

**BNSF (GREASE LAKE)
(West Burlington, Iowa)**

GENERAL DESCRIPTION

BNSF operated a locomotive repair installation south of the site. The repair work included wreck repair, major overhauls, and painting. The site is located in the West 1/2 of Section 25, Township 70 N, Range 3 W, Des Moines County, Iowa. The site includes a small landfill and drainage channel leading to Grease Lake, Grease Lake itself and a small portion of Honey Creek north of the lake. The site covers approximately 12 acres and is owned by BNSF. Grease Lake was used as a disposal site for shop and sanitary waste from 1927 until 1976. Part of the site was leased to City of Burlington for use as a landfill until 1992. The site was entered on the Registry in March 1990. Since the site was entered on the Registry, further investigations have shown soil, sediment, groundwater, and surface water contamination south and west of the boundaries of the Registry Site Grease Lake.

SITE CLASSIFICATION

In 2004 BNSF discontinued maintenance operations, and 2006, discontinued materials storage activities. This site is re-classified to “d”, Site Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- Waste lubrication and hydraulic oils, tetrachloroethylene and other halogenated degreasing solvents, waste diesel fuel, mineral spirits, paint thinners, other spent non-halogenated solvents, waste sodium hydroxide, and sanitary wastes.

The facility used Lyxol, mineral spirits, and a chlorinated solvent blend for parts cleaning. These spent solvents are hazardous wastes based on the characteristic of ignitability. Tetrachloroethylene (PCE) was used as a degreasing solvent until 1983. Painting waste is hazardous based on the characteristics of ignitability and EP toxicity for lead and chromium. Industrial wastewater (which includes paint stripping waste) is pre-treated (oil and grit removal and then dissolved air flotation) prior to discharge to the sanitary sewer.

Volatile organic compounds found at elevated concentrations in Grease Lake include tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,2-trans-dichloroethylene. Analysis of shallow sediment samples identified PCB-1260, 2-methylnaphthalene, chloro-benzene, xylenes, lead and arsenic are present above background levels. To reduce access to Grease Lake, BNSF has fenced the most accessible route to the lake and posted No Trespassing/Fishing signs along the fence. Sampling of the unnamed stream to the west of the site found intermittent and low levels of PCE in the stream. Monitoring of the stream indicates these concentrations are decreasing with time.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

PCE contamination has been found in fractured bedrock at depths up to 160 feet. However, the deeper Maple Mill Shale formation forms a substantial boundary to contaminant movement, thus protecting the underlying aquifer used by the city of West Burlington for water supply, however off-site groundwater contamination does not appear to be a problem. The city of West Burlington, Iowa obtains its municipal water primarily from the City of Burlington, a Surface Water source treatment facility. West Burlington also maintains two emergency wells located southwest of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

EPA is the lead agency at the site. Since 1994, BNSF has been conducting routine groundwater and surface water monitoring and is conducting an ongoing (phased) investigation of PCE in groundwater and in the unnamed stream to the northwest of the source area. Information provided in these investigations indicates surface waters of unnamed creek are impacted by contaminated groundwater discharging to the creek.

2002: In April 2002 BNSF signed an Administrative Order on Consent (AOC) with USEPA. The AOC prescribed the development of an Interim Measure Work Plan (IMWP) to address potential groundwater contamination discharging to Unnamed Creek. The IMWP was submitted to EPA in July of 2002 and was approved in September **2002**. Subsequent to the approval of the IMWP it was determined that a Human Health and Ecological Risk Assessment (HHERA) would also be conducted to determine if (remedial) measures would be required for Unnamed Creek.

2003: A first Quarter Groundwater and Surface Water Monitoring report and a revised Interim Measures Work Plan (IMWP) Incorporating the (HHERA) were submitted for EPA review and comment in June 2003. In August, a Preliminary Human Health and Ecological Conceptual Site Model was submitted for EPA approval. In September a Second Quarter Ground Water and Surface Water Monitoring report was submitted for EPA approval.

2004

- July 2004: Semi-annual Ground Water and Surface Water Monitoring Report, and work plan for Final RCRA Facility Investigation (RFI) were submitted.
- September 2004: Human Health and Ecological Risk Assessment Work Plan for Final RFI submitted.
- November 2004: Human Health Risk Assessment report for Unnamed Creek. Conclusion of the report is that the discharge of ground water to Unnamed Creek does not present significant risk to public health.

- December 2004: Screening Level Ecological Risk Assessment and Biological Assessment (**SLERA**) report. Results of report that no evidence of adverse impacts to aquatic receptors.
- Indoor Air Evaluation Work Plan was submitted to assess the potential vapor intrusion to buildings on site.

2005

- Submittal of Final Indoor Air Evaluation Work Plan for EPA approval.
- Submittal of Semiannual Groundwater and Surface water Monitoring Report for DNR review.
- Submittal of Phase I RCRA Facility Investigation (RFI).
- Submittal of Final Addendum for Ambient and Indoor Air Sampling report for the Phase I RCRA Facility Investigation QA plan.
- Submittal of Summary report for Industrial Sewer cleaning and Inspection

2006

- Submittal of (Fall) 2005 Semiannual Groundwater and Surface water Monitoring Report
- Submittal of Spring 2006 Semiannual groundwater and surface water report
- Indoor Air Evaluation Report submitted 9/14/06
- Submittal of Phase II RCRA Facility Investigation Work Plan

2008

- Semi-annual monitoring reports received.

2009

- Revised Facility-Wide Ground Water Investigation
- Treatability Study Work Plan

2010

- Implementation of supplemental investigation field work including treatability studies
- 2009 Annual surface and groundwater monitoring report
- Spring 2010 semi-annual surface and groundwater monitoring report
- Site Assessment Work Plan

2011

- Quarterly site progress reports submitted for review and comment
- Site Assessment Work Plan (Addendum #1) to 2010 work plan.

2012

- Submittal of revised RCRA Facility Investigation Report
- EPA commented on revised RCRA Facility Investigation Report
- Soil vapor sampling performed

- Submitted, for EPA approval, additional investigations conducted to support the RFI as follows:
- *Deep Bedrock Drilling Report, March 23, 2012*
- *Southern Property Boundary Well Pumping Test Report, March 26, 2012*
- *Facility-Wide Groundwater Investigation Report, Update III, April 12, 2012*

2013

- Submitted *2012 Annual Groundwater Monitoring Report*, February 22, 2013
- Submitted *Revised RCRA Facility Investigation, (RFI) Report, June 28, 2013*, to address comments prepared by the EPA in 2012.
- Submitted revised Ecological and Human Health Risk Assessments, as sections within the RFI, to address comments prepared by the EPA in 2012.
- *Submitted Spring 2013 Groundwater Monitoring Report, August 8, 2013*
- EPA approved the *Vapor Investigation Report, August 29, 2013*, that concluded: VOCs are not present in near surface groundwater along the southern property boundary in the area investigated, PCE detected in ambient air samples was not associated with the site, and does not present an unacceptable risk to residents adjacent to the site
- EPA approved the *2012 Deep Bedrock Drilling Report* with modifications

2014

- Submitted *2013 Annual Groundwater Monitoring Report*, February 23, 2014
- Submitted *RCRA Facility Investigation Report*, March 2014
- Submitted *Spring 2014 Groundwater Monitoring Report*, August 18, 2014
- EPA approved the document *RCRA Facility Investigation Report, March 2014* in a letter dated July 23, 2014
- Submitted routine Quarterly Progress Reports 47, 48, 49 and 50

2015

- Submitted *2014 Annual Groundwater Monitoring Report*, February 23, 2015
- Submitted *Spring 2015 Groundwater Monitoring Report*, August 21, 2015
- Submitted routine Quarterly Progress Reports 51, 52, 53 and 54

2016

- Submitted *2015 Annual Groundwater and Surface Water Monitoring Report* to EPA on February 29, 2016
- Submitted *Draft Technical Memorandum to Support Plume Containment Remedy AOC-7 (Facility-wide Groundwater)* on June 16, 2016
- Submitted *Spring 2016 Semi-Annual Groundwater and Surface Water Monitoring Report* to EPA on August 15, 2016
- Submitted routine Quarterly Progress Reports 55, 56, 57, and 58
- EPA has proposed to conduct a Preliminary Assessment at a neighboring property

2017

- Submitted 2016 Annual Groundwater and Surface Water Monitoring Report to EPA on February 23, 2017.
- Submitted Spring 2017 Semi-Annual Groundwater and Surface Water Monitoring Report to EPA on August 29, 2017
- Submitted routine Quarterly Progress Reports 59, 60, 61 and 62.
- Submitted preliminary draft IC and soil management plan to EPA on June 30, 2017
- Submitted draft Groundwater Capture Zone Modeling Work Plan to EPA on June 30, 2017
- Submitted draft Monitored Natural Attenuation Work Plan on September 30, 2017
- Submitted draft Setback Area – Soil Sampling Work Plan on September 28, 2017

2018

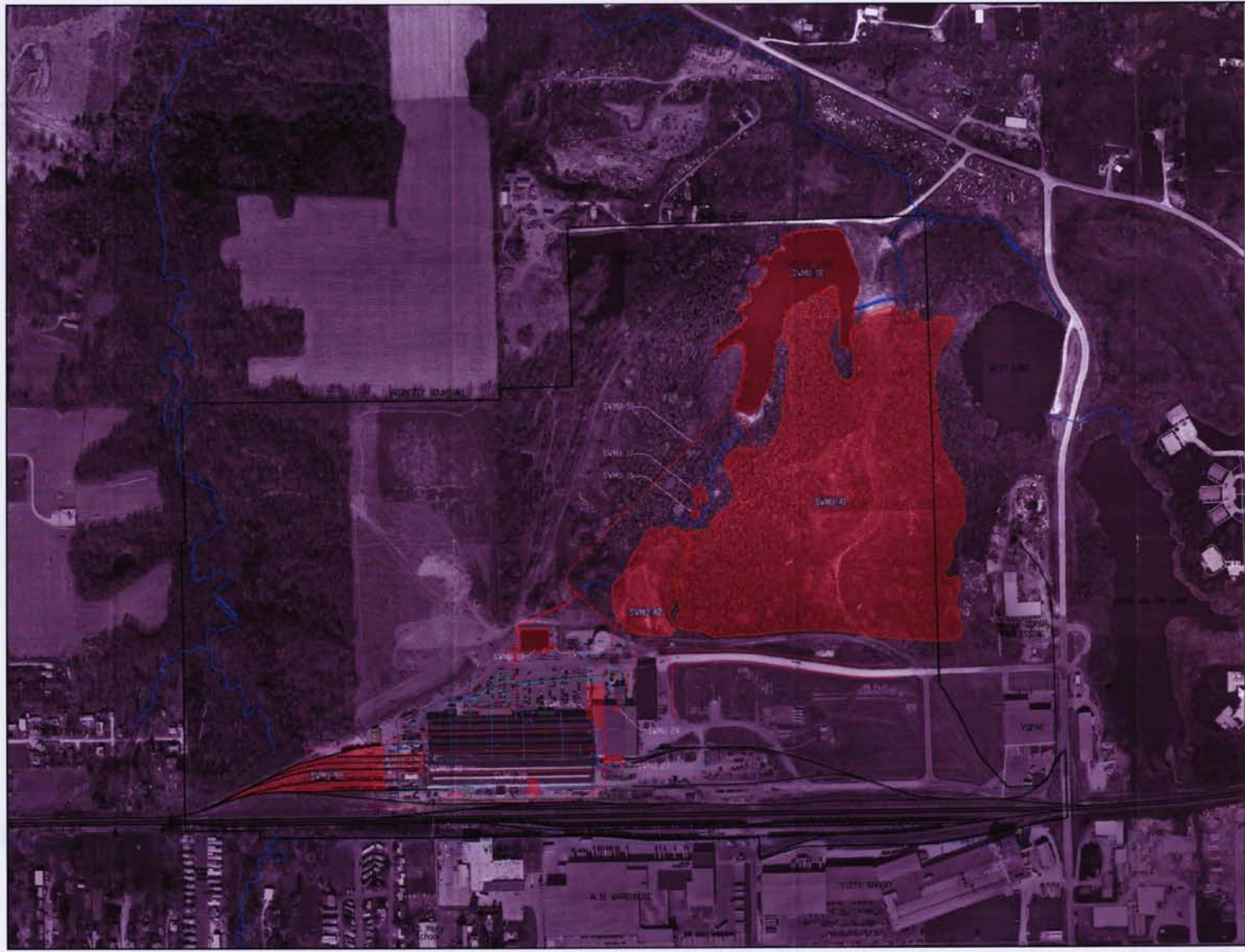
- Implemented Setback Area Sampling Plan – soil sampling conducted on December 19, 2017
- Submitted 2017 Annual Groundwater and Surface Water Monitoring Report to EPA on March 12, 2018
- Submitted revised draft Groundwater Modeling Work Plan to EPA on April 19, 2018
- Collected Spring 2018 groundwater and surface water samples June 11-15, 2018
- Submitted revised draft Monitored Natural Attenuation Work Plan on July 6, 2018
- Submitted routine Quarterly Progress Reports 63, 64, 65 and 66
- Goals for the coming months include working on the draft environmental covenant, submitting aquifer pumping test work plan and submitting setback area sampling results

2019

- Initiated drilling program to complete aquifer pumping test on September 30, 2019, and completed the field work for the pumping test in November 2019.
- Submitted Spring 2019 Semi-Annual Groundwater and Surface Water Monitoring Report
- Submitted routine Quarterly Progress Reports 67, 68, 69 and 70
- The EPA's Statement Of Basis will be on public notice from November 29, 2019 through January 29, 2019
- Goals for coming months include working on the draft environmental covenant, complete the fall 2019 semi-annual groundwater and surface water monitoring, and complete drilling program and aquifer pumping test

2020

- Submitted Draft 2019 Aquifer Pumping Test Report on July 20, 2020.
- Submitted 2019 Annual Surface and Groundwater Sampling Report February 25, 2020.
- Submitted routine Quarterly Progress Reports 71, 72, 73 and 74.
- Conducted spring surface and groundwater sampling week of June 15, 2020.



LEGEND

- Property Boundary
- Railroad Tracks
- SWMU 15
- SWMU 16
- SWMU 21

SWMU No.	SWMU Name
SWMU 15	Hammerhead Collection System
SWMU 16	South Tank
SWMU 17	SWP Feed Storage Basin
SWMU 18	Green Lake Surface Impoundment
SWMU 19	Primary Secondary Treatment Plant aeration
SWMU 20	Primary Sludge Storage Tank
SWMU 21	Flow Control Structure / Single Stage Tank
SWMU 22	Flow Control Tank
SWMU 23	Plant Sludge Storage and Former Sludge Bed
SWMU 24	Former Secondary Clarifier
SWMU 25	Comminution / Grinding Area
SWMU 26	Recycled Landfill
SWMU 27	SWP Company Construction Levels
SWMU 28	Former Lake Storage Basin
SWMU 29	Feed Storage Tank Area

Note: The actual boundaries of SWMU 21 are currently undefined. The boundaries shown on this figure are approximate. The area is not shaded to avoid visual obstruction of other map features.

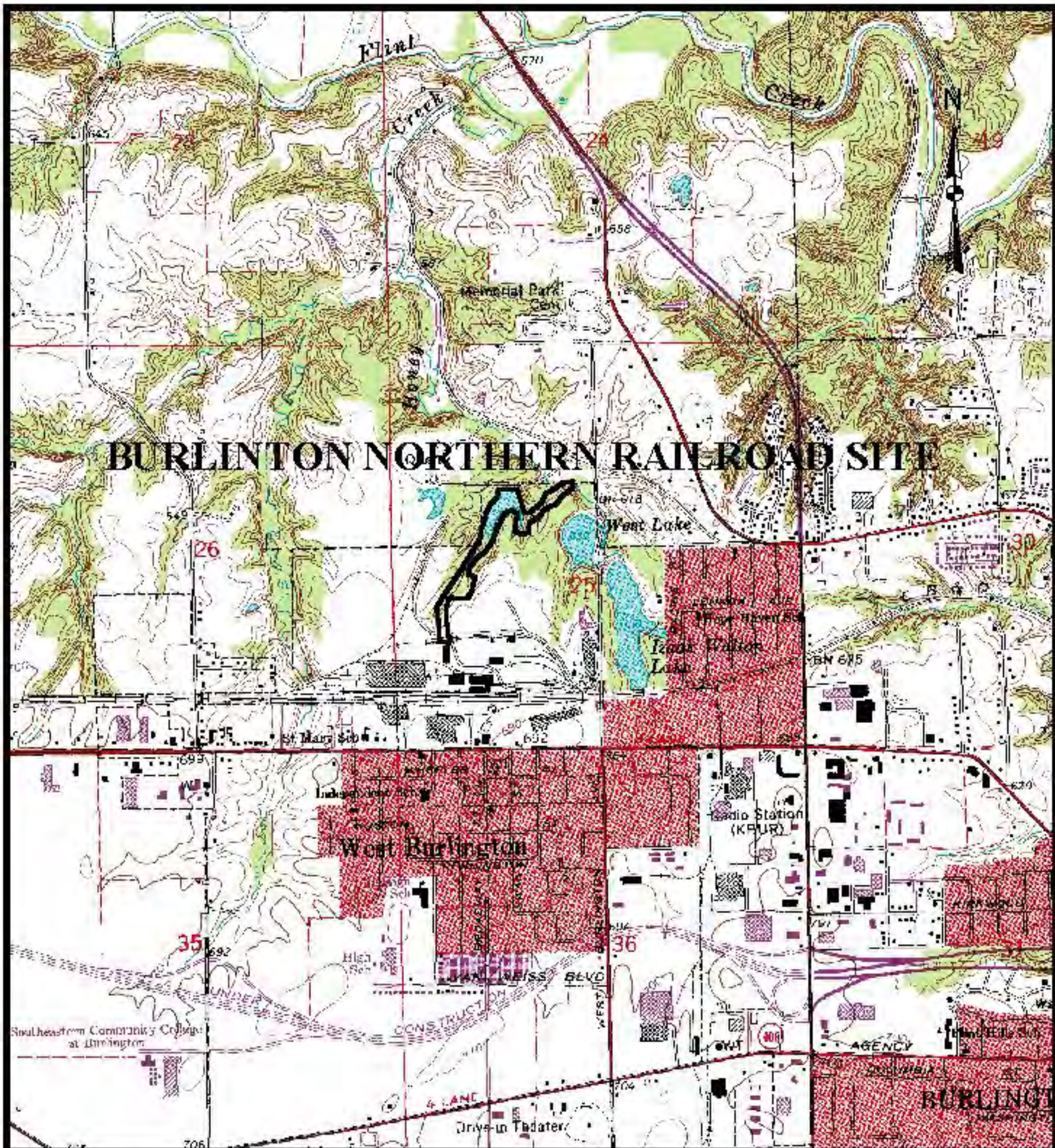
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AERIAL PHOTOGRAPHY ©2010 TRC
 Facility Setting and Location of
 Solid Waste Management Units
 SWP WEST BURLINGTON FACILITY
 BURLINGTON, IOWA

DATE: 07/15/2010	BY: JMS	REVISED: 07/15/2010
PROJECT NO: 1000000000	PROJECT FILE: 1000000000	FIGURE: 1
10 SOUTH HARRISON PLAZA CHICAGO, IL 60606-3007 312.620.0000		TRC PLATE 1

(Burlington Northern Railroad)



Contour Interval 10 Feet

