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30 August 2013

Mr. Norm Hepner, P.E.
Washington State Department of Ecology
Toxics Cleanup Program – Central Region Office
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902-3401

Subject: Request for No Further Action (NFA)
BNSF Railway Company (Ecology AO DE01TCPCR-3168)
Glacier Park East Site, Leavenworth, Washington
K/J 1396107*00

Dear Mr. Hepner:

This letter report presents our evaluation and findings regarding the presence of the Leavenworth Fault zone on the Glacier Park East site (Site) and its impact on contaminants of concern (COCs) in groundwater. The Site is located at the northeastern corner of Chumstick Highway (aka Highway 209) and Front Street/U.S. Highway 2 in Leavenworth, Chelan County, Washington (Figure 1).

The work documented in this report was conducted on behalf of BNSF Railway Company (BNSF) and Chevron Products Company (Chevron) in general accordance with the *Sampling and Analysis Plan, Remedial Action, Glacier Park East Site, Leavenworth, Washington*, dated 9 May 2001. Environmental investigations and remedial cleanup action have been conducted under Washington State Department of Ecology (Ecology) Agreed Order (AO) DE01TCPCR-3168, dated 25 September 2001, between Ecology, BNSF, and Chevron. Groundwater monitoring/sampling activities have been conducted at the Site since October 2001 to March 2013. The data are summarized in the attached tables.

Local Geology and the Leavenworth Geologic Fault Zone

The geologic history of the Leavenworth area is related to the formation of the Chiwaukum Graben which is a pull-apart basin that formed approximately 48 to 49 million years ago. The Leavenworth Fault zone forms the western side of the Chiwaukum Graben and in our professional opinion (based on review of geologic reports and maps), appears to be oriented in a northwest-southeast direction on the western side of the Site (Figure 2).

Groundwater Elevations and Flow Direction

Groundwater elevations in monitoring well MW-5 have been anomalous since the well was installed. Water level elevations in wells MW-1 through MW-4 have typically varied by less than 2 feet. The water level elevation in well MW-5, located within 200 feet of wells MW-1 through MW-4, has typically been 8 to 10 feet lower. The groundwater flow direction beneath the Site

would be expected to flow toward the Wenatchee River to the east-southeast. Groundwater measurements suggest that the flow is toward the east-southeast when excluding water level measurements from well MW-5. When including measurements from well MW-5, the groundwater flow direction beneath the Site is in a general north-northwest direction. The presence of the fault zone beneath the Site may potentially create a vertical barrier and cause divergent groundwater flow directions in the eastern and western portions of the Site.

Western Portion of Site and Glacier Park West Property

As mentioned above, groundwater elevations in monitoring well MW-5, located on the western side of the fault, have consistently been 8 to 10 feet lower than the measured elevations in wells MW-1 through MW-4 (Table 1). Combining groundwater elevation data collected by Olympus Environmental from the Glacier Park West property (located directly west of the Site) with measurements from well MW-5 suggests that the predominant groundwater flow direction on the western side of the fault is toward the north as shown on Figure 3.

Eastern Portion of Site

As mentioned above, groundwater elevations in monitoring wells MW-1 through MW-4, located on the eastern side of the fault zone, have typically varied by less than 2 feet, suggesting a different geologic regime, and supporting the supposition that he Leavenworth Fault zone has potentially altered the subsurface conditions beneath the Site. Groundwater contours for the eastern side of the fault were drafted using Surfer for groundwater elevation data collected on 18 March 2013 from monitoring wells MW-1 through MW-4, and are shown on Figure 4. The data suggest the groundwater flow direction on the eastern side of the fault zone is toward the east-northeast (Figure 4).

Contaminant Migration

Given the presence of the Leavenworth Fault zone bisecting the Site and resulting in two separate components of groundwater flow direction, it appears to be appropriate to establish well MW-5 as a point of compliance for the western portion of the Site and wells MW-1 and MW-2 as points of compliance for the eastern portion of the Site.

Western Portion of Site and Glacier Park West Property

Total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) have either not been detected or have been detected in groundwater samples from well MW-5 at concentrations less than Ecology's Model Toxics Control Act (MTCA) Method A groundwater cleanup levels (CULs) for the period from 2001 to 2007. Groundwater sampling was discontinued in well MW-5 in 2007 with Ecology's concurrence due to the extended period (over 20 consecutive quarterly events from October 2001 through March 2007) of lack of TPH and VOC detections.

Eastern Portion of Site

TPH has not been detected in groundwater samples from monitoring well MW-1 at concentrations greater than method reporting limits since 2005. TPH has either not been detected or has been detected in groundwater samples from well MW-2 at concentrations less than MTCA Method A CULs for the time period from 2001 to 2013 (Table 2). VOCs have either been not detected or have been detected at concentrations less than MTCA Method A CULs in monitoring wells MW-1 and MW-2 for the time period from 2001 to 2013. Groundwater sampling was discontinued in well MW-1 in 2007 with Ecology's concurrence due to the extended period (seven consecutive quarterly events from September 2005 through March 2007) of lack of TPH and VOC detections.

Closing

It appears the Leavenworth Fault zone separates the Site into western and eastern portions, each of which appears to have different groundwater elevations and flow directions. Based on the two apparent different groundwater flow directions in the two areas of the Site, we recommend establishing well MW-5 as a conditional point of compliance for the western portion of the Site and wells MW-1 and MW-2 as conditional points of compliance for the eastern portion of the Site. COCs have not been detected at concentrations exceeding MTCA Method A CULs:

- In well MW-5 for the period from 2001 to 2007
- In well MW-1 for the period from 2005 to 2007
- In well MW-2 from 2001 to 2013.

Based on our evaluation and findings regarding the presence of the Leavenworth Fault zone at the Glacier Park East site and its impact on COCs, we respectfully request Ecology consider a No Further Action determination along with the existing Environmental Covenant Restriction for the Site.

Data provided by others and presented in this report are assumed to be accurate to the best of Kennedy/Jenks Consultants' knowledge. Please do not hesitate to contact the undersigned at (253) 835-6400 should you have questions regarding the information contained in this report.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

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Project Manager – Hydrogeologist

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Enclosures

Tables
Table 1 – Summary of Groundwater Elevation Data
Table 2 – Summary of Groundwater Analytical Results

Figures
Figure 1 – Site Vicinity Map
Figure 2 - Geologic Map of Leavenworth and Vicinity Area
Figure 3 – Groundwater Potentiometric Map – April 1996, Glacier Park West Property
Figure 4 – Groundwater Potentiometric Map – March 2013, Glacier Park East Facility

cc: Scott MacDonald, BNSF
Dan Carrier, Chevron Environmental Management Company
Don E. Wyll, SAIC

Tables

TABLE 1

SUMMARY OF GROUNDWATER ELEVATION DATA
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well Designation	Well Elevation (feet msl)[a,b]	Measurement Date	Depth to Water (feet)	Water Level Elevation (feet msl)	Change in Water Elevation (feet)
MW-1	1,149.84	10/5/2001	59.12	1,090.72	
		12/20/2001	59.41	1,090.43	-0.29
		3/21/2002	59.12	1,090.72	0.29
		6/26/2002	57.29	1,092.55	1.83
		9/24/2002	57.70	1,092.14	-0.41
		12/18/2002	62.26	1,087.58	-4.56
	1,153.50	3/14/2003	65.22	1,088.28	0.70
		5/30/2003	60.30	1,093.20	4.92
	1,153.24	3/26/2004	60.44	1,092.80	-0.40
		6/29/2004	56.45	1,096.79	3.99
		9/27/2004	60.50	1,092.74	-4.05
		12/1/2004	60.69	1,092.55	-0.19
		3/9/2005	61.10	1,092.14	-0.41
		6/29/2005	61.11	1,092.13	-0.01
		9/23/2005	61.82	1,091.42	-0.71
		12/30/2005	61.69	1,091.55	0.13
		3/28/2006	61.76	1,091.48	-0.07
		6/29/2006	58.89	1,094.35	2.87
		9/5/2006	59.23	1,094.01	-0.34
		12/11/2006	59.14	1,094.10	0.09
		3/30/2007	57.85	1,095.39	1.29
		9/6/2007	Not measured	Not applicable	
		4/29/2008	59.30	1,093.94	
		10/1/2008	59.22	1,094.02	0.08
		4/30/2009	59.36	1,093.88	-0.14
		10/12/2009	58.94	1,094.30	0.42
		4/29/2010	59.85	1,093.39	-0.91
	1,153.21	8/17/2010	59.10	1,094.11	0.72
		10/12/2010	59.90	1,093.31	-0.80
		4/28/2011	60.02	1,093.38	0.07
		10/13/2011	58.29	1,095.11	1.73
		3/9/2012	59.34	1,093.87	-1.24
		6/20/2012	57.74	1,095.47	1.60
		9/20/2012	56.95	1,096.26	0.79
		12/11/2012	58.39	1,095.01	-1.25
		3/18/2013	59.31	1,093.90	-1.11
MW-2	1,150.95	10/5/2001	64.02	1,086.93	
		12/20/2001	63.24	1,087.71	0.78
		3/21/2002	64.02	1,086.93	-0.78
		6/26/2002	58.14	1,092.81	5.88
		9/24/2002	59.53	1,091.42	-1.39
		12/18/2002	Not measured	Not applicable	
		3/14/2003	Not measured	Not applicable	
		5/30/2003	60.35	1,090.60	
	1,161.19	3/26/2004	69.57	1,091.62	1.02
		6/29/2004	63.98	1,097.21	5.59
		9/27/2004	69.40	1,091.79	-5.42
		12/1/2004	69.98	1,091.21	-0.58
		3/9/2005	70.55	1,090.64	-0.57
		6/29/2005	70.20	1,090.99	0.35
		9/23/2005	72.34	1,088.85	-2.14
		12/30/2005	71.82	1,089.37	0.52
		3/28/2006	72.06	1,089.13	-0.24
		6/29/2006	66.46	1,094.73	5.60
		9/5/2006	68.72	1,092.47	-2.26
		12/11/2006	68.81	1,092.38	-0.09
		3/30/2007	66.48	1,094.71	2.33
		9/6/2007	67.05	1,094.14	-0.57
		4/29/2008	69.11	1,092.08	-2.06
		10/1/2008	68.96	1,092.23	0.15
		4/30/2009	68.23	1,092.96	0.73
		10/12/2009	68.60	1,092.59	-0.37
		4/29/2010	68.96	1,092.23	-0.36
	1,161.12	8/17/2010	68.02	1,093.10	0.87
		10/12/2010	68.91	1,092.21	-0.89
		4/28/2011	68.65	1,092.76	0.55
		10/13/2011	67.05	1,094.07	1.31
		3/9/2012	68.69	1,092.43	-1.64
		6/20/2012	66.03	1,095.09	2.66
		9/20/2012	66.40	1,094.72	-0.37
		12/11/2012	67.81	1,093.60	-1.12
		3/18/2013	68.02	1,093.10	-0.50

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SUMMARY OF GROUNDWATER ELEVATION DATA
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well Designation	Well Elevation (feet msl)[a,b]	Measurement Date	Depth to Water (feet)	Water Level Elevation (feet msl)	Change in Water Elevation (feet)
MW-3	1,151.20	10/5/2001	60.38	1,090.82	
		12/20/2001	61.06	1,090.14	-0.68
		3/21/2002	60.38	1,090.82	0.68
		6/26/2002	57.72	1,093.48	2.66
		9/24/2002	58.01	1,090.14	-3.34
		12/18/2002	64.56	1,086.64	-3.50
	1,156.35	3/14/2003	66.72	1,089.63	2.99
		5/30/2003	61.95	1,094.40	4.77
	1,156.34	3/26/2004	63.10	1,093.24	-1.16
		6/29/2004	59.22	1,097.12	3.88
		9/27/2004	62.88	1,093.46	-3.66
		12/1/2004	63.99	1,092.35	-1.11
		3/9/2005	63.95	1,092.39	0.04
		6/29/2005	63.90	1,092.44	0.05
		9/23/2005	64.98	1,091.36	-1.08
		12/30/2005	67.80	1,088.54	-2.82
		3/28/2006	65.01	1,091.33	2.79
		6/29/2006	61.27	1,095.07	3.74
		9/5/2006	60.89	1,095.45	0.38
		12/11/2006	61.81	1,094.53	-0.92
		3/30/2007	60.60	1,095.74	1.21
		9/6/2007	58.71	1,097.63	1.89
		4/29/2008	62.10	1,094.24	-3.39
		10/1/2008	61.35	1,094.99	0.75
		4/30/2009	62.12	1,094.22	-0.77
		10/12/2009	61.46	1,094.88	0.66
		4/29/2010	63.01	1,093.33	-1.55
	1,156.29	8/17/2010	61.49	1,094.80	1.47
		10/12/2010	62.66	1,093.63	-1.17
		4/28/2011	62.58	1,093.99	0.36
		10/13/2011	59.96	1,096.61	2.62
		3/9/2012	62.12	1,094.17	-2.44
		6/20/2012	60.43	1,095.86	1.69
		9/20/2012	59.64	1,096.65	0.79
		12/11/2012	61.33	1,095.24	-1.41
		3/18/2013	62.30	1,093.99	-1.25
MW-4	1,155.29	10/5/2001	64.03	1,091.26	
		12/20/2001	64.42	1,090.87	-0.39
		3/21/2002	64.03	1,091.26	0.39
		6/26/2002	61.72	1,093.57	2.31
		9/24/2002	61.26	1,094.03	0.46
		12/18/2002	65.92	1,089.37	-4.66
	1,158.42	3/14/2003	73.22	1,085.20	-4.17
		5/30/2003	63.90	1,094.52	9.32
	1,156.92	3/26/2004	63.70	1,093.22	-1.30
		6/29/2004	60.50	1,096.42	3.20
		9/27/2004	63.79	1,093.13	-3.29
		12/1/2004	64.29	1,092.63	-0.50
		3/9/2005	64.66	1,092.26	-0.37
		6/29/2005	64.72	1,092.20	-0.06
		9/23/2005	65.67	1,091.25	-0.95
		12/30/2005	66.11	1,090.81	-0.44
		3/28/2006	65.86	1,091.06	0.25
		6/29/2006	62.21	1,094.71	3.65
		9/5/2006	61.85	1,095.07	0.36
		12/11/2006	62.50	1,094.42	-0.65
		3/30/2007	61.38	1,095.54	1.12
		9/6/2007	59.75	1,097.17	1.63
		4/29/2008	62.90	1,094.02	-3.15
		10/1/2008	62.24	1,094.68	0.66
		4/30/2009	63.07	1,093.85	-0.83
		10/12/2009	62.33	1,094.59	0.74
		4/29/2010	63.89	1,093.03	-1.56
	1,156.90	8/17/2010	62.43	1,094.47	1.44
		10/12/2010	63.48	1,093.42	-1.05
		4/28/2011	63.63	1,093.27	-0.15
		10/13/2011	60.73	1,096.60	3.33
		3/9/2012	62.92	1,093.98	-2.62
		6/20/2012	61.32	1,095.58	1.60
		9/20/2012	60.48	1,096.42	0.84
		12/11/2012	62.11	1,095.22	-1.20
		3/19/2013	63.15	1,093.75	-1.47

TABLE 1

SUMMARY OF GROUNDWATER ELEVATION DATA
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well Designation	Well Elevation (feet msl)[a,b]	Measurement Date	Depth to Water (feet)	Water Level Elevation (feet msl)	Change in Water Elevation (feet)
MW-5	1,158.11	10/5/2001	75.57	1,082.54	
		12/20/2001	74.23	1,083.88	1.34
		3/21/2002	75.57	1,082.54	-1.34
		6/26/2002	67.96	1,090.15	7.61
		9/24/2002	73.87	1,084.24	-5.91
		12/18/2002	74.60	1,083.51	-0.73
	1,158.11	3/14/2003	73.09	1,085.02	1.51
		5/30/2003	68.95	1,089.16	4.14
		3/26/2004	72.15	1,085.96	-3.20
		6/29/2004	65.78	1,092.33	6.37
		9/27/2004	73.40	1,084.71	-7.62
		12/1/2004	72.99	1,085.12	0.41
		3/9/2005	73.25	1,084.86	-0.26
		6/29/2005	73.06	1,085.05	0.19
		9/23/2005	75.51	1,082.60	-2.45
		12/30/2005	73.86	1,084.25	1.65
		3/28/2006	73.65	1,084.46	0.21
		6/29/2006	68.18	1,089.93	5.47
		9/5/2006	73.52	1,084.59	-5.34
		12/11/2006	72.48	1,085.63	1.04
		3/30/2007	69.10	1,089.01	3.38
		9/6/2007	Not measured	Not applicable	
		4/29/2008	72.40	1,085.71	
		10/1/2008	73.66	1,084.45	-1.26
		4/30/2009	71.29	1,086.82	2.37
		10/12/2009	73.97	1,084.14	-2.68
		4/29/2010	71.60	1,086.51	2.37
	1,158.09	8/17/2010	72.17	1,085.92	-0.59
		10/12/2010	73.07	1,085.02	-0.90
		4/28/2011	71.56	1,087.05	2.03
		10/13/2011	72.23	1,085.86	-1.19
		3/9/2012	73.08	1,085.01	-0.85
		6/20/2012	67.64	1,090.45	5.44
		9/20/2012	71.23	1,086.86	-3.59
		12/11/2012	73.23	1,085.38	-1.48
		3/18/2013	72.09	1,086.00	0.62

Notes:

msl = mean sea level.

(a) All site wells were surveyed following installation in October 2001 and re-surveyed in March 2003 to account for the raising of the wells in anticipation of future cap construction. Wells MW-1 through MW-4 were surveyed in October 2003 after completion of the CAP.

(b) The Site including all monitoring wells were surveyed in August 2010.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well ID	Date Sampled[a]	Total Petroleum Hydrocarbons (µg/L)[b]			Aromatic Volatile Organic Compounds (µg/L)[c]			
		Gasoline Range	Diesel Range	Heavy Oil Range	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-1	10/4/2001	<50.0[d]	<281 I[e]	<562 I	<0.500	1.79	<0.500	<1.00
	12/20/2001	<50.0	<250 UJ[f]	<500	<0.500	<0.500	<0.500	<1.00
	3/21/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/26/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/24/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/18/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/14/2003	<50.0	543	<500	<0.500	<0.500	<0.500	1.24
	5/30/2003	<50.0	710	<500	<0.500	<0.500	<0.500	<1.00
	3/26/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/27/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/1/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/9/2005	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2005	<50.0/<50.0[g]	**1,710/1,040**	**1,130/722**	<0.500/<0.500	<0.500/<0.500	<0.500/<0.500	<1.00/<1.00
	9/23/2005	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/30/2005	<50.0	<281	<562	<0.500	<0.500	<0.500	<1.00
	3/28/2006	<50.0	<253	<505	<0.500	<0.500	<0.500	<1.00
	6/29/2006	<50.0	<253	<505	<0.500	<0.500	<0.500	<1.00
	9/5/2006	<80.0	<248	<495	<0.500	<0.500	<0.500	<1.00
	12/11/2006	<50.0[h]	<250	<500	<0.500[h]	<0.500[h]	<0.500[h]	<1.00[h]
	3/30/2007	<50.0	<248	<495	<0.500	<0.500	<0.500	<1.00
MW-2	10/4/2001	<50	Not analyzed	Not analyzed	<0.500	<0.500	<0.500	<1.00
	12/20/2001	102	<250 UJ	<500	0.52	<0.500	<0.500	<1.00
	3/21/2002	<50	<250	<500	<0.50	<0.500	<0.500	<1.00
	6/26/2002	82	<250	<500	<0.50	<0.500	<0.500	1.73
	9/24/2002	125	<250	<500	<0.50	<0.500	0.815	1.06 I
	12/18/2002	Not Sampled[i]	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
	3/14/2003	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
	5/30/2003	165	499	<500	1.18	<0.500	<0.500	<1.00
	3/26/2004	99.1	<250	<500	<0.500	<0.600	<0.500	1.30
	6/29/2004	71.2	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/27/2004	96.9	264	<500	<0.500	<0.500	<0.500	<1.00
	12/1/2004	67.8	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/9/2005	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2005	55.6	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/23/2005	54.6	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/30/2005	84.6	<248	<495	<0.500	<0.500	0.763	2.74 I
	3/28/2006	180	<253	<505	0.558	<0.500	0.993	1.38
	6/29/2006	154	<250	<500	0.801	<0.500	<0.500	<1.00
	9/5/2006	98.2	<278	<556	0.932	<0.500	0.79	<1.00
	12/11/2006	71[h]	<250	<500	<0.500[h]	<0.500[h]	<0.500[h]	<1.00[h]
	3/30/2007	258	<245	<490	2.66	<0.500	1.11	2.12
	9/6/2007	341	<253	<505	5.28	<0.500	3.67	3.23
	4/29/2008	318	<250	<500	3.22	<0.500	0.968	1.28
	10/1/2008	563	<250	<500	2.97	0.608	3.93	2.88
	4/30/2009	154	<245	<490	0.604	<0.500	<0.500	1.10
	10/12/2009	300	180	470	1.0 H[j]	<1.0 H	<1.0 H	<1.0 H
	4/29/2010	160	<120	300	<0.50	<0.50	<0.50	1.8
	10/12/2010	190	220	<250	0.76	<0.50	<0.50	<1.0
	4/28/2011	97	<120	<240	<1.00	<1.00	<1.00	<1.00
	10/13/2011	590	140	<260	4.6	<1.00	6.4	2.7
	3/9/2012	580	75.2	<450	<1.00	<1.00	<1.00	<3.00
	6/20/2012	118	<76	<380	1.1	<1.00	<1.00	<3.00
	9/20/2012	74.7	<76	<380	<1.00	<1.00	<1.00	<3.00
	12/11/2012	<100	200	290	<1.00	<1.00	<1.00	<3.00
	3/18/2013	<100	240	<250	<0.50	<5.0	<0.50	<1.5

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well ID	Date Sampled[a]	Total Petroleum Hydrocarbons (µg/L)[b]			Aromatic Volatile Organic Compounds (µg/L)[c]			
		Gasoline Range	Diesel Range	Heavy Oil Range	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-3	10/5/2001	**1,280 I**	**1,730**	<500	**28.1 I**	11.2 I	51.6 I	4.52 I
	12/20/2001	**977 I/950 I**	<250 UJ/<250 UJ	<500 UJ/<500 UJ	**19.2 I/19.3 I**	2.40 I/2.42 I	7.62 I/7.60 I	3.55 I/3.55 I
	3/21/2002	**993 I/963 I**	255/428	<500/<500	**14.9 I/16.7 I**	2.95 I/1.23 I	4.58 I/2.66 I	7.35 I/1.84 I
	6/26/2002	**823/762**	<250/<250	<500/<500	**16.6/15.4**	1.02 I/1.03 I	2.46 I/2.48 I	3.60 I/3.56 I
	9/24/2002	**1,020 I/1,030 I**	<250 UJ/<250 UJ	<500 UJ/<500 UJ	**16.2 I/16.3 I**	4.77 I/4.73 I	29.4 I/29.6 I	8.74 I/8.69 I
	12/18/2002	**1,300/1,250**	<250/<250	<500/<500	**20.7/21.1**	7.42/7.43	78.9/79.4	10.4/10.2
	3/14/2003	**919 I/849 I**	**2,330/2,200**	<500/<500	**12 I/11.4 I**	2.58 I/2.21 I	27.7 I/25.5 I	2.5 I/2.32 I
	5/30/2003	**959/845**	**2,820/3,610**	<500/580	**22.7/14.4**	6.01/3.88	42.8/27.0	7.12/3.46
	3/26/2004	**1,060/1090**	443/528	<500/<500	**19.7/19.1**	7.44/7.14	24.0/23.0	4.32/3.62
	6/29/2004	**1,260/1,050**	305/<250	<500/<500	**25.6/21.7**	8.11/6.82	20.7/17.4	2.99/2.61
	9/27/2004	**1,340**	**535**	<500	**19.4**	9.41	31.8	7.29
	12/1/2004	**1,450**	259	<500	**20.9**	8.06	27	4.82
	3/9/2005	698/639	**602/334**	<500/<500	**11.7/9.33**	2.52/1.98	4.84/3.84	1.28/<1.00
	6/29/2005	**909**	324	<500/<501	**11.0**	1.67	4.72	2.27
	9/23/2005	**718**	<250	<500	**7.38**	0.994	1.96	2.25
	12/30/2005	377	<248	<495	**5.01**	0.799	0.890	1.04
	3/28/2006	603	<250	<500	4.28	<0.500	0.918	1.99
	6/29/2006	**998**	<278	<500	**12.7**	1.61	10.5	3.03
	9/5/2006	655	366	<556	**20.1**	8.83	74.5	33.5
	12/11/2006	**959**	369	<490	4.66	<0.500	<0.500	2.06
	3/30/2007	**2,510**	341	<485	**32.3**	17.7	89.9	56.8
	9/6/2007	**2,080**	<250	<500	**30.7**	38.8	137	106
	4/29/2008	**1,550 UJ/2,000 UJ**	**419 I/<250**	<476/<500	**12.8/16.7**	16.2/19.9	48.4/54.6	29.9/31.7
	10/1/2008	**2,250 UJ/2,390 UJ**	<248/<240	<495/<481	**17.4/18.3**	24.2/25.4	117/118	84.2/88.9
	4/30/2009	**1,050/1,040**	<248/<238	**532/<476**	**9.39/9.36**	7.33/7.30	26.5/26.2	25.0/24.6
	10/12/2009	**4,600/4,700**	**980/910**	**720/570**	**27 H/27 H**	41 H/43 H	180 H/190 H	40 H/42 H
	4/29/2010	**1,100/890**	690/480	<250/<250	**9.9/9.0**	7.5/6.4	16/14	13/12
	10/12/2010	**1,300/1,300**	**1,600/2,700**	<240/370	**11/10**	18/18	69/70	68/69
	4/28/2011	65/74	120/150	<250/<250	1.00/1.00	<1.00/<1.00	<1.00/<1.00	<1.00/<1.00
	10/13/2011	<50/57	<130/<120	<260/<250	<1.00/<1.00	<1.00/<1.00	<1.00/<1.00	<1.00/<1.00
	3/9/2012	**1,080/985**	**3,800/4,100**	**1,400/1,500**	**10/9.1**	9.6/8.7	9.7/8.9	18.6/17.0
	6/20/2012	50.6/62.1	120/<82	<380/<410	1.4/1.6	<1.00/<1.00	<1.00/<1.00	<3.00/<3.00
	9/20/2012	<50/<50	93/<79	<420/<400	<1.00/<1.00	<1.00/<1.00	<1.00/<1.00	<3.00/<3.00
	12/11/2012	**1,460/708**	**1,800/1,600**	**1,300/1,300**	7.3/3.7	39.9/22.9	14.9/7.2	71.5/35.1
	3/18/2013	600/610	**1,800/1,100**	**1,300**/250	**5.2/5.4**	7.8/8.1	2.7/2.8	24/25
MW-4	10/5/2001	149/140	**1,940/2,180**	<561/<561	<0.500/<0.500	2.17/2.08	<0.500/<0.500	<1.00/<1.00
	12/20/2001	50.7	<250 UJ	<500 UJ	<0.500	<0.500	<0.500	<1.00
	3/21/2002	63.4	393	<500	<0.500	<0.500	<0.500	<1.00
	6/26/2002	244	<250	<500	2.73	<0.500	<0.500	1.06
	9/24/2002	253	<250	<500	3.31	<0.500	<0.500	1.01 I
	12/18/2002	236	<250	<500	1.73	<0.500	<0.500	<1.00
	3/14/2003	254	**2,830**	<500	0.847	<0.500	<0.500	<1.00
	5/30/2003	199	**2,980**	<500	0.602	<0.500	<0.500	<1.00
	3/26/2004	204	314	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2004	204	469	<500	<0.500	<0.500	<0.500	<1.00
	9/27/2004	192	408	<500	<0.500	<0.500	<0.500	<1.00
	12/1/2004	196	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/9/2005	153	378	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2005	183	477	<500	<0.500	<0.500	<0.500	<1.00
	9/23/2005	180	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/30/2005	137	<248	<495	<0.500	<0.500	<0.500	<1.00
	3/28/2006	170	<243	<485	<0.500	<0.500	<0.500	<1.00
	6/29/2006	132	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/5/2006	<80.0	<263	<526	<0.500	<0.500	<0.500	<1.00
	12/11/2006	<50.0[h]	<245	<490	<0.500[h]	<0.500[h]	<0.500[h]	<1.00[h]
	3/30/2007	<50	<253	<505	<0.500	<0.500	<0.500	<1.00
	9/6/2007	267	<250	<500	0.65	<0.500	<0.500	<3.00
	4/29/2008	98.7	<248	<495	<0.500	<0.500	<0.500	<1.00
	10/1/2008	52.2	<248	<495	<0.500	<0.500	<0.500	<1.00
	4/30/2009	76.4	<245	<490	<0.500	<0.500	<0.500	<1.00
	10/12/2009	68	<120	<250	<1.0 H	<1.0 H	<1.0 H	<1.0 H
	4/29/2010	75	<120	<240	<0.500	<0.500	<0.500	<1.00
	10/12/2010	65	**580**	<240	<0.500	<0.500	<0.500	<1.00
	4/28/2011	<50.0	<120	<240	<1.00	<1.00	<1.00	<1.00
	10/13/2011	140	350	<250	<1.00	<1.00	<1.00	<1.00
	3/9/2012	<50.0	**2,800**	**1400**	<1.00	<1.00	<1.00	<3.00
	6/20/2012	<50	<79	<400	<1.00	<1.00	<1.00	<3.00
	9/20/2012	<50	<79	<400	<1.00	<1.00	<1.00	<3.00
	12/11/2012	<100	**2,100**	**1,800**	<1.00	<1.00	<1.00	<3.00
	3/18/2013	<100	**1,400**	400	<0.50	<5.0	<0.50	<1.5

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
October 2001 Through March 2013
BNSF Glacier Park East, Leavenworth, Washington

Well ID	Date Sampled[a]	Total Petroleum Hydrocarbons (µg/L)[b]			Aromatic Volatile Organic Compounds (µg/L)[c]			
		Gasoline Range	Diesel Range	Heavy Oil Range	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-5	10/5/2001	<50.0	Not analyzed	Not analyzed	<0.500	<0.500	<0.500	<1.00
	12/20/2001	<50.0	<250 UJ	<500	<0.500	<0.500	<0.500	<1.00
	3/21/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/26/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/24/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	12/18/2002	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/14/2003	<50.0	<250	<500	<0.500	<0.500	<0.500	1.24
	5/30/2003	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	3/26/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2004	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/27/2004	<50.0/<50.0	<250/<250	<500/<500	<0.500/<0.500	<0.500/<0.500	<0.500/<0.500	<1.00/<1.00
	12/1/2004	<50.0/<50.0	<250/<250	<500/<500	<0.500/<0.500	<0.500/<0.500	<0.500/<0.500	<1.00/<1.00
	3/9/2005	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	6/29/2005	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00
	9/23/2005	<50.0/<50.0	<250/<250	<500/<500	<0.500/<0.500	<0.500/<0.500	<0.500/<0.500	<1.00/<1.00
	12/30/2005	<50.0/<50.0	<250/<248	<500/<495	<0.500/<0.500	<0.500/<0.500	<0.500/<0.500	<1.00/<1.00
	3/28/2006	<50.0/<50.0	<243/<250	<485/<500	<0.500/<0.500	<0.500/<0.500	<0.500/0.500	<1.00/<1.00
	6/29/2006	<50.0/<50.0	<250/<263	<500/<526	<0.500/<0.500	<0.500/<0.500	<0.500/0.500	<1.00/<1.00
	9/5/2006	<80.0/<80.0	<278/<253	<556/<505	<0.500/<0.500	<0.500/<0.500	<0.500/0.500	<1.00/<1.00
	12/11/2006	<50.0/<50.0[h]	<250/<248	<500/<495	<0.500/<0.500[h]	<0.500/<0.500[h]	<0.500/0.500[h]	<1.00/<1.00[h]
	3/30/2007	<50.0/<50.0	<245/<245	<490/<490	<0.500/<0.500	<0.500/<0.500	<0.500/0.500	<1.00/<1.00
MTCA Method A Cleanup Levels[k]		800	500	500	5	1,000	700	1,000

Notes:

(a) Analytical data prior to 26 March 2004 generated by GeoEngineers.

(b) Groundwater samples were analyzed for gasoline range total petroleum hydrocarbons (TPH) using Northwest Method NWTPH-Gx and diesel/heavy oil range TPH using NWTPH-Dx/Dx Extended

(c) Groundwater samples were analyzed for aromatic volatile organic compounds (VOC) by EPA Method 8021B.

(d) "<" indicates the compound was not detected at a concentration greater than the stated laboratory reporting limit.

(e) "I" indicates the analyte concentration may be artifically elevated because of co-eluting compounds or components.

(f) "UJ" indicates the surrogate recovery for this sample cannot be accurately quantified because of interference from co-eluting compounds and/or the surrogate recovery for the sample was outside established control limits because of a sample matrix effect.

(g) Where two values are displayed, the second is the analytical result for a field blind duplicate sample.

(h) Samples MW-1, MW-2, MW-4, MW-5, and duplicate sample MW-100 had a pH >2 and were analyzed outside the 7-day hold time for unpreserved VOC samples (per Ecology Method 5035) due to power outage from wind storm.

(i) MW-2 was inaccessible because the well head was elevated in anticipation of cap construction.

(j) "H" indicates the samples were analyzed outside of the analytical holding time due to an analyst oversight.

(k) Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A groundwater cleanup levels (WAC 173-340) dated February 2001.

µg/L = micrograms per liter.

Concentrations above the cleanup level are shown in bold and shaded

Figures

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N

500 250 0 500

Feet

Kennedy/Jenks Consultants

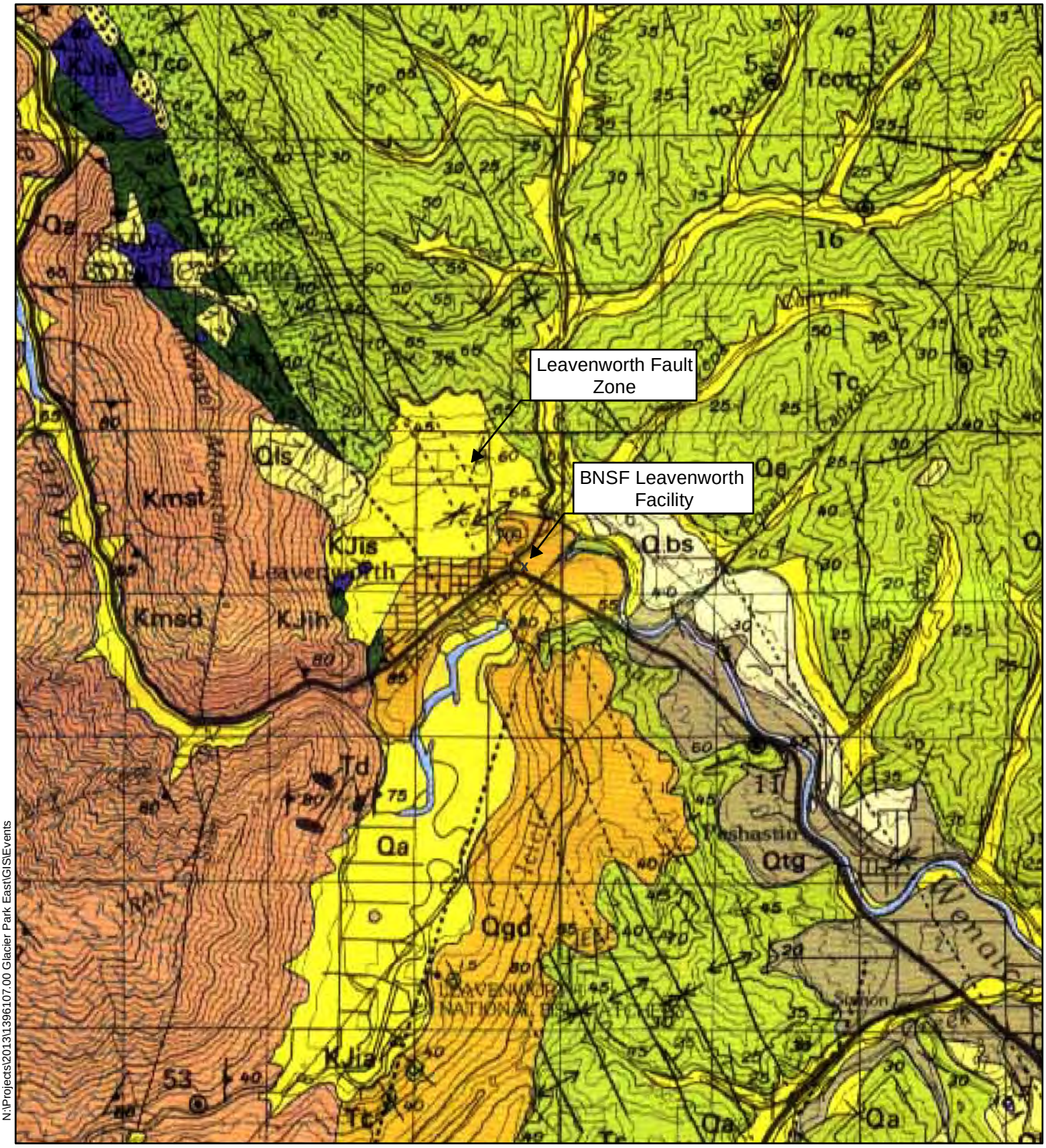
BNSF Railway Company
Glacier Park East

Site Vicinity Map

K/J Project Number 1396107.00

8/13

Figure 1



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Source: R.W. Tabor, V.A. Frizzell, Jr., R.B. Wait, D.A. Swanson, G.R. Byerly, D.B. Booth, M.J. Hetherington, and R.E. Zartman, Geologiv Map of the Chelan 30 x 60 Minute Quadrangle, Washington. U.S. Geological Survey, Geologic Investigations Series I-1661, 1987.

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Miles

Kennedy/Jenks Consultants

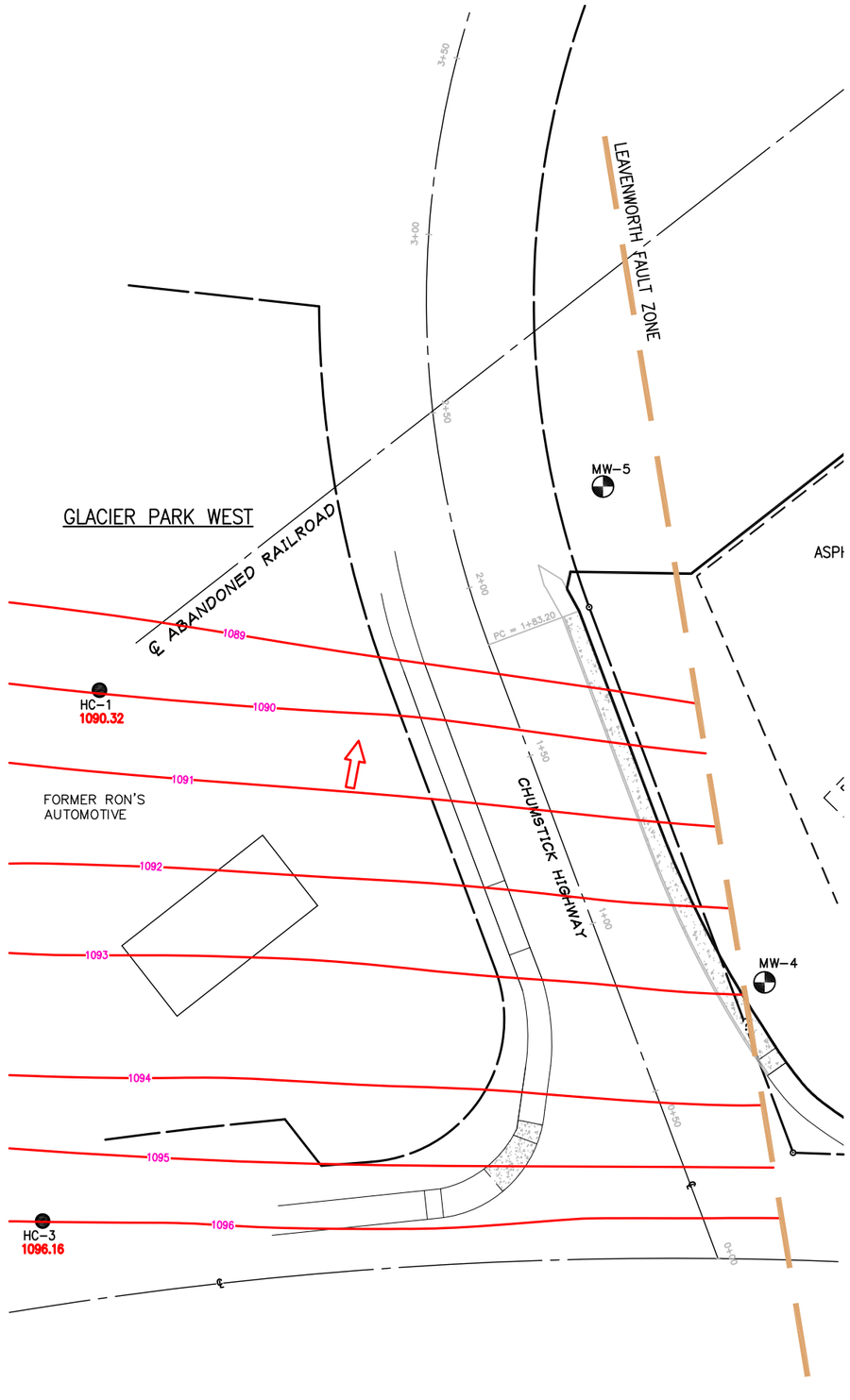
BNSF Railway Company
Glacier Park East

Geologic Map of Leavenworth and Vicinity Area

K/J Project Number 1396107.00

8/13

Figure 2



LEGEND:

- HC-1 — HART CROWSER MONITORING WELL
- MW-1 — MONITORING WELL
- 1093.9 — GROUNDWATER ELEVATION (FEET)
- GROUNDWATER FLOW DIRECTION
- 1091 — GROUNDWATER CONTOURS BASED ON OLYMPUS ENVIRONMENTAL APRIL 1996 ELEVATION DATA
- APPROXIMATE LOCATION OF LEAVENWORTH FAULT ZONE

NOTES:

1. LOCATIONS OF ALL FEATURES ARE APPROXIMATE.

0 20 40

APPROXIMATE SCALE IN FEET

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Kennedy/Jenks Consultants

BNSF RAILWAY COMPANY
GLACIER PARK EAST

GROUNDWATER POTENTIOMETRIC MAP
APRIL 1996
GLACIER PARK WEST PROPERTY

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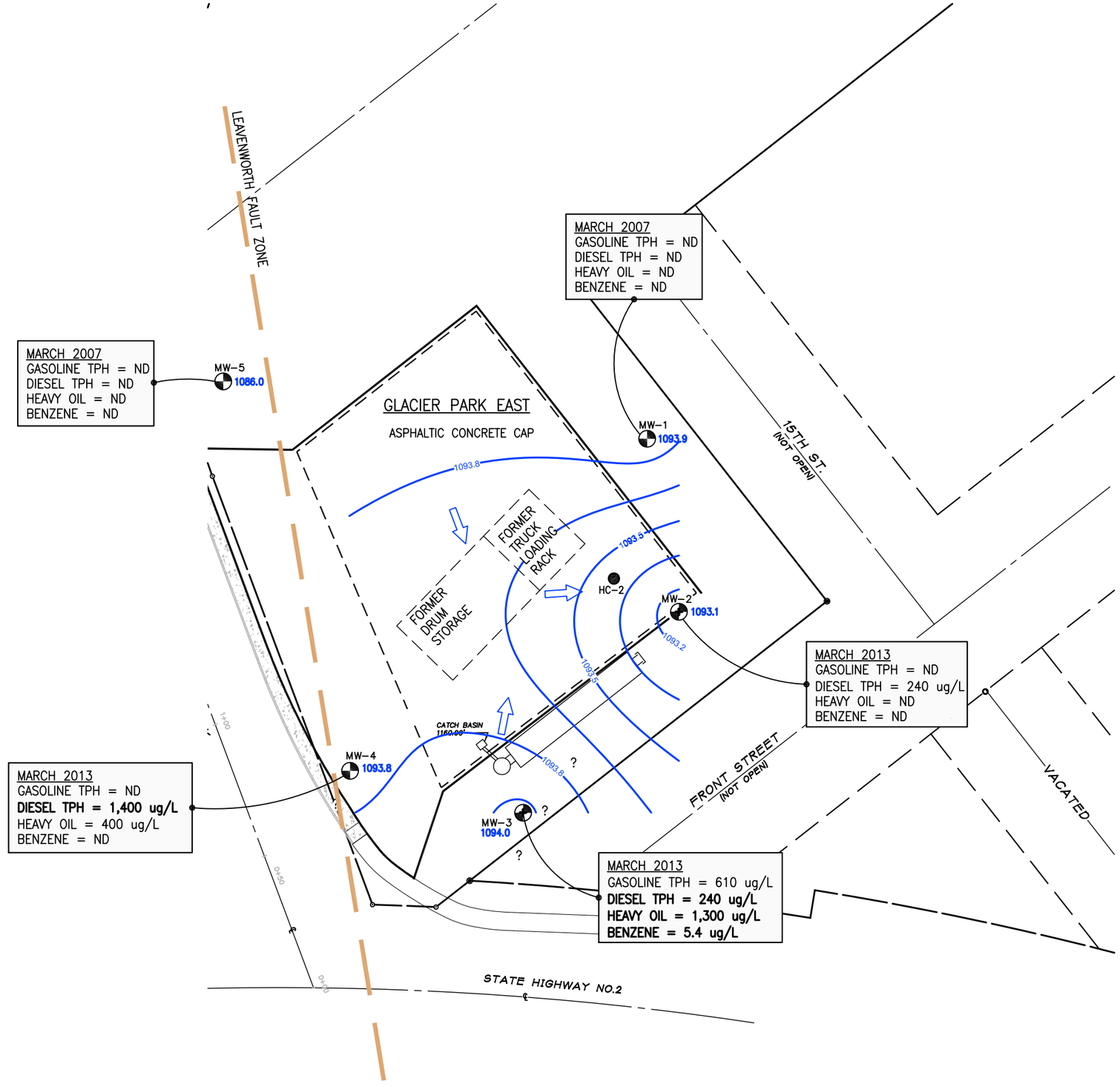
8/13

FIGURE 3



LEGEND:

- HC-2 — HART CROWSER MONITORING WELL
- MW-1 — MONITORING WELL
- 1093.9 — GROUNDWATER ELEVATION (FEET)
- GROUNDWATER FLOW DIRECTION
- 1093.6 — GROUNDWATER CONTOURS BASED ON KENNEDY/JENKS MARCH 2013 ELEVATION DATA
- TPH = TOTAL PETROLEUM HYDROCARBONS
- ND = NOT DETECTED
- ug/L = MICROGRAM PER LITER
- APPROXIMATE LOCATION OF LEAVENWORTH FAULT ZONE

NOTES:

1. SURVEY COMPLETED 17 AUGUST 2010. BASEMAP FROM LANDLINE SURVEYORS.
2. LOCATIONS OF ALL FEATURES ARE APPROXIMATE.
3. GROUNDWATER ELEVATION AT MW-5 WAS NOT INCLUDED IN DRAFTING KENNEDY/JENKS GROUNDWATER POTENTIOMETRIC MAP.

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APPROXIMATE SCALE IN FEET

Kennedy/Jenks Consultants

BNSF RAILWAY COMPANY
GLACIER PARK EAST

GROUNDWATER POTENTIOMETRIC MAP
MARCH 2013
GLACIER PARK EAST FACILITY

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8/13

FIGURE 4