

**ADDENDUM TO FACT SHEET**  
**Permit No. WA-003212-3**  
**BNSF Railway Company**

This is an addendum to the fact sheet accompanying NPDES Permit No. WA-003212-3, which was issued to BNSF Railway Company on May 4, 2006. These changes are proposed to address the discharges from the upcoming cleanup activities at the BNSF Railway Former Maintenance and Fueling Facility in Skykomish, WA. The proposed discharge and construction activities were not addressed by the existing permit that was issued on May 4, 2006.

**SUMMARY OF PROPOSED CHANGES TO THE PERMIT**

- Addition of two groundwater discharge wells to inject treated water into the ground, and two new outfalls to discharge treated water to the Skykomish River. Ecology is requiring the wastewater to be treated to meet surface water quality standards, MTCA Method A groundwater cleanup levels, and the site-wide groundwater concentrations for arsenic, measured outside the contamination plume. The discharge already meets groundwater standards for most parameters.
- Additional requirements in the permit to prevent exceeding the capacity of the storm sewer systems in order to prevent flooding the area, and water backing up to the treatment systems.

**BACKGROUND**

The Final Consent Decree (FCD) for BNSF Railway Former Maintenance and Fueling Facility in Skykomish was formally signed by BNSF Railway Company, and the Washington State Department of Ecology, and entered through King County Superior Court on October 19, 2007, after the above-referenced permit was issued.

Chapter 6.2 of Appendix B of the FCD presents the summary of the cleanup activities by Work Year as follows:

- 2008 – Construction of project-duration soil handling facility on the rail yard. Begin excavation of Northwest Developed Zone (NWDZ) east of Fifth Street and along Railroad Avenue. Begin installation of hydraulic control and containment system along northern rail yard boundary. Excavation of portion of Northeast Developed Zone (NEDZ) along Railroad Avenue. Excavation of metals in the NEDZ. Installation of air-sparging system to treat contaminated soil and groundwater in NEDZ.
- 2009 – Continue excavation of NWDZ. Extension of hydraulic control and containment system along northern rail yard boundary if not completed in 2008 and installation of hydraulic control and containment system at Former Maloney Creek (FMC), if necessary. Excavation of South Developed Zone (SDZ) and part of FMC. Excavation of petroleum- and metals-contaminated soil within 2 feet of the surface on the rail yard (may be rescheduled, but will be completed by 2012).

- 2010 – Continue excavation of NWDZ and begin treatment beneath the school. Complete FMC excavation. Conduct cleanup around south abutment of Fifth Street Bridge (this work may be moved to 2011 and is subject to coordination with the Washington State Department of Transportation).
- 2011 – Complete excavation of NWDZ. Complete school cleanup. Conduct cleanup of the south abutment of the Fifth Street Skykomish Bridge, if not performed in 2010. Proceed with any work not completed in prior years and dismantling of active cleanup operations.
- 2012 and following – Operation and maintenance of installed systems. Compliance monitoring will be conducted. Excavate any additional smear and vadose zone soil within BNSF's rail yard facility property boundary, as necessary, to reach a total of 7,500 cubic yards.

### **ACTIVITIES TO BE ADDRESSED BY PROPOSED PERMIT MODIFICATION**

The following addresses the remediation construction stormwater and groundwater treatment and discharge activities beginning the summer of 2008.

- ***Treatment and discharge of groundwater using the construction water treatment system.***  
Groundwater may be produced during periodic and short-duration dewatering in support of subsurface cleanup construction. Further, the hydraulic control and containment (HCC) system planned for the site will continuously produce groundwater once installed. Short-term use of the construction water treatment system may be required in the event that the permanent HCC treatment system is not ready for service. BNSF also plans to conduct pilot tests on the rail yard this summer to evaluate treatment technologies for eventual use beneath and near the Skykomish school. Two technologies are being considered for testing— steam/hot water flushing and resistive thermal heating. Groundwater extraction and reinjection may be required to maintain hydraulic control in the area of the tests. Extracted water would be treated and a portion of the treated water will be injected back into the ground. The temperature at the point of extraction is anticipated to be between 120 and 140 °F. The extracted water will lose heat as it passes through the water treatment systems associated with the pilot scale tests, and as it travels through pipes to the construction water or HCC water treatment systems. It is expected that the temperature at the point of discharge to the construction water or HCC water treatment systems will be less than 100 °F. The quantity of water expected to discharge to surface water is anticipated to range from 0 to 20 gpm. In all cases, the discharge will be required to meet the effluent limits set forth in the permit prior to discharge to groundwater by means of injection wells, and to the Skykomish River through the existing city of Skykomish stormwater outfalls.
- ***Facility location for construction water treatment system.***  
The treatment systems for both construction and HCC will be located on the rail yard (see attached Figure A and B-1). A combination of temporary and permanent conveyance piping will carry water to and from the system through a utility conduit installed under the railroad tracks.

- **Conveyance and discharge of construction water for the summer of 2008.**

Untreated and treated construction water will be conveyed to and from the treatment system by means of a combination of temporary and fixed piping. A dual assembly of 8-inch HDPE piping will be installed subgrade to enable transfer of water underneath the rail line and along the Railroad Avenue corridor. Treated water will ultimately be discharged to the Skykomish River by means of an existing city of Skykomish storm sewer on 6<sup>th</sup> Street (see Figure A).

The Hydraulic Capacity Analysis indicates that the existing storm sewer line located along 6<sup>th</sup> Street has sufficient capacity and integrity to receive the following additional flow:

24-Hour Storm Event (Year)	Storm Flows (cfs)	Available Hydraulic Capacity During Storm Event (gpm)
2	3.3	673
5	4.2	404
10	4.6	269
25	5.5	0

- **Hydraulic Control and Containment System (HCC).**

The approximately 1,100-foot long HCC will be installed to control groundwater movement within BNSF's rail yard facility property, capture free product (hydrocarbon), and treat contaminated groundwater. A dedicated treatment system located on the rail yard (see Figure B-1) will treat groundwater recovered by means of the HCC system. The anticipated average treatment rate of the HCC system is approximately 50 gpm. The design basis is for a flow of 100 gpm. The treatment system is a granular activated carbon (GAC) adsorption configuration preceded by oil separation/recovery, equalization, and filtration unit processes (see Figure C).

Treated water from the HCC operation will be discharged through a combination of injection to groundwater, and surface water discharge into the Skykomish River. Two injection wells, IW-1 located west of the Central Gate and IW-2 located immediately south of the East Gate of the HCC system (see Figure B-2), will be utilized. Each injection well will be between eight and 24 inches in diameter and constructed according to standard practices. The projected rate of injection is five gpm at each well. The groundwater flow direction is generally north, toward the river. The remaining treated water will be conveyed underneath the railroad tracks to the north and discharged to the river by means of the existing 10-inch storm sewer on 3<sup>rd</sup> Street (see Figure B-1).

The Hydraulic Capacity Analysis indicates that the existing 10-inch storm sewer line located along 3<sup>rd</sup> Street, has sufficient capacity and integrity to receive the following additional flow:

24-Hour Storm Event (Year)	Peak Flow Rates (CFS/GPM)	Available Hydraulic Capacity During Storm Event (gpm)
2	1.36   610	377
5	1.63   732	255
10	1.77   794	193
25	2.11   947	40
50	2.30   1032	0

## DESCRIPTION OF THE PROPOSED MODIFICATIONS TO THE PERMIT

***Changes to the title of Special Condition S1.C of the permit:*** A clarification will be made to the title of S1.C to read as follows: “Industrial Stormwater and Construction Dewatering Discharges Associated With All Cleanup Zones (Figure 3 of the Fact Sheet).”

### ***Changes to Special Condition S1.C of the permit: Discharge Limitations for Industrial Stormwater and Construction Dewatering Discharges***

1. A paragraph will be added to include authorization to discharge to groundwater through two injection wells, IW1 and IW2. It will read as follows: “Beginning on the issuance date of the second permit modification of this permit and lasting through the expiration date, the Permittee is authorized to discharge treated effluent to groundwater through injection wells IW1 and IW2 (see Figure B-2), subject to complying with the following limitations”:
2. An effluent limit of 15 µg/L for total lead, based on MTCA Method A Cleanup levels, will be added to the table in S1 of the permit. An effluent limit of 7.42 µg/L for total arsenic, based on the site-wide concentrations obtained from the 2005 and 2006 groundwater monitoring data for the area outside the contamination plume, will be added to the table in S1 of the permit.

The treated effluent to be injected into the groundwater through wells IW1 and IW2 must be in compliance with the existing effluent limits listed in S1.C of the permit, and the effluent limits listed above for lead and arsenic prior to injection. The effluent limits above for arsenic and lead are more stringent than those of the surface water quality standards. The effluent limits listed in the permit are consistent with the groundwater quality standards (Chapter 173-200 WAC) except those for benzene and arsenic.

The Department has decided to allow the discharge to exceed the groundwater standards for benzene and arsenic. The basis for this decision includes the following: 1) there is hydraulic continuity between groundwater and surface water, and the treated groundwater flows to surface water will meet surface water standards; 2) there is a greater benefit to the environment if the Permittee addresses the contamination underneath the rail yard by utilizing the remediation method of pump, treat, and recycle (HCC system), than to rely on natural groundwater attenuation; and 3) the Permittee’s ability to employ AKART (all known, available, and reasonable treatment technologies) to treat the water. This decision will be made as allowed under Chapter 173-200-050(3)(b)(vi) WAC. These considerations will be presented in a public notice in order to satisfy the requirements of WAC-173-200-050(3)(a)(ix) related to issuance of permits authorizing the discharge of wastewater exceeding groundwater quality standards, to groundwater.

3. Effluent limits for temperature, based on surface water quality standards, will be added to Table S1 of the permit. Those temperature limits are 13°C or 55.4°F during the spawning season from September 15 to July 1, and 12°C or 53.6°F the rest of the year. The extracted water from the pilot testing activity is expected to range from 120 to 140 °F, and the temperature at the point of discharge to the construction water or HCC water treatment systems is expected to be less than 100°F. The above-mentioned temperature effluent limits are proposed to be placed in the permit in order to ensure that the combined wastewater after

commingling with the water generated from the thermal pilot test, meets the surface water quality standards prior to discharge to the Skykomish River.

4. Outfall 001 was the outfall associated with the levee work completed in 2006. This outfall has been demolished and will be removed from the permit. Outfalls 002 and 003 will be added to S1.C of the permit.

Outfall 002 is located on West River Road, and is connected to the Town of Skykomish (Town) storm sewer located on 6<sup>th</sup> Street.

Outfall 003 is connected to the Town storm sewer located on 3<sup>rd</sup> Street.

BNSF has obtained approval from the Town to discharge to the storm sewer located on 3rd Street, and 6<sup>th</sup> Street. Footnote “e” will be added to the table of S1.C in the permit to describe the location of these outfalls.

5. A requirement will be added to the permit that the Permittee must cease discharge of any wastewater resulting from the remediation cleanup activities when the river level exceeds the high water flood stage, in order to prevent flooding or backwater within the system.
  - For Outfall 001 (6<sup>th</sup> Street), the Permittee must **cease** discharge when the river level exceeds the mean annual high river stage of 922.5 feet (at the outfall). The Permittee is required to monitor the water elevation in the river or in catch basin 3 on West River Road (see Figure A).
  - For Outfall 002 (3<sup>rd</sup> Street), the Permittee must **cease** discharge when the river level exceeds the high river stage of 928.56 feet (at the outfall). The Permittee is required to monitor the water elevation in the river, or at the nearest catch basin to the river approved by the Department.
6. Summer and winter seasonal flow limits are specified for outfalls 001 and 002.

The flow rates applicable during summer months are based on either the available capacity of the city of Skykomish storm sewers during a 2-year, 24-hour storm event, or the treatment system design flow, whichever is limiting.

<u>Outfalls</u>	<u>Maximum Flow Rates (summer months: April through September)</u>
001	673 gpm (based on available hydraulic capacity)
002	100 gpm (based on treatment system design flow)

The flow rates applicable during winter months are based on the available capacity of the city of Skykomish storm sewers during a 10-year, 24-hour storm event.

<u>Outfalls</u>	<u>Maximum Flow Rates (winter months: October through March)</u>
001	269 gpm (based on available hydraulic capacity)
002	100 gpm (based on treatment system design flow)

***Changes to Special Condition S2.A, Monitoring Requirements:***

1. The injection rates for wells IW1 and IW2 are required to be monitored and reported. This monitoring requirement will be added to the table in S2.A of the permit.
2. For temperature monitoring, footnote “e” will be added to the table, and will read as follows: “The Permittee is required to monitor effluent temperature only when the Permittee is discharging wastewater resulting from the thermal groundwater remediation pilot testing.”
3. For injection to groundwater, footnote “c” will be added to the table, and will read as follows: “The Permittee shall monitor the injection rate for wells IW1 and IW2. Should the Permittee choose to inject at a flow rate exceeding 5 gpm, the Permittee must seek written approval from the Department prior to discharging at that rate.”
4. The monitoring frequencies for benzene, BTEX (benzene, toluene, ethyl-benzene, and xylene), and polyaromatic hydrocarbons (PAH) constituents as listed in S2.A of the permit are proposed to be reduced from weekly to monthly. The Department proposes to allow the use of TPH analyses as the surrogate for these parameters, and TPH (total petroleum hydrocarbons) will therefore continue to be monitored on a weekly basis.

***Special Condition S4, Operations and Maintenance:***

The Permittee is required to develop a contingency treatment plan to treat turbidity in the wastewater when chitosan treatment is ineffective. This plan is necessary in order to ensure that the turbidity in the discharge meets the turbidity limit prior to discharge to the Skykomish River. The conditions will be added to S4.A of the O&M section, as well as to the TSOP section of the permit.

Item 8 of S4.A will read, “The contingency treatment plan to treat the wastewater to meet the turbidity limit if chitosan treatment failed.”

Item 5 of the TSOP section in S4.A of the permit will read, “A description of operating procedures to be employed for treatment of turbidity if chitosan treatment failed.”

**PUBLIC NOTICES**

Modification of the permit to include the changes proposed above requires a publication of a public notice: 1) to satisfy the requirements of 40 CFR 122.62 regarding the issuance of public notice for major permit modifications, and 2) to satisfy the requirements of WAC-173-200-050(3)(a)(ix) related to issuance of permits authorizing the discharge of wastewater exceeding groundwater quality standards, to groundwater. The draft permit modification will be published for a 30-day public review and comment period in *The Seattle Times* and *The Everett Herald* to fulfill the above requirements. Issuance of the final modification is contingent upon the outcome of the public review and comment period.