FACT SHEET
Proposed Remedial Action Decision
Beatrice FMGP-1st and Market St.

The Nebraska Department of Environmental Quality (NDEQ) is providing public notice of its intent to approve a Remedial Action Plan (RAP) for part of the Beatrice Former Manufactured Gas Plant (FMGP) site at 1st and Market Streets in Beatrice, Nebraska conducted under NDEQ's Voluntary Cleanup Program (VCP) by the City of Beatrice and Sprint/Centel. This fact sheet provides background information on the site, a summary of contamination, a description of the proposed actions, a description of the public participation procedures, and the NDEQ contact person.

Background: The Beatrice FMGP-1st and Market St. site is located adjacent to the Big Blue River on the west side of downtown Beatrice, Nebraska, in the SE 1/4 of Section 33 in Township 4 North, Range 6 East; Gage County, Nebraska. The center of the site is located at approximately 40.264184 degrees north latitude and -96.753646 degrees west longitude. Historically, a former manufactured gas plant using both the coal gas and water gas processes was located at this site on land currently owned by the City of Beatrice.

Nature and Extent of Contamination: Site soil, groundwater, and Big Blue River pore water and sediment are contaminated due to previous site activities. The RAP will address the FMGP-related contamination in the area west of 1st Street on land primarily owned by the City. Contaminants in the various media exceeding remediation goals (RGs) and applicable numerical standards are included in Table 1 below.

Soil Contamination: Shallow and deep soil are contaminated by cyanide, metals, petroleum hydrocarbons, gasoline additives, and polycyclic aromatic hydrocarbons (PAHs) at multiple locations at the site. Contaminants in shallow soil (0-2 ft bgs) that are FMGP-related and exceed the VCP industrial direct contact remediation goals (RGs) include arsenic and PAH compounds listed in Table 1. Unsaturated deep soil also has cyanide, metals, PAHs, and benzene, toluene, ethylbenzene and xylene (BTEX). Indications of free product were described in unsaturated deep soil at multiple locations

Groundwater Contamination: Groundwater across the site is contaminated by cyanide, metals, PAHs, BTEX, gasoline additives, chlorinated solvents, and free product. Contaminant concentrations in groundwater were compared to the maximum contaminant levels (MCLs) and VCP RGs to determine the significance of the contamination. MCLs are established by Nebraska Title 118 – Groundwater Quality Standards and Use Classification, Chapter 4. Site-related dissolved contaminants found to exceed MCLs and/or RGs include cyanide, petroleum hydrocarbons, metals, and PAHs (see Table 1). Significant free product was found in monitoring wells and borehole groundwater samples across the site.

Groundwater Remedial Action Class: NDEQ assigns a Remedial Action Class (RAC) to groundwater contamination to determine the importance of remedial action based, in part, on the use of the groundwater in the area (Nebraska Title 118, Appendix A, Step 8). Groundwater that is being used as a public drinking water supply is assigned the highest remedial action class of RAC-1. Groundwater that has the potential to be used as drinking water is generally designated as RAC-2. The Department typically

requires extensive cleanup of groundwater that is designated as RAC-1 or RAC-2. Where the use of groundwater in an area is more limited or of poor quality, the groundwater is generally assigned a remedial action class of RAC-3. Generally, groundwater cleanup will be less extensive for a RAC-3 designation. Groundwater in the Beatrice area is of poor quality with limited yield. No private drinking water wells are allowed in the city. NDEQ has determined that groundwater pollution at this site should be designated as a Remedial Action Class 3 (RAC -3) occurrence. Cleanup of free product is required at RAC-3 sites, including this site.

Big Blue River Pore Water: Free product was observed in pore water discharging into the Big Blue River. Cyanide, benzene, and several PAHs exceeded the Nebraska Title 117 - Surface Water Quality Standards, Chapter 4, Section 004 Water Supply Criteria or other applicable surface water standards (see Table 1).

Big Blue River Sediment: Although numerical standards could not be established, the Ecological Risk Assessment (ERA) determined a potential risk to the benthic invertebrate community exists where exposed to significant concentrations of PAHs in sediment. Where the maximum contaminant concentrations of PAHs exceeded the ERA screening levels, the contaminant was determined to be a probable contaminant of concern for sediment. These contaminants are listed in Table 1.

Remedial Action Objectives: Remedial Action Objectives (RAOs) are statements that define qualitative and quantitative goals for site contaminants to be achieved by the proposed RAP. The RAOs provide the framework from which potential remedial actions are evaluated. RAOs for the Beatrice FMGP-1st and Market Street site are as follows:

- Control the exposure of worker populations (e.g., during utility or construction activities) and potential recreational users to COCs in soil exceeding the VCP industrial direct contact pathway remediation goals.
- Control the migration of COCs to the surrounding soil, groundwater, and sediment and surface water in the Big Blue River.
- Remove and/or stabilize free product associated with the MGP operations in soil, groundwater, and sediment.
- Prevent the migration of COCs in groundwater into surface water exceeding the Nebraska Title 117-Surface Water Quality Standards, Chapter 4, Section 004 Water Supply Criteria or other applicable surface water standards.
- Control the exposure of the water supply or benthic invertebrate populations and/or epibenthic fauna by eliminating the pathway of contaminant migration through sediment along the riverbank adjacent to the site at locations where the ERA demonstrated lines of evidence indicating a potential risk along the east bank of the river (ERA Stations 4, 6, and 8).

Table 1: Contaminants of Concern (COCs)

Site-Related COC	Shallow Soil (0-2')	Deep Soil (2'-Water Table)	Ground-water	Pore Water	Sediment*
Petroleum Hydrocarbons					
Benzene			✓	✓	
Ethylbenzene			✓		
Toluene					
Xylenes			✓		
Cyanide			✓	✓	
Metals					
Arsenic	✓		✓		
Lead		✓	✓		
Polycyclic Aromatic Hydrocarbons					
Acenaphthene			✓		✓
Anthracene			✓		
Benzo(a)anthracene	✓	✓	✓	✓	
Benzo(a)pyrene	✓	✓	✓	✓	✓
Benzo(b)fluoranthene	✓	✓	✓	✓	
Benzo(k)fluoranthene			✓		
Chrysene			✓	✓	✓
Dibenzo(a,h)anthracene	✓	✓	✓		
Fluoranthene			✓		
Fluorene			✓		
Indeno(l,2,3-cd)pyrene	✓		✓	✓	✓
Naphthalene		✓	✓	✓	
Pyrene			✓		
Free Product Indicators					
LNAPL		✓	✓		
DNAPL		✓	✓		
Undifferentiated or mixed NAPL		✓	✓	✓	
* no numerical standard; determination of COCs based on screening levels for empirical exposure data					

Proposed Remedial Actions: An evaluation of various remedial alternatives was performed. Based on this evaluation and additional analysis, the proposed remedial actions for the site addressed by this RAP are:

- Excavation and disposal of shallow contaminated soil (0-4 feet) exceeding the VCP industrial direct contact remediation goals (RGs);

- Excavation and disposal of contaminated soil and FMGP waste including free product from an underground gas holder;
- In-situ stabilization and solidification of free product and contaminated soil to bedrock;
- Development and implementation of a groundwater management plan;
- Development and implementation of institutional controls with the following activity and use limitations;
    - Land use limitations: The site and adjacent land shall not be used for any purpose other than open space. Permanent buildings or other barriers or restrictions to conveyance of floodwater are prohibited.
    - Groundwater use limitations: Groundwater use is prohibited with the exception of sampling for water quality characterization or treatment. No wells other than water quality monitoring wells or closed loop ground heat exchange wells will be allowed.
    - Disturbance limitations: Disturbance of clean fill cover or onsite excavation is limited to necessary utility installation or similar types of work. Any digging, excavating, grading, earth moving, or any other soil or land disturbance must be in accordance with the approved Operations and Maintenance Plan (see below).
- Development and implementation of a long term Operations and Maintenance (O&M) Plan that will describe procedures for routine inspection, monitoring, maintenance, documentation, reporting, and any other requirements performed to protect the engineered controls and to prevent exposure.

The proposed remedial actions described in the RAP will address contamination on and west of 1st Street, on land owned primarily owned by the City. Additional remedial action related to the FMGP operations east of 1st Street on land owned by Burlington Northern Railroad (BNRR) will be addressed in a separate RAP addendum.

Public Participation Procedures: Any person may receive additional information, submit written comments regarding the proposed actions, or request a public hearing, in writing, on or before December 23, 2016. A hearing request must state the nature of the issues to be raised and all arguments and factual grounds supporting such position. If the Director grants a public hearing, the hearing will be advertised by public notice at least 30 days prior to its occurrence. Comments and requests should be mailed to: Mr. David Haldeman, Land Management Division, Nebraska Department of Environmental Quality, P.O. Box 98922, Lincoln, NE 68509-8922.

Contact Information: The proposed RAP and supporting documents are available for inspection at the office of the Nebraska Department of Environmental Quality, 1200 N Street, Suite 400, The Atrium, P.O. Box 98922, Lincoln, NE 68509-8922. These materials may also be viewed online at http://deq.ne.gov/ by selecting "Public Notices" at the bottom of the page and then "RAP" or by accessing the Public Records search portal https://ecmp.nebraska.gov/publicaccess/viewer.aspx?&MyQueryID=340, using DEQ Facility Number 23736. Please notify the Department of Environmental Quality if alternate formats of materials are needed by December 8, 2016. Individuals requiring special accommodations or alternate formats of materials should notify the Department by calling (402) 471-2186. TDD users should call (800) 833-7352 and ask the relay operator to call the Department at (402) 471-2186. Further information may be obtained from Mike Felix, Remediation Section, (402) 471-4210.