the Ogallala and underlying Dakota Formations. The Dakota Formation underlies the Graneros Shale and is composed of white, gray, red, brown and tan claystone, siltstone, shale, and sandstone. Regional data indicate that the formation extends from approximately 180 to over 350 feet below ground surface (bgs).

2.3 Hydrogeology

Groundwater is present within the unconsolidated depths of the Ogallala Formation ranging from approximately 70 to 120 feet bgs. Regional and site water level data indicate that the groundwater generally flows toward the southeast or toward the Arkansas River. In 1983, the former owner of the facility began groundwater recovery at the site with multiple recovery wells following the discovery that chemical constituents of interest (COIs) from Facility operations had impacted the groundwater. The current pumping system includes 66 recovery wells. These wells are shown on figure 1. On average, KNC pumps 100 to 150 million gallons of water annually under Term Permit 969010 administered by the Kansas Department of Agriculture. These volumes correspond to average pumping rates ranging from 190 to 280 gallons per minute. The water is treated onsite by a reverse-osmosis (RO) system that was installed in 2006. The treated water is re-used at the Facility and then discharged to the Facility's wastewater treatment system. The water is then disposed of at one of the Facility's two permitted Class 1 nonhazardous waste injection wells.

Groundwater flow within the Graneros Shale is limited because of its lithologic character. As noted above, the Dakota Formation is the next deepest aquifer beneath the site. In the Dakota formation, groundwater is contained in relatively thin sandstone lenses.

2.4 Nature and Distribution of Groundwater Constituents of Interest

As noted above, groundwater in the unconsolidated deposits at the site has been impacted by COIs associated with industrial activity conducted by the Facility's former owner. The primary COIs are nitrogen-bearing compounds (measured as nitrate plus nitrite), chromium, and low levels of volatile organic compounds (VOCs).

During 2006, 2008, 2009, and 2010 KNC collected a round of groundwater samples for total chromium and nitrate analyses from on-site wells. During 2009, KNC began submitting samples for hexavalent chromium and nitrite analyses as well as total chromium and nitrate analysis. The VOC compounds detected in groundwater include tetrachloroethene, 1,1,1-trichloroethane, trichloroethylene, 1,1-dichloroethane, and vinyl chloride.

2.5 RCRA Facility Investigation

In September, 2006, EPA approved, with comments, the Phase I RFI Work Plan submitted for assessment of the Facility in accordance with the RCRA permit. The approved RFI Work Plan contained the Sampling and Analysis Plan and the Quality Assurance Project Plan. This work included soil sampling within various Solid Waste Management Units (SWMU) and Areas of Concern (AOC) and the installation of several monitoring wells to help determine the areal and vertical extent of COIs on-and off-site. On August 10, 2007, KNC submitted an RFI Interim Status Report to summarize the work completed to date. In September, 2008, EPA approved, with comments, the Phase II RFI Work Plan. The Phase II RFI Work Plan outlined the soil investigation results to date and future soil investigation activities to be conducted. The Phase II RFI Work Plan also indicated that additional monitoring wells would be installed downgradient (south) and west of the site to further delineate the nitrate plus nitrite concentrations in the groundwater. Work outlined in the Phase II RFI Work Plan was completed in 2010 with the exception of the installation of the additional monitoring wells to the south and to the west of the site. These wells will now be completed as part of the Phase II RFI Work Plan Addendum: Groundwater Characterization that was approved in October 2010. The objectives of this addendum are to continue the delineation of COIs on- and off-site, determine any preferential flow zones within the unconsolidated

sediments, and to add to the monitoring well network to allow for the separation of the monitoring and recovery systems.

3.0 PERMIT REVIEW

During the implementation of the permit, KNC has periodically provided the KDHE and EPA with evaluations of the permit and groundwater corrective action program through routine reports and work plan reviews. This has been done annually in the Annual Groundwater Corrective Action Report, in the RFI Interim Status Report, submitted in August 2007, and in the Initial Interim Measures Work Plan – Groundwater Recovery System Optimization, submitted in December 2008.

3.1 Annual Groundwater Corrective Action Report

On an annual basis, KNC submits an Annual Groundwater Corrective Action Report. Section IV.E.3 of the Part I permit states that this report “shall evaluate the effectiveness of the groundwater corrective action program.”

Conclusions from this evaluation were listed in Section 7.1 of the 2009 Annual Groundwater Corrective Action Report:

- The recovery system continues to remove groundwater from beneath the plant;
- Based on analysis of isoconcentration data, the extent of constituents in the groundwater has not substantially changed during the monitoring period as compared to 2008 conditions;
- Statistical analysis indicates that constituents in many wells are non-detect or below the GWPS for the last 3 consecutive sampling events. Specifically, wells meeting these criteria are as follows:

Total Chromium
B-1, TW-05, TW-08, TW-11, TW-16, TW-22, TW-23, TW-26, TW-37, TW-39, TW-40, TW-52, TW-56, TW-63, TW-76, TW-77, TW-78, TW-79, TW-89, and TW-93.
Nitrate plus Nitrite
A-3B, B-1, TW-11, TW-22, TW-23, TW-52, TW-56, TW-63, TW-74, TW-76, TW-78, and TW-79.
VOCs
A3-B, B-1, C-3B, TW-08, and TW-74.

Additionally, section 8 of the 2009 Annual Groundwater Corrective Action Report lists KNC’s specific recommendation including:

- Abandon wells TW-02, TW-04, and TW-08 and replace them with new wells designed for

adequate recovery under the current groundwater elevation conditions;

- Implement the Phase II RFI Work Plan Addendum: Groundwater Characterization to help evaluate the effectiveness of the groundwater recovery well network.

3.2 RFI Interim Status Report

In August 2007, KNC submitted the RFI Interim Status Report to provide a summary of certain work completed under the approved RFI work plan to date, including; site characterization, definition of source(s), and degree and extent of analyte detections above background.

Section 4.3 of the RFI Interim Status Report provided an update on activities associated with the Groundwater at KNC. This section provided recommendations from previous Groundwater Corrective Action Reports, the results from the Dakota Formation investigation, and the results and recommendations from the Groundwater Recovery System Optimization Study.

Section 5.2 of the RFI Interim Status Report provided general and specific recommendations. Some recommendations involved reducing the monitoring frequency of select wells for select analytes. As stated in the 2009 Annual Groundwater Corrective Action Report, KNC believes it would be in the best interest of the project to continue monitoring the wells as defined in the RCRA Groundwater Sampling and Analysis Plan (SAP). Some recommendations have been resolved. For example, KNC recommended re-evaluating the exclusive use of non-filtered samples for metals analysis due to matrix interference problems encountered. Through discussions with KDHE and EPA it was determined to analyze samples for Hexavalent Chromium and Total Chromium to resolve the issue of non-filtered samples. Other recommendations are now awaiting results of the Phase II RFI Work Plan Addendum: Groundwater Characterization. For example, KNC recommended optimizing the recovery well system and separating the monitoring and remediation systems. KNC will refine all recommendations upon completion of the work outlined in the Phase II RFI Work Plan Addendum: Groundwater Characterization.

3.3 Groundwater Recovery System Optimization

The Initial Interim Measures Work Plan – Groundwater Recovery System Optimization summarized the work completed to investigate the impacts of the existing groundwater recovery system and the potential benefits that could accrue by making changes to optimize the system. KNC conducted an initial optimization study from July 2006 through January 2007 to evaluate the effectiveness of optimizing the recovery system. KNC conducted the optimization study under a temporary permit authorization approved by KDHE on July 14, 2006. During the study, three different recovery system configurations

were tested. Results, observations, and recommendations from the study included:

- The operation of fewer recovery wells than currently in use will remove constituents in groundwater with greater effectiveness than the current configuration allows.
- Enhancing contaminant mass removal in source areas will enable more efficient and rapid removal of these components.
- Eliminating upgradient pumping will allow the optimized system to work more effectively with the natural flow gradient to transport contaminants to extract points for removal from the groundwater.
- The monitoring and recovery functions should be separated, to allow more accurate monitoring of contaminant concentrations and improved calculation of capture zones.
- Plugging, abandonment, or conversion (to ground-water level monitoring only) of non-productive or counterproductive recovery wells would improve the overall performance of the system.

As noted above, all recommendations will be refined upon completion of the Phase II RFI Work Plan Addendum: Groundwater Characterization.

4.0 POTENTIAL CHANGES FOR THE NEW PERMIT

There are several changes that have previously been discussed with the Agencies that are listed in the supplemental information submitted with the Quarterly Progress Reports. These changes include inconsistencies between certain permit documents, or between the language in these documents and best practices. Examples include: changes to field/laboratory data sheets, the availability of newer or more accurate analytical methods, the use of alternate field meters, and changes in recovery well operation due to the regional drop in water level. These changes will be addressed during the re-permitting process.

The results of the Phase II RFI Work Plan Addendum: Groundwater Characterization will likely influence any recommended significant changes to the new permit. Upon completion of this work, KNC will likely revisit the Recovery System Optimization Study and make several recommendations relating to the number and location of recovery wells as well as a recommendation to separate the monitoring and recovery systems. Until the work outlined in the Phase II RFI Work Plan Addendum: Groundwater Characterization is completed, KNC has one recommended change for the new permit. KNC proposes to change the schedule for sampling wells that is contained in the SAP to provide for sampling only the private wells quarterly and sampling all other wells semi-annually. KNC believes this request is justified based on the differences observed when comparing all well sampling data to quarterly and semi-annual sampling data.

4.1 All Well Sampling

Currently KNC samples the select wells as described in the SAP (figure 2). KNC believes a more complete analysis of the effectiveness of the groundwater corrective action program can be achieved by sampling all of the recovery wells and monitoring wells that have bladder pumps (figure 3). On four different occasions dating back to December 2006, KNC has performed an "all well" sampling event. Significant differences can be observed in plume detail and plume delineation when comparing the data collected during an "all well" sampling event to the data collected during the corresponding semi-annual sampling event. These additional details provide a more complete understanding of the COI concentrations at the site.

Figures 4 through 9 display the data collected during "all well" and semi-annual events in the 4th quarter 2006, 2nd quarter 2008, 2nd quarter 2009, and 2nd quarter 2010. During the 2006-2008 time period samples were analyzed for Total Chromium and Nitrate/Nitrite. In the 4th quarter 2008, KNC began analyzing samples for Total Chromium, Hexavalent Chromium, Nitrate, and Nitrite.

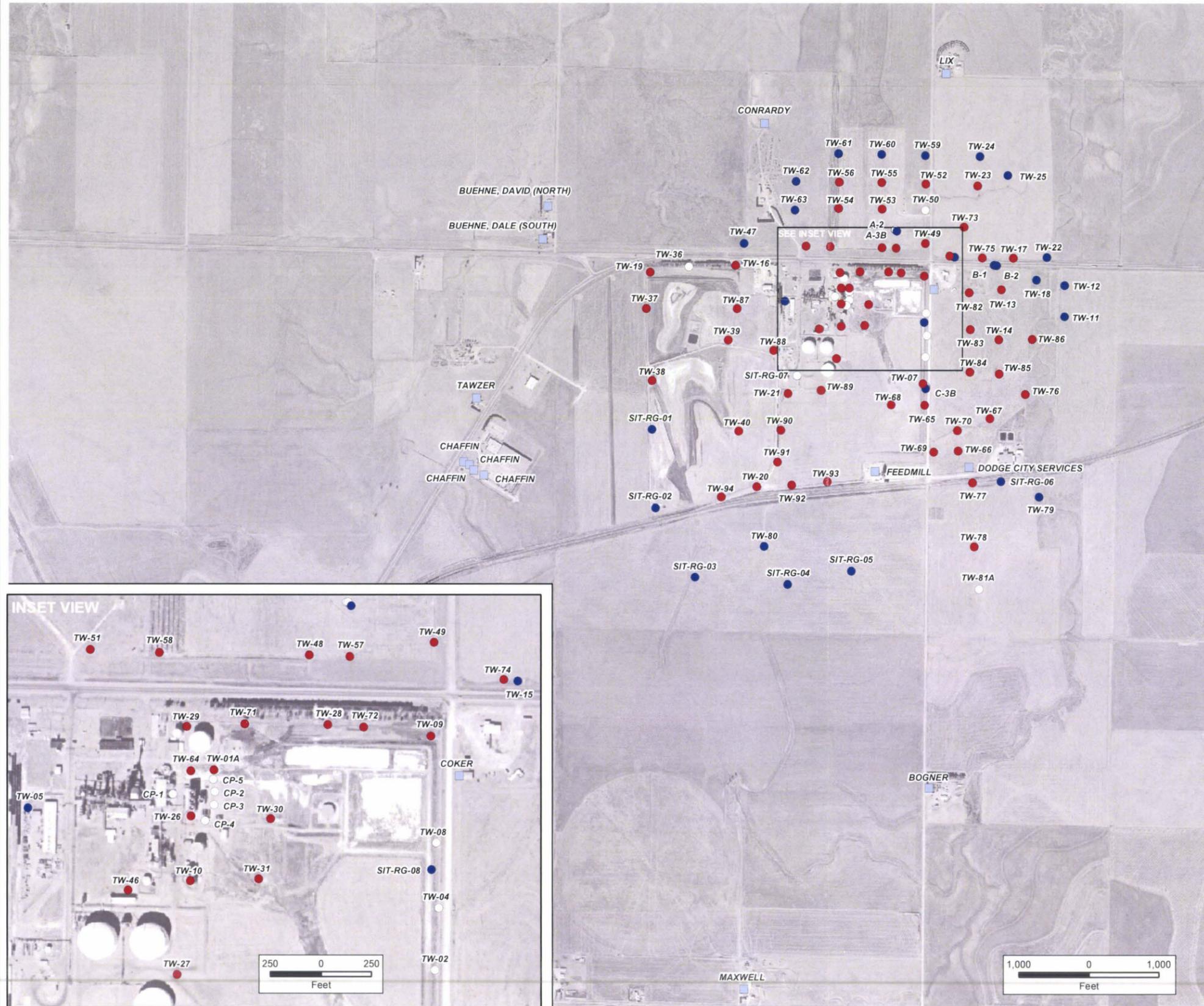
The figures display several examples where the "all well" figure defined the plume boundaries better than the semi-annual figure. The southern boundary of the total chromium plume on figure 5 is a good example. The southernmost wells are not sampled semi-annually and therefore, the southern extent is undefined. The total chromium "all well" map shows the southern boundary delineated to background. In other figures, the "all well" sampling shows more detail than the semi-annual sampling. On figure 7, the semi-annual hexavalent chromium map shows the highest concentration to be 0.2 mg/L. By comparison, the "all well" figure shows 4 different locations at the site where the hexavalent chromium is greater than 0.3 mg/L.

4.2 Private Well Sampling

By increasing the number of wells sampled during each sampling event, KNC believes that the quality of the data used for evaluation of the groundwater corrective action program would be improved and that it would be unnecessary to sample all wells quarterly. To ensure adequate monitoring of the public receptors near the site, KNC would propose to continue quarterly sampling of all of the private wells listed in the SAP.

5.0 CONCLUSION

During the implementation of the permit, KNC has periodically provided the KDHE and EPA evaluations of the permit and groundwater corrective action program through routine reports and work plan reviews. These evaluations have revealed several potential areas of improvement that are then reported to the agencies through routine annual reports and work plan documents. Some of these areas of improvement have already been addressed and others will be addressed as KNC continues to collect information regarding the impact of COIs at the KNC site through the implementation of the Phase II RFI Work Plan Addendum: Groundwater Characterization. Currently, there is one change that KNC believes will add value to the project. By sampling "all wells" semi-annually, KNC will be able to better evaluate the effectiveness of the groundwater corrective action program.



LEGEND

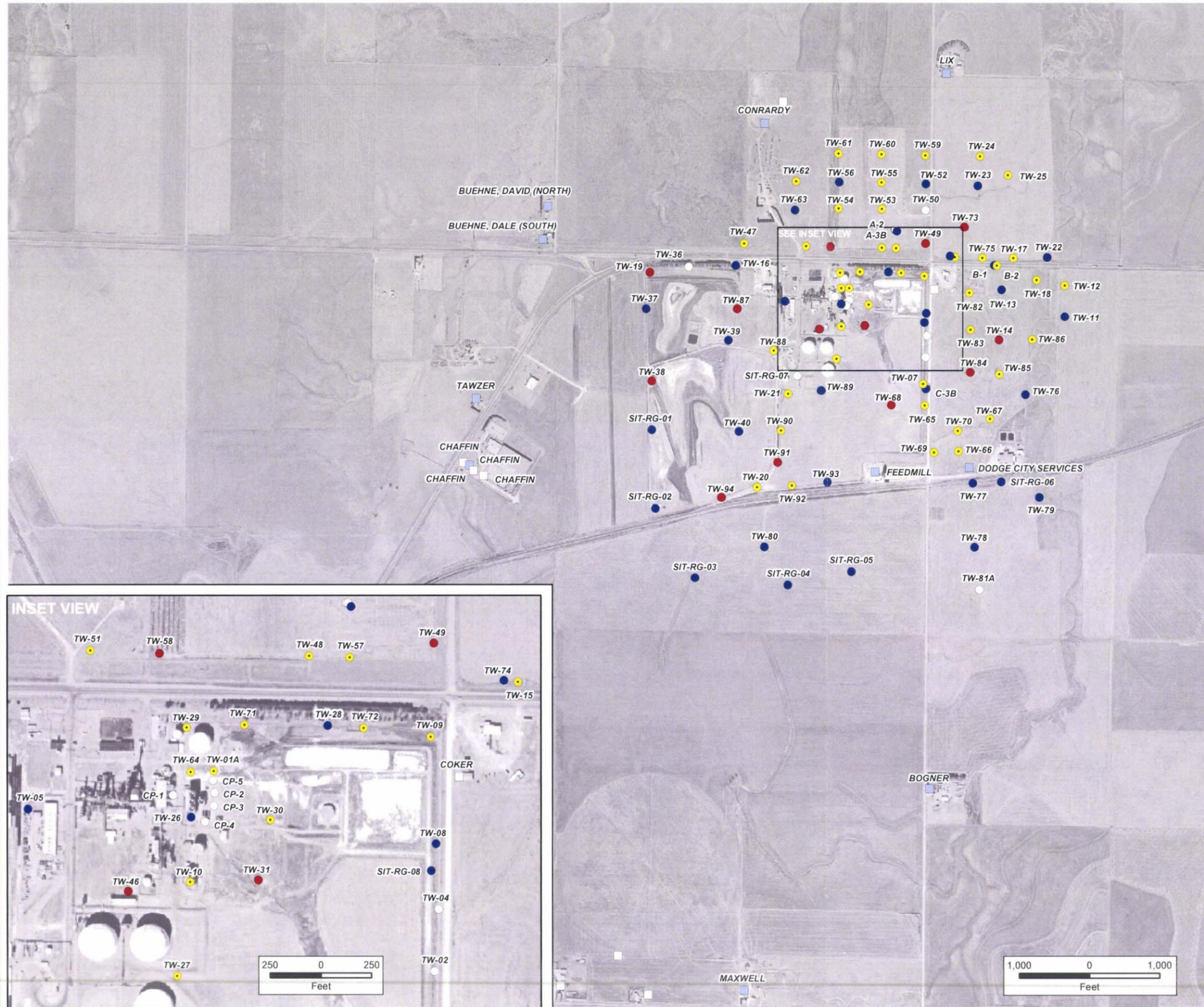
- MONITORING (NON-PUMPING) WELL
- RECOVERY (PUMPING) WELL
- WELL NOT IN USE - DRY OR PLUGGED
- PRIVATE WELL

**GROUNDWATER
RECOVERY WELL NETWORK**

PREPARED BY:



PROJECT NO.	FIGURE NO. 1
DATE. JAN 2011	REVISION NO.



LEGEND

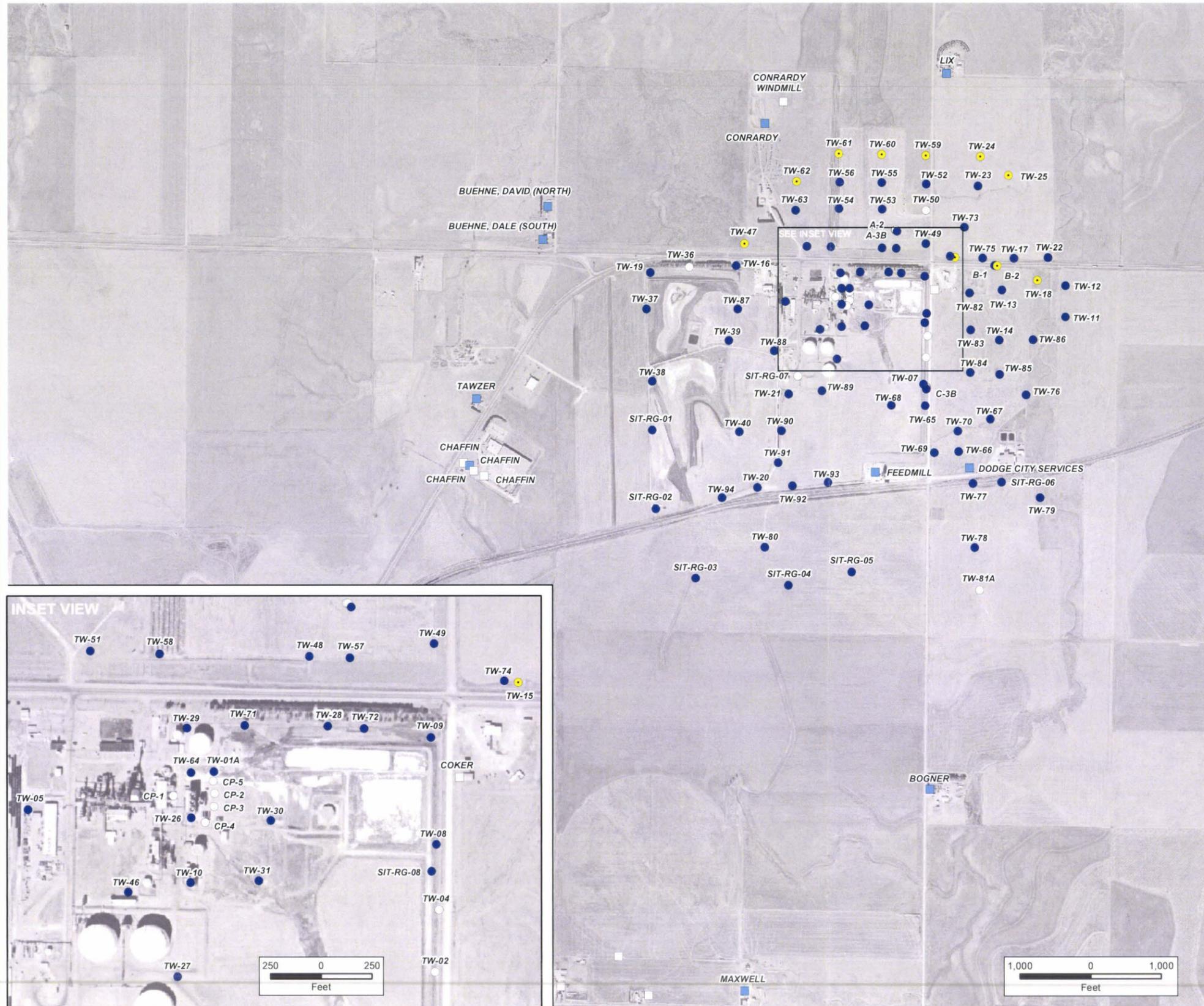
- KNC WELL MONITORED QUARTERLY
- KNC WELL MONITORED SEMI-ANNUALLY
- KNC WELL NOT IN USE - DRY OR PLUGGED
- KNC WELL PRIMARILY USED FOR WATER LEVEL GAUGING
- PRIVATE WELL MONITORED QUARTERLY
- PRIVATE WELL NO LONGER SAMPLED

WELL SAMPLING FREQUENCY

PREPARED BY:



PROJECT NO.	FIGURE NO. 2
DATE: JAN 2011	REVISION NO.



LEGEND

- KNC WELL TO BE MONITORED SEMI-ANNUALLY
- PRIVATE WELL TO BE MONITORED QUARTERLY
- KNC WELL TO BE USED FOR WATER LEVEL GAUGING
- KNC WELL NOT IN USE - DRY OR PLUGGED
- PRIVATE WELL NOT SAMPLED

**PROPOSED
WELL SAMPLING FREQUENCY**

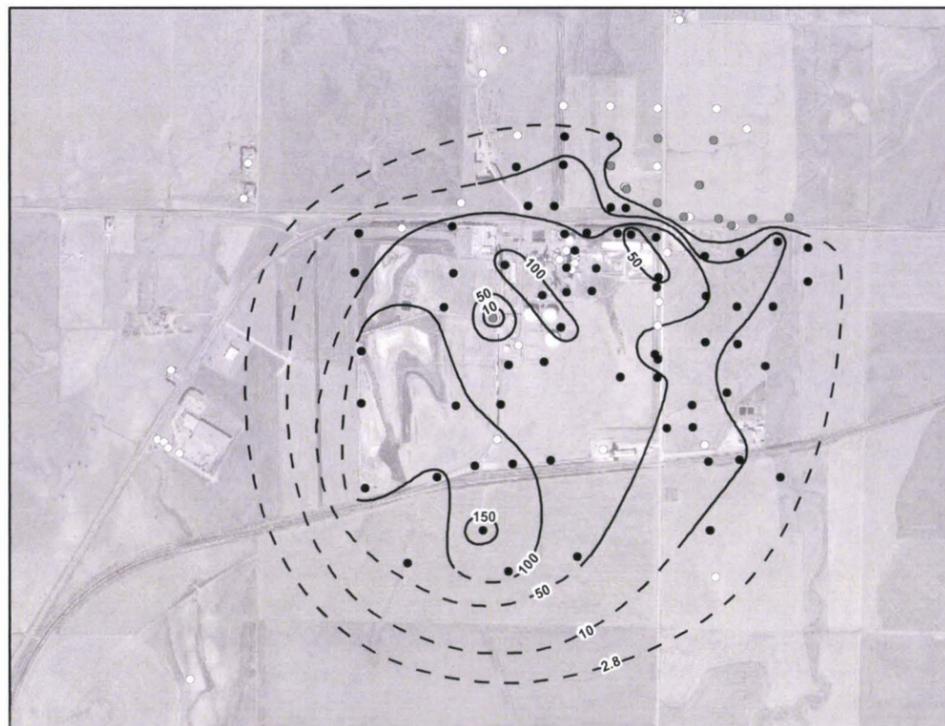
PREPARED BY:		KOCH KOCH NITROGEN COMPANY 11559 US HIGHWAY 50 - P.O. BOX 1337 DODGE CITY, KS 67801	
PROJECT NO.	JAN 2011	FIGURE NO.	3
DATE.	JAN 2011	REVISION NO.	



Total Chromium Isocontours - Fourth Quarter (December) 2006 - All Sampled Wells Used For Contouring



Total Chromium Isocontours - Fourth Quarter (October) 2006 - Only Semi-Annual Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Fourth Quarter (December) 2006 - All Sampled Wells Used For Contouring



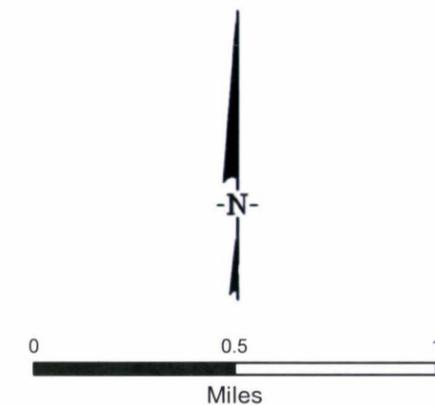
Nitrate+Nitrite (as N) Isocontours - Fourth Quarter (October) 2006 - Only Semi-Annual Wells Used For Contouring

LEGEND

- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR TOTAL CHROMIUM OR ABOVE 2.8 mg/L FOR NITRATE+NITRITE (as N) IN RESPECTIVE SAMPLING EVENT
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR TOTAL CHROMIUM OR BELOW 2.8 mg/L FOR NITRATE+NITRITE (as N) IN RESPECTIVE SAMPLING EVENT
- MONITORING WELL EITHER NOT SAMPLED OR NOT USED FOR CONTOURING IN RESPECTIVE SAMPLING EVENT
- ~ ISOCOLOUR (mg/L) FOR RESPECTIVE ANALYTE AND SAMPLING EVENT (DASHED WHERE INFERRED OR UNKNOWN)

NOTE:

THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR TOTAL CHROMIUM AND NITRATE+NITRITE (as N) - 4TH QUARTER 2006

PREPARED BY:



PROJECT NO.	FIGURE NO. 4
DATE. JAN 2011	FILE NO.



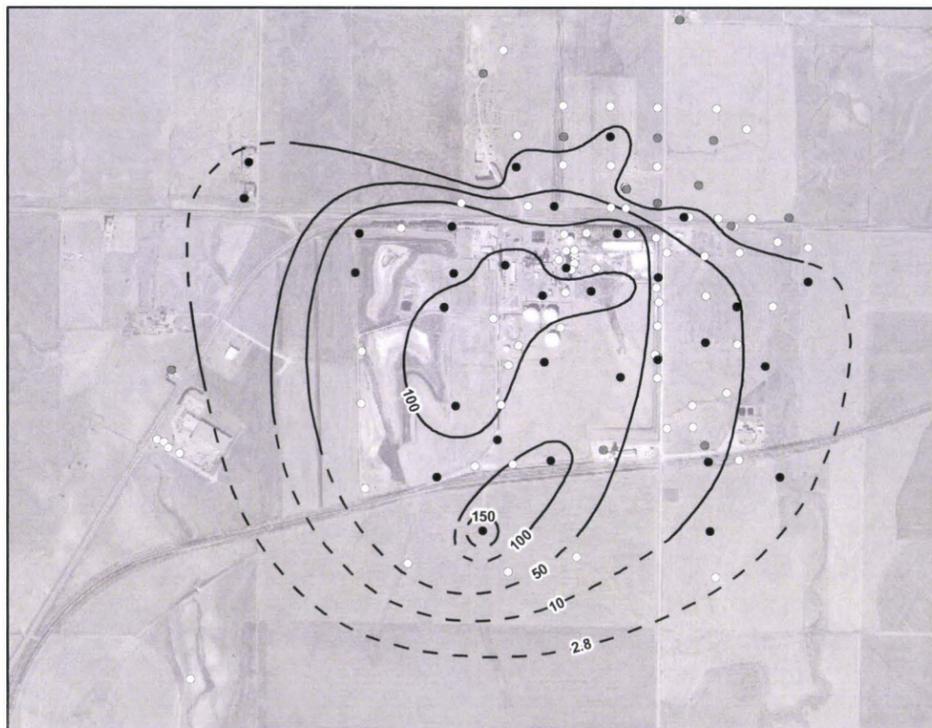
Total Chromium Isocontours - Second Quarter (May) 2008 - All Sampled Wells Used For Contouring



Total Chromium Isocontours - Second Quarter (April) 2008 - Only Semi-Annual Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Second Quarter (May) 2008 - All Sampled Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Second Quarter (April) 2008 - Only Semi-Annual Wells Used For Contouring

LEGEND

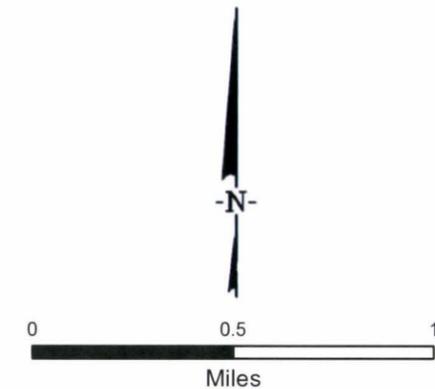
- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR TOTAL CHROMIUM OR ABOVE 2.8 mg/L FOR NITRATE+NITRITE (as N) IN RESPECTIVE SAMPLING EVENT
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR TOTAL CHROMIUM OR BELOW 2.8 mg/L FOR NITRATE+NITRITE (as N) IN RESPECTIVE SAMPLING EVENT
- MONITORING WELL EITHER NOT SAMPLED OR NOT USED FOR CONTOURING IN RESPECTIVE SAMPLING EVENT

~ ISOCONTOUR (mg/L) FOR RESPECTIVE ANALYTE AND SAMPLING EVENT (DASHED WHERE INFERRED OR UNKNOWN)

NOTES:

1. THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.

2. THE BOGNER WELL TO THE SOUTH OF THESE MAP PANELS HAD A NITRATE+NITRITE (as N) CONCENTRATION OF 40.1 mg/L IN APRIL 2008.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR TOTAL CHROMIUM AND NITRATE+NITRITE (as N) - 2ND QUARTER 2008

PREPARED BY:

KOCH
KOCH NITROGEN COMPANY
 11559 US HIGHWAY 50 - P.O. BOX 1337
 DODGE CITY, KS 67801

PROJECT NO.

FIGURE NO. 5

DATE. JAN 2011

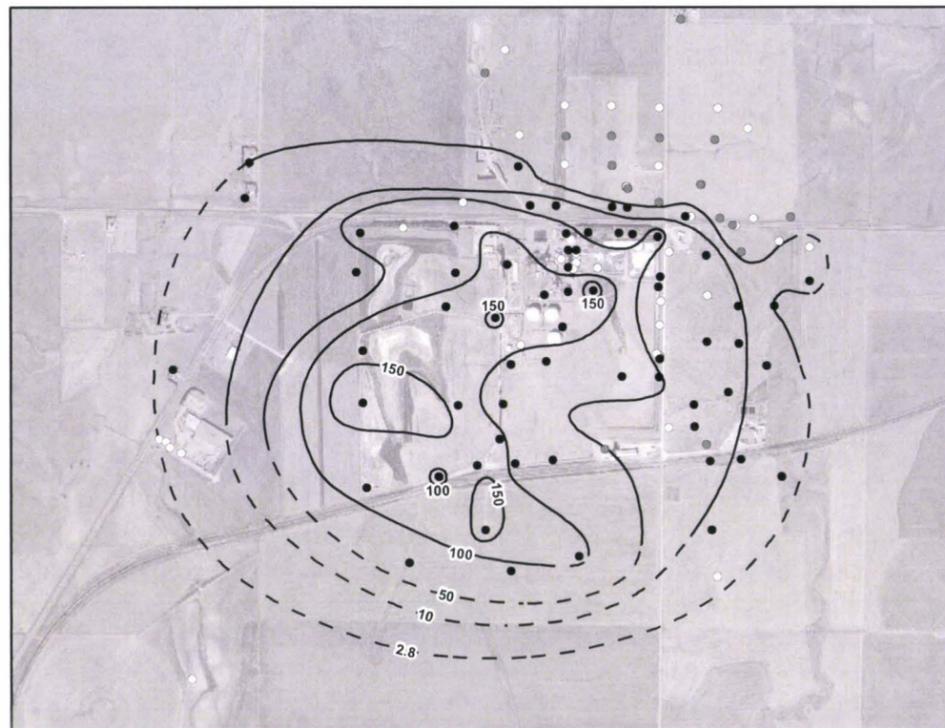
FILE NO.



Total Chromium Isocontours - Second Quarter (April) 2009 - All Sampled Wells Used For Contouring



Total Chromium Isocontours - Second Quarter (April) 2009 - Only Semi-Annual Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Second Quarter (April) 2009 - All Sampled Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Second Quarter (April) 2009 - Only Semi-Annual Wells Used For Contouring

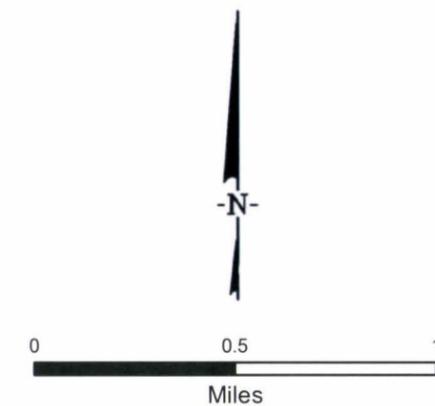
LEGEND

- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR TOTAL CHROMIUM OR ABOVE 2.8 mg/L FOR NITRATE+NITRITE (as N) IN APRIL 2009
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR TOTAL CHROMIUM OR BELOW 2.8 mg/L FOR NITRATE+NITRITE (as N) IN APRIL 2009
- MONITORING WELL EITHER NOT SAMPLED IN APRIL 2009 OR NOT USED FOR CONTOURING
- ~ ISOCONTOUR (mg/L) OF RESPECTIVE ANALYTE FOR APRIL 2009 (DASHED WHERE INFERRED OR UNKNOWN)

NOTES:

1. THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.

2. THE BOGNER WELL TO THE SOUTH OF THESE MAP PANELS HAD A NITRATE+NITRITE (as N) CONCENTRATION OF 40 mg/L IN APRIL 2009.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR TOTAL CHROMIUM AND NITRATE+NITRITE (as N) - 2ND QUARTER 2009

PREPARED BY:



PROJECT NO.	FIGURE NO. 6
DATE. JAN 2011	FILE NO.



Hexavalent Chromium Isocontours - Second Quarter (April) 2009 - All Sampled Wells Used For Contouring



Hexavalent Chromium Isocontours - Second Quarter (April) 2009 - Only Semi-Annual Wells Used For Contouring



Nitrite (as N) Isocontours - Second Quarter (April) 2009 - All Sampled Wells Used For Contouring



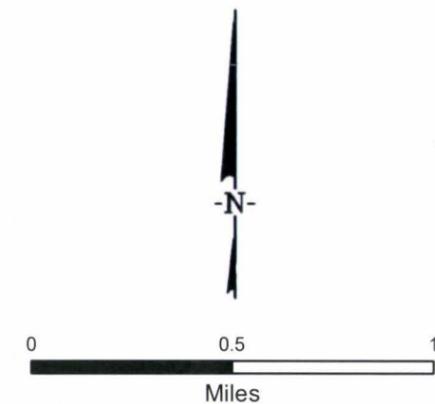
Nitrite (as N) Isocontours - Second Quarter (April) 2009 - Only Semi-Annual Wells Used For Contouring

LEGEND

- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR HEXAVALENT CHROMIUM OR ABOVE 0.1 mg/L FOR NITRITE (as N) IN APRIL 2009
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR HEXAVALENT CHROMIUM OR BELOW 0.1 mg/L FOR NITRITE (as N) IN APRIL 2009
- MONITORING WELL EITHER NOT SAMPLED IN APRIL 2009 OR NOT USED FOR CONTOURING
- ~ ISOCONTOUR (mg/L) OF RESPECTIVE ANALYTE FOR APRIL 2009 (DASHED WHERE INFERRED OR UNKNOWN)

NOTE:

THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR HEXAVALENT CHROMIUM AND NITRITE (as N) - 2ND QUARTER 2009

PREPARED BY:



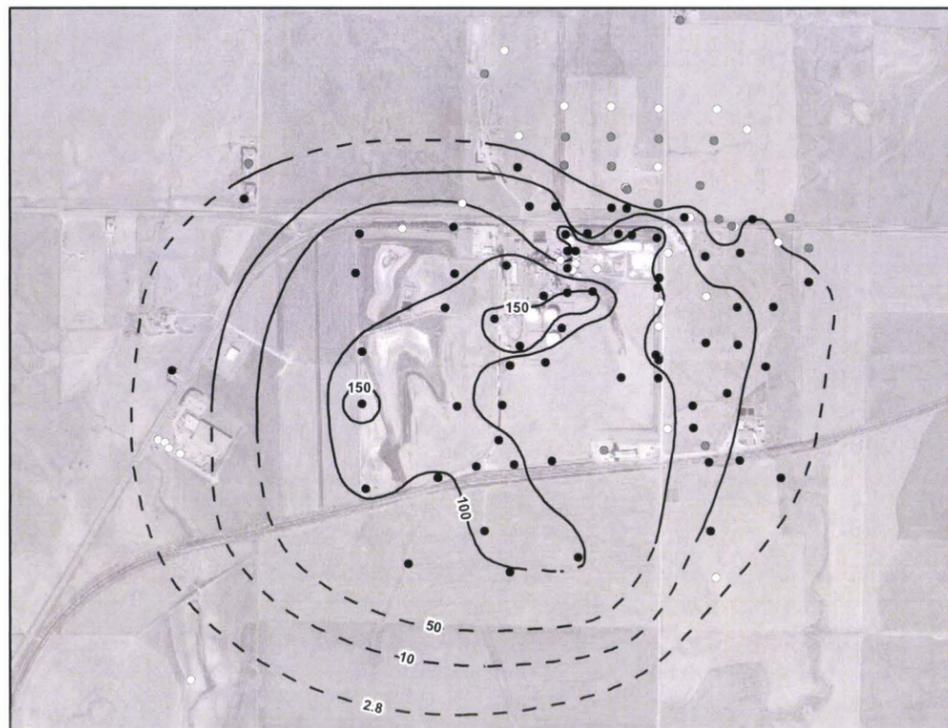
PROJECT NO.	FIGURE NO. 7
DATE. JAN 2011	FILE NO.



Total Chromium Isocontours - Second Quarter (April) 2010 - All Sampled Wells Used For Contouring



Total Chromium Isocontours - Second Quarter (April) 2010 - Only Semi-Annual Wells Used For Contouring



Nitrate+Nitrite (as N) Isocontours - Second Quarter (April) 2010 - All Sampled Wells Used For Contouring



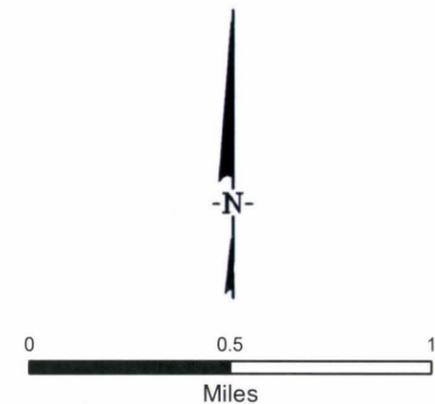
Nitrate+Nitrite (as N) Isocontours - Second Quarter (April) 2010 - Only Semi-Annual Wells Used For Contouring

LEGEND

- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR TOTAL CHROMIUM OR ABOVE 2.8 mg/L FOR NITRATE+NITRITE (as N) IN APRIL 2010
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR TOTAL CHROMIUM OR BELOW 2.8 mg/L FOR NITRATE+NITRITE (as N) IN APRIL 2010
- MONITORING WELL EITHER NOT SAMPLED IN APRIL 2010 OR NOT USED FOR CONTOURING
- ~ ISOCONTOUR (mg/L) OF RESPECTIVE ANALYTE FOR APRIL 2010 (DASHED WHERE INFERRED OR UNKNOWN)

NOTES:

1. THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.
2. THE BOGNER WELL TO THE SOUTH OF THESE MAP PANELS HAD A NITRATE+NITRITE (as N) CONCENTRATION OF 36 mg/L IN APRIL 2010.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR TOTAL CHROMIUM AND NITRATE+NITRITE (as N) - 2ND QUARTER 2010

PREPARED BY:

KOCH
KOCH NITROGEN COMPANY
 11559 US HIGHWAY 50 - P.O. BOX 1337
 DODGE CITY, KS 67801

PROJECT NO.

FIGURE NO. 8

DATE. JAN 2011

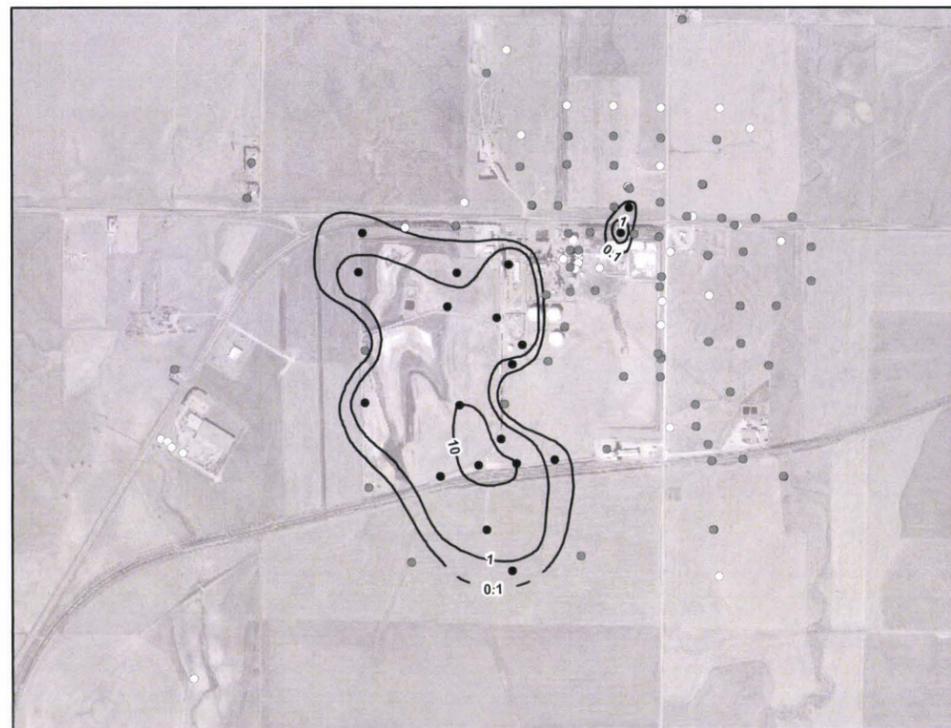
FILE NO.



Hexavalent Chromium Isocontours - Second Quarter (April) 2010 - All Sampled Wells Used For Contouring



Hexavalent Chromium Isocontours - Second Quarter (April) 2010 - Only Semi-Annual Wells Used For Contouring



Nitrite (as N) Isocontours - Second Quarter (April) 2010 - All Sampled Wells Used For Contouring



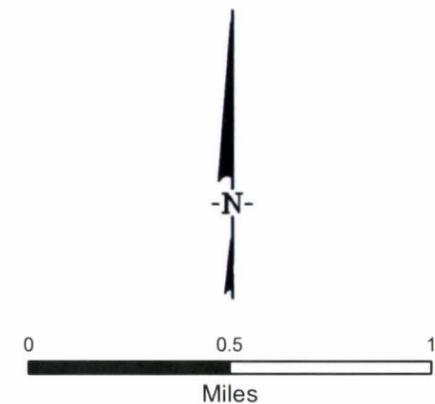
Nitrite (as N) Isocontours - Second Quarter (April) 2010 - Only Semi-Annual Wells Used For Contouring

LEGEND

- MONITORING WELL INDICATING A CONCENTRATION ABOVE 0.01 mg/L FOR HEXAVALENT CHROMIUM OR ABOVE 0.1 mg/L FOR NITRITE (as N) IN APRIL 2010
- MONITORING WELL INDICATING A CONCENTRATION BELOW 0.01 mg/L FOR HEXAVALENT CHROMIUM OR BELOW 0.1 mg/L FOR NITRITE (as N) IN APRIL 2010
- MONITORING WELL EITHER NOT SAMPLED IN APRIL 2010 OR NOT USED FOR CONTOURING
- ~ ISOCONTOUR (mg/L) OF RESPECTIVE ANALYTE FOR APRIL 2010 (DASHED WHERE INFERRED OR UNKNOWN)

NOTE:

THE DODGE CITY SERVICES AND FEEDMILL WELLS ARE COMPLETED IN THE DAKOTA FORMATION. THESE WELLS WERE SAMPLED AND RESULTS ARE INDICATED ON THESE MAP PANELS, BUT THEY ARE NOT USED FOR CONTOURING PURPOSES.



GROUNDWATER ISOCONCENTRATION CONTOUR MAPS FOR HEXAVALENT CHROMIUM AND NITRITE (as N) - 2ND QUARTER 2010

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PROJECT NO.	FIGURE NO. 9
DATE. JAN 2011	FILE NO.