April 23, 2012
Project 141533

Ms. Patricia Wells
AT&T Services, Inc.
308 South Akard, Suite 1700
Dallas, TX 75202

Re: 2011 Enhanced Separate-Phase Hydrocarbon Removal and Pilot Test Report
AT&T Data Center, 20307 North Creek Parkway, Bothell, Washington

Dear Ms. Wells:

Shaw Environmental, Inc. (Shaw) is pleased to present the results of the 2011 Enhanced Separate Phase Hydrocarbon (SPH) Removal and Pilot Test conducted at the AT&T Bothell Facility (Site) located at 20307 North Creek Parkway, Bothell, Washington (Figure 1).

A total of four injection events were conducted at one week intervals starting November 9, 2011. Regenox® PetroCleanze™ and Part A™ were mixed with potable water and injected into observation wells and piezometers inside the generator building at the Site. PetroCleanze™ is an in-situ chemical oxidizer which increases the desorption rates of hydrocarbons bound in saturated soil, making them available for enhanced recovery. Regenox® Part A™ is a solid alkaline oxidant that employs a sodium percarbonate powder and PetroCleanze™ is a specialized liquid activator which oxidizes contaminants (See Attachment 1 for the material safety data sheets (MSDS).

SITE HISTORY

The AT&T Data Center is located in the northwest corner of the Schnitzer North Creek development in Bothell, Washington. North Creek Parkway borders the east side of the Site and Interstate 405 borders the west side. The property is largely paved and contains three AT&T office buildings and a generator building. The property is approximately 8.13 acres and is situated within the N1/2, NE1/4, Section 5, T26N, R5E, King County, Washington. The facility, currently owned by AT&T, is zoned for commercial/industrial use.

The site is located in the North Creek basin, which is typically underlain by floodplain and alluvial deposits consisting of inter-bedded organic silt, peat, and sand. Above these deposits is medium dense to dense sand fill imported during site development. The organic silt and peat at the subject site is typically encountered at a depth of 2 to 10 feet below ground surface (bgs) and extends to depths ranging from 20 to 65 feet bgs.

Shallow groundwater is present beneath the site and ranges in depth from approximately 2 to 8 feet bgs. The groundwater is generally present in the fill material and is perched atop the peat layer. The groundwater fluctuates considerably with precipitation, seasons, and the level of nearby North Creek. The maximum thickness of the saturated zone is expected to occur November through March, the wettest months of the year in the Northwest.

In August 2008, approximately 15,000 gallons of diesel fuel was released from the aboveground storage tanks located adjacent to the west wall of the generator building. The initial response and subsequent remedial activities were successful in containing subsurface diesel impacts within AT&T property boundaries. A total of eight groundwater monitoring wells were installed during and after the emergency response activities. Approximately 2,449 tons of contaminated soil were removed during excavation activities.

Following excavation of contaminated soil, an impermeable liner was installed in the remedial excavation to prevent diesel-contaminated water from entering the backfill of the stormwater line and/or the line itself. The lining system consisted of:

1. Impermeable fuel-resistant geosynthetic liner, specified as XPRO geo 401E
2. Protective geotextile cushion, GN200, on both sides of the liner

The liner and cushion were anchored at the base of the recovery trench inside the anchor trench and backfilled with bentonite chips. The liner is approximately 280 feet long and is illustrated on Figure 2. The top of liner was surveyed prior to covering with pea gravel and asphalt.

Nine extraction wells were installed in the excavation upgradient of the impermeable liner during the construction period (the extraction wells were installed and then the pea gravel was backfilled around them) to provide access for the recovery of diesel-contaminated water. Extraction well EW-10 was drilled at a later date. Details regarding the spill cleanup, monitoring well and extraction well installation, the initial round of groundwater sampling conducted on October 2, 2008, and four quarters of groundwater sampling conducted during 2009 are documented in a Shaw report titled *Emergency Response and Remedial Activities Report* (ERRAR), dated January 2010.

Groundwater analytical results from the 2009 and 2010 sampling events indicate no detections above laboratory method reporting limits or MTCA Method A Groundwater Cleanup Levels for total petroleum hydrocarbons (TPH) as diesel (TPH-D), TPH as oil (TPH-O), or benzene, toluene, ethyl benzene, and xylenes (BTEX) in groundwater from monitoring wells MW-1 through MW-7. Groundwater analytical results in monitoring well MW-8 (installed January 5, 2009, near the spill area) had TPH-D results ranging from 1,030 to 2,700 micrograms per liter

(µg/L) (above the MTCA Method A Groundwater Cleanup level of 500 µg/L). Benzene concentrations ranged from 3.7 to 86.3 µg/L (above the MTCA Method A Groundwater Cleanup Level of 5 µg/L). Total xylene results were 1,000 µg/L in January 2009. The MTCA Method A Groundwater Cleanup Levels for total xylenes is 1,000 µg/L. The groundwater flow direction during all previous sampling events was to the south or southeast.

Groundwater analytical results from the two 2011 semi-annual sampling events indicate no detections above laboratory method reporting limits or MTCA Method A Groundwater Cleanup Levels for TPH-D, TPH-O, or BTEX in groundwater from monitoring wells MW-1 through MW-7. Groundwater analytical results in well MW-8 (installed near the spill area) had TPH-D results ranging from 1,500 to 1,600 µg/L (above the MTCA Method A Groundwater Cleanup level of 500 µg/L). Benzene concentrations in MW-8 ranged from non-detect to 18 µg/L (above the MTCA Method A Groundwater Cleanup Level of 5 µg/L).

ENHANCED SPH RECOVERY PILOT TEST FIELD ACTIVIES

In October 2011, Shaw submitted an Underground Injection Control (UIC) registration application to the Washington State Department of Ecology (Ecology). The application proposed RegenOx® PetroCleanze™ and Part A™ oxidizer injection into groundwater under the generator building through the use of existing observation wells (OW-1, OW-2, and OW-3), and piezometers (B-19, B-20, B-25, and B-26) inside the generator building (See Figure 2). The Ecology-approved UIC is included in Attachment 2. PetroCleanze™ is a mixture of sodium silicate solution, sodium hydroxide, sodium tripoly-phosphate and ferrous sulfate that, when mixed with water and injected into contaminated aquifers, make hydrocarbons bound in saturated soil more available for remediation. RegenOx® Part A™ is a mixture of sodium percarbonate, sodium silicate and silica gel that oxidizes contaminated soil and groundwater.

A pre-injection pump test was conducted in extraction well EW-6 to measure the groundwater response in observation wells inside the generator building (OW-2 and OW-3). A total of 5,000 gallons were pumped on October 18, 2011. Results in OW-2 and OW-3 and the inside piezometers indicated little drawdown following the 2.5 hour pumping event, however the following day water levels were up to 1.0 inch lower than the initial groundwater levels in the observation wells and piezometers.

Following Ecology's approval, a total of four injection events were conducted at one week intervals starting November 9, 2011. RegenOx® PetroCleanze™ was mixed with potable water to an approximate 4% solution prior to injecting into observation wells and/or piezometers inside the generator building.

A small amount of PetroCleanze™ and Part A™ were also injected into one observation well (OW-1 was chosen since it was upgradient) and four piezometers (P-19, P-20, P-25, and P-26). The Material Data Safety sheets for PetroCleanze™ and Part A™ are included in Attachment 1. The injection rate was approximately 10 gallons per minute: no resistance was noted on a pressure gauge installed on the injection hose. The pH was measured in the downgradient and cross gradient extraction wells, monitoring wells, and piezometers prior to or following injection to determine if there were any changes resulting from the injection of PetroCleanze™ and Part A™. The pH of RegenOx® is 11 in a 4% solution; the on-site groundwater has a pH between 6 and 6.5.

SPH/groundwater was pumped using a centrifugal trash pump at a rate of approximately 100 gallons per minute from the extraction wells during or following the injection events to draw the injected fluids toward the extraction wells. SPH/groundwater was pumped into a temporary, on-site, 18,000-gallon frac tank. Pumped SPH/groundwater was discharged into the sanitary sewer allowed by a Letter of Authorization from King County and the City of Bothell. SPH/groundwater was also pumped during the injection period to keep the groundwater level below the top of the liner, as stipulated in the Ecology injection approval.

SPH pumping was also conducted during the project from piezometers inside the generator building. SPH/groundwater was stored on-site in a 55 gallon Department of Transportation (DOT) approved drum The drum was not filled to capacity at the end of the Enhanced SPH Removal activities. The drum will be disposed at an off-site petroleum recycling facility once filled to capacity.

The following sections summarize the Enhanced SPH Recovery injection events, results, and conclusions for the Site.

ENHANCED SPH RECOVERY PILOT TEST INJECTION EVENTS

Approximately 1,200 pounds of PetroCleanze™ and 120 pounds of Part A™ were ordered following approval from Ecology.

Table 1 details the injection amounts, SPH pumping from specific wells, and SPH/groundwater pumping from the extraction wells during each injection event. Tables 2 through 7 outline the groundwater elevation vs the liner elevation, the groundwater depth and SPH thickness in the extraction wells, observation wells, and piezometers, the volume of SPH removed from the piezometers, the SPH/groundwater extracted, and the pH measurements collected during the enhanced SPH recovery.

First Injection

The first injection on November 9, 2011 consisted of:

- Measuring SPH/groundwater levels and SPH removal
- Injecting 360 gallons of PetroCleanze™ into OW-3
- Injecting 360 gallons of PetroCleanze™ into OW-2
- Injecting 80 gallons of PetroCleanze™ into OW-1

Part A™ was not injected and SPH/groundwater was not extracted during the injection period on the first round. Instead, the PetroCleanze™ was given time to release the sorbed diesel from soil particles around the wells.

SPH/groundwater measurements were collected on November 9 and 11, 2011. Approximately 0.02 gallons of SPH was removed from B-19 on November 11, 2011 (see Table 5). A pH of 7.1 was measured at EW-6 on November 11, 2011 compared to background pH levels of 6.3 to 6.9 (See Table 7).

SPH/groundwater levels were measured again on November 14, 2011. Approximately 0.08 and 0.06 gallons of SPH were removed from B-19 and B-20, respectively (see Table 5).

Extraction pumping was conducted six days after the initial injection on November 15, 2011. Approximately 3,850 gallons of SPH/groundwater was extracted (see Table 6).

Second Injection

The second injection on November 16, 2011 consisted of:

- Measuring SPH/groundwater levels and SPH removal
- Measuring pH at EW-6, EW-9, EW-10, and MW-8
- Injecting 360 gallons of PetroCleanze™ at OW-2
- Injecting 360 gallons of PetroCleanze™ at OW-3
- Injecting 160 gallons of PetroCleanze™ in OW-1
- Extraction pumping 3,925 gallons at EW-5 during the injection period

SPH/groundwater measurements were collected on November 16 and 21, 2011. Approximately 0.016 and 0.017 gallons of SPH were removed from B-20 and B-25, respectively, on November 16, 2011 (see Table 5). The pH readings at EW-6, EW-9, EW-10, and MW-8 were 7.1, 7.6, 7.4, and 7.0, respectively, compared to background pH levels of 6.3 to 6.9 (See Table 7).

Extraction pumping was conducted during the injection event; a total of 3,925 gallons of SPH/groundwater was extracted. Five days after the initial injection approximately 4,450 gallons of SPH/groundwater was extracted due to high water levels near the liner (see Table 6).

Third Injection

The third injection on November 23, 2011 included:

- Measuring SPH/groundwater levels and SPH removal
- Measuring pH at EW-6 and MW-8
- Injecting 280 gallons of PetroCleanze™ into OW-2
- Injecting 160 gallons of PetroCleanze™ into OW-3
- Injecting 120 gallons of PetroCleanze™ into B-19
- Injecting 80 gallons of PetroCleanze™ into B-20
- Injecting 40 gallons of PetroCleanze™ into B-25
- Injecting 40 gallons of PetroCleanze™ into B-26
- Injecting 80 gallons of PetroCleanze™ and Part A™ into OW-1
- Injecting 40 gallons of PetroCleanze™ and Part A™ into B-19
- Injecting 40 gallons of PetroCleanze™ and Part A™ into B-26
- Extraction pumping 8,620 gallons of SPH/groundwater from EW-6.

SPH/groundwater measurements were collected on November 23 and 28, 2011. Approximately 0.08, 0.05, and 0.05 gallons of SPH were removed from B-19, B-20, and B-25, respectively, on November 23, 2011 (see Table 5). The pH readings at EW-6 and MW-8 were 7.0 and 7.4, respectively, compared to background levels between 6.3 to 6.9 (See Table 7).

Extraction pumping was conducted during the injection event; a total of 8,620 gallons of SPH/groundwater was extracted. Two days after the initial injection approximately 9,225 gallons of SPH/groundwater was extracted due to high water levels near the liner. An additional 5,665 gallons of SPH/groundwater was extracted five days after the initial injection due to high water levels near the liner (see Table 6).

Fourth Injection

The fourth injection on November 30, 2011 consisted of:

- Measuring SPH/groundwater levels and SPH removal
- Measuring pH at EW-6, EW-9, EW-10, and MW-8

- Injecting 160 gallons of PetroCleanze™ into OW-2
- Injecting 160 gallons of PetroCleanze™ into OW-3
- Injecting 120 gallons of PetroCleanze™ into B-20
- Injecting 120 gallons of PetroCleanze™ into B-25
- Injecting 40 gallons of PetroCleanze™ into B-26
- Injecting 40 gallons of PetroCleanze™ into B-19
- Injecting 160 gallons of PetroCleanze™ and Part A™ into OW-1
- Injecting 80 gallons of PetroCleanze™ and Part A™ into B-26
- Injecting 80 gallons of PetroCleanze™ and Part A™ into B-19
- Extraction pumping 9,530 gallons of SPH/groundwater from EW-6

SPH/groundwater measurements were collected on November 30 and December 2, 2011. The pH readings at EW-6, EW-9, EW-10, and MW-8 were 7.8, 7.6, 7.4, and 7.1, respectively, compared to background pH levels of 6.3 to 6.9 (See Table 7).

Extraction pumping was conducted during the injection event; a total of 9,075 gallons of SPH/groundwater was extracted. Three days after the initial injection, approximately 6,150 gallons of SPH/groundwater was extracted due to high water levels near the liner (see Table 6).

RESULTS

Following the four injections of PetroCleanze™ and three injections of Part A™ into the three observation wells and four piezometers inside the generator building (OW-1 through OW-3 and B-19, B-20, B-25, and B-26), there was a noticeable increase of SPH in piezometers B-19 and B-20 (see Figure 3). This increase may be due to sorbed diesel releasing as a result of the PetroCleanze™. SPH was measured in OW-2 and OW-3 prior to injecting; thicknesses ranged from 0.01 to 0.66 feet. Recordable levels of SPH were not noted in the injection wells following the initial injection of PetroCleanze™ as expected.

The pH of groundwater in monitoring and extraction wells was monitored in adjacent observation, monitoring, and extraction wells. A small increase in the pH of several wells was noticed.

Approximately 0.49 gallons of measurable SPH (a total of 9.9 gallons of SPH/groundwater) was recovered from the piezometers inside the generator building (See Table 4). The total volume of SPH recovered during the injection period is unknown since oil was likely being emulsified by the pumps.

CONCLUSIONS

The following conclusions have been reached based on the Enhanced SPH Recovery pilot test activities:

- SPH/groundwater extraction pumping removed 50,950 gallons of total fluids from the extraction wells and the collected water was discharged under a King County and City of Bothell Letter of Authorization permit into the sanitary sewer system (King County Permit #813-01, City of Bothell (Permit # UTIL2010-00002).
- Approximately ½ gallon of measurable SPH was removed during the injection period. The total volume of SPH removed during the injection period is undetermined since oil was likely being emulsified by the pump.
- The PetroCleanze™ appeared to initially release sorbed diesel/SPH from the area under the generator building. However, the effectiveness of PetroCleanze™ is somewhat limited.
- Due to the restrictions in accessing the source area for the SPH, an automated groundwater pump and treat system is proposed to be a more efficient and cost-effective method to remediate the source or impacted area over the long term. Specific recommendations will be provided under separate cover.

If you have any questions or require additional information, please do not hesitate to contact myself at 425.402.3252 or via email at tim.oconnor@shawgrp.com, or Lori Evans at 972.773.8411 or via email at lori.evans@shawgrp.com.

Sincerely,

SHAW ENVIRONMENTAL, INC.

FOR:

Tim O'Connor, L.G., L.H.G.
Senior Project Geologist

State of Washington
Hydrogeologist
2063
Licensed Hydrogeologist
TIMOTHY CHARLES O'CONNOR

Lori M. Evans
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cc: Mark Smith, AT&T Services, Inc.
Heather Vic, Washington State Department of Ecology

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Table 1
Enhanced SPH Recovery Injection Details

Activity	Injection Events			
	First Injection Date November 9, 2011	Second Injection Date November 16, 2011	Third Injection Date November 23, 2011	Fourth Injection Date November 30, 2011
Injected 4% PetroCleanze™	OW-3 – 360-gal. OW-2 – 360-gal. OW-1 – 80-gal.	OW-2 – 360-gal. OW-3 – 360-gal.	OW-2 – 280-gal OW-3 – 160-gal. B-19 – 120-gal. B-20 – 80-gal B-25 – 40-gal. B-26 – 40-gal.	OW-2 – 160-gal. OW-3 – 160-gal. B-20 – 120-gal. B-25 – 120-gal. B-26 – 40-gal. B-19 – 40-gal.
Total	800 gal.	720 gal.	720 gal.	640 gal.
Injected 4% PetroCleanze™ and Part A™	None	OW-1 – 160-gal.	OW-1 – 80-gal. B-26 – 40-gal. B-19 – 40-gal.	OW-1 – 160-gal. B-26 – 80-gal. B-19 – 80-gal.
Total	None	160 gal.	160 gal.	320 gal.
SPH Pumping	B-19 – 0.021-gal. (11/11) B-19 – 0.075-gal. (11/14) B-20 – 0.055-gal. (11/14)	B-20 – 0.158-gal. (11/16) B-25 – 0.017 gal. (11/16)	B-19 – 0.079-gal. (11/23) B-20 – 0.053-gal. (11/23) B-25 – 0.053-gal. (11/23)	B-19 – 0.017-gal. (11/30) B-20 – 0.017-gal. (11/30) B-25 – 0.017-gal. (11/30)
Total	0.151 gal.	0.175 gal.	0.185 gal.	0.051 gal.
SPH/ Groundwater Pumping	EW-3 – 3,850-gal. (11/15)	EW-5 – 3,925-gal. (11/16) EW-6 – 4,450-gal. (11/21)	EW-6 – 8,620-gal. (11/23) EW-6 – 6,640-gal. (11/25) EW-3 – 2,585-gal. (11/25) EW-3 – 5,655-gal. (11/28)	EW-6 – 3,380-gal. (11/30) EW-3 – 3,560-gal. (11/30) EW-2 – 2,135-gal. (11/30) EW-6 – 6,150-gal. (12/2)
Total	3,850 gal.	8,375 gal.	23,500 gal.	15,225 gal.

Table 2
Groundwater Elevation vs. Liner Elevation (Extraction Wells)
2011 Enhanced SPH Removal
October 18 - December 2, 2011
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Well	Top of Casing Elevation	Liner Elevation	10/18/11		11/9/11		11/11/11		11/14/11		11/16/11		11/21/11		11/23/11		11/25/11	
			Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]
EW-1	34.19	30.86	NM	NM	3.36	-0.03	NM	NM	NM	NM	3.80	-0.47	NM	NM	NM	NM	NM	NM
EW-2	34.12	30.86	3.26	0.00	3.25	0.01	3.47	-0.21	3.21	0.05	3.70	-0.44	3.14	0.12	2.27	0.99	2.83	0.43
EW-3	34.25	31.27	3.39	-0.41	3.38	-0.40	NM	NM	3.34	-0.36	3.83	-0.85	3.27	-0.29	2.97	0.01	2.96	0.02
EW-4	34.07	31.25	3.20	-0.38	3.19	-0.37	3.40	-0.58	3.15	-0.33	3.64	-0.82	3.09	-0.27	2.86	-0.04	2.79	0.03
EW-5	34.17	31.60	3.29	-0.72	3.27	-0.70	NM	NM	3.23	-0.66	3.71	-1.14	3.17	-0.60	3.09	-0.52	2.88	-0.31
EW-6	34.95	32.30	4.07	-1.42	4.05	-1.40	4.26	-1.61	4.01	-1.36	4.48	-1.83	NM	NM	NM	NM	3.67	-1.02
EW-7	34.86	32.20	3.99	-1.33	3.96	-1.30	NM	NM	3.91	-1.25	4.35	-1.69	NM	NM	3.72	-1.06	NM	NM
EW-8	35.55	33.00	NM	NM	4.57	-2.02	5.25	-2.70	NM	NM	5.89	-3.34	NM	NM	NM	NM	NM	NM
EW-9	36.25	None	NM	None	5.20	None	NM	None	NM	None	5.25	None	NM	None	NM	None	NM	None
EW-10	NM	None	NM	None	2.77	None	2.70	None	2.72	None	2.70	None	NM	None	2.24	None	NM	None

Well	Top of Casing Elevation	Liner Elevation	11/28/11		11/30/11		12/2/11	
			Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]	Depth to Water/ SPH	Elevation Between Water/ SPH and Liner[a]
EW-1	34.19	30.86	2.96	0.37	4.30	-0.97	NM	NM
EW-2	34.12	30.86	2.86	0.40	3.07	0.19	3.18	0.08
EW-3	34.25	31.27	2.99	-0.01	2.89	0.09	3.32	-0.34
EW-4	34.07	31.25	2.82	0.00	2.99	-0.17	3.10	-0.28
EW-5	34.17	31.60	2.91	-0.34	3.77	-1.20	3.20	-0.63
EW-6	34.95	32.30	3.70	-1.05	3.83	-1.18	3.98	-1.33
EW-7	34.86	32.20	NM	NM	NM	NM	3.88	-1.22
EW-8	35.55	33.00	NM	NM	4.99	-2.44	4.47	-1.92
EW-9	36.25	None	NM	None	2.49	None	5.10	None
EW-10	NM	None	NM	None	NM	None	2.53	None

Notes:

All depths and elevations are shown in feet.

NM = measurement not available.

SPH = separate phase hydrocarbons.

a Negative values indicate water elevations are below top of liner elevation.

Table 3
Groundwater Depth/SPH Thickness (Extraction Wells)
2011 Enhanced SPH Removal
October 18 - December 8, 2011
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Well	10/18/11		11/9/11		11/11/11		11/14/11		11/16/11		11/21/11		11/23/11		11/25/11	
	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness
EW-1	NM	NM	3.36	ND	NM	NM	NM	NM	3.80	ND	NM	NM	NM	NM	NM	NM
EW-2	3.26	ND	3.25	ND	3.47	ND	3.21	ND	3.70	ND	3.14	ND	2.27	ND	2.83	ND
EW-3	3.39	0.02	3.38	0.01	NM	NM	3.34	ND	3.83	ND	3.27	ND	2.97	ND	2.96	0.01
EW-4	3.20	0.01	3.19	ND	3.40	ND	3.15	ND	3.64	ND	3.09	ND	2.86	ND	2.79	ND
EW-5	3.29	0.01	3.27	ND	NM	NM	3.23	ND	3.71	ND	3.17	ND	3.09	ND	2.88	ND
EW-6	4.07	0.01	4.05	ND	4.26	ND	4.01	ND	4.48	ND	NM	NM	NM	NM	3.67	ND
EW-7	3.99	ND	3.96	ND	NM	NM	3.91	ND	4.35	0.01	NM	NM	3.72	ND	NM	ND
EW-8	NM	NM	4.57	ND	5.25	ND	NM	NM	5.89	ND	NM	NM	NM	NM	NM	NM
EW-9	NM	NM	5.20	ND	NM	NM	NM	NM	5.25	ND	NM	NM	NM	NM	NM	NM
EW-10	NM	NM	2.77	ND	2.70	ND	2.72	ND	2.70	ND	NM	NM	2.24	ND	NM	NM

Well	11/28/11		11/30/11		12/2/11	
	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness	Depth to Water/ SPH	SPH Thick-ness
EW-1	2.96	ND	4.30	ND	NM	NM
EW-2	2.86	ND	3.07	ND	3.18	ND
EW-3	2.99	ND	2.89	ND	3.32	ND
EW-4	2.82	ND	2.99	ND	3.10	ND
EW-5	2.91	ND	3.77	ND	3.20	ND
EW-6	3.70	ND	3.83	ND	3.98	ND
EW-7	NM	NM	NM	NM	3.88	ND
EW-8	NM	NM	4.99	ND	4.47	ND
EW-9	NM	NM	2.49	ND	5.10	ND
EW-10	NM	NM	NM	NM	2.53	ND

Notes:

All depths and thicknesses are shown in feet.

NM = not measured.

ND = SPH was not detected in well.

SPH = separate phase hydrocarbons.

Table 4
Groundwater Depth/SPH Thickness (Observation Wells and Piezometers Inside Generator Building)
2011 Enhanced SPH Removal
October 18 - December 2, 2011
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Well	10/18/11		11/9/11		11/11/11		11/14/11		11/16/11		11/23/11		11/28/11		11/30/11		12/2/11	
	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness	Depth to Water/ SPH	SPH Thickness
OW-1	6.45	ND	6.29	ND	5.98	ND	6.13	ND	6.18	ND	NM	NM	NM	NM	5.40	ND	5.58	ND
OW-2	6.59	0.61	6.54	0.66	5.22	ND	5.35	ND	5.42	ND	5.41	ND	5.66	0.01	5.76	ND	5.40	ND
OW-3	5.91	0.01	5.91	0.19	5.52	ND	5.51	ND	4.57	ND	5.13	0.00	5.22	ND	5.13	ND	5.17	ND
B-19	6.84	0.72	6.97	1.02	6.61	1.65	6.67	1.16	6.65	1.53	5.93	1.73	5.80	0.01	5.91	0.03	6.03	0.00
B-20	7.04	1.15	6.77	1.59	6.56	2.00	6.69	1.41	6.86	1.28	6.29	0.69	5.96	0.76	5.63	0.01	6.15	0.13
B-21	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B-25	NM	NM	7.07	1.12	NM	NM	6.76	0.59	6.79	ND	5.85	ND	6.33	0.12	6.49	0.21	6.47	0.01
B-26	NM	NM	7.19	0.97	NM	NM	7.11	0.91	7.12	0.64	6.24	ND	6.17	ND	6.34	ND	5.91	ND
B-27	NM	NM	7.12	ND	NM	NM	7.18	ND	7.28	ND	6.35	ND	6.18	ND	6.41	ND	6.38	ND
B-28	NM	NM	6.82	ND	NM	NM	7.05	ND	7.12	ND	6.32	ND	5.72	ND	5.93	ND	5.93	ND

Notes:
All depths and thicknesses are shown in feet.
NM = not measured.
ND = SPH was not detected in well.
SPH = separate phase hydrocarbons.
[a] *B-21 is not measured due to the inability to get the water level probe down the piezometer casing.*

Table 5
Volume of SPH Removed From Piezometers
Inside the Generator Building
2011 Enhanced SPH Removal
October 18 - December 2, 2011
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Well	Date	Estimated SPH Pumped (gallons)	Total Amount of Water/SPH Removed (Gallons)
B-19	11/11/2011	0.02	0.78
	11/14/2011	0.08	0.84
	11/23/2011	0.08	1.00
	Sub-total	**0.18**	**2.62**
B-20	11/14/2011	0.06	0.64
	11/16/2011	0.16	1.90
	11/23/2011	0.05	0.75
	Sub-total	**0.27**	**3.29**
B-25	11/16/2011	0.02	3.00
	11/23/2011	0.05	4.00
	Sub-total	**0.07**	**7.00**
Total		**0.52**	**12.90**

Table 6
Groundwater/SPH Extraction
2011 Enhanced SPH Removal
(October 18 - December 2, 2011)
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Date	11/15/11	11/16/11	11/21/11	11/23/11	11/25/11	11/28/11	11/30/11	12/2/11
Gallons Removed	3,850	3,925	4,450	8,620	10,225	5,500	9,325	6,150
Cumulative Total	52,045							

Table 7
Extraction and Monitoring Well pH Measurements
2011 Enhanced SPH Removal
(November 19 - December 2, 2011)
AT&T Data Center
20307 North Creek Pkwy, Bothell, WA

Well	11/9/2011 pH	11/11/2011 pH	11/14/2011 pH	11/16/2011 pH	11/21/2011 pH	11/23/2011 pH	11/30/2011 pH	12/2/2011 pH
EW-6	NM	7.1	NM	7.1	NM	7	7.8	7.5
EW-9	NM	NM	NM	7.6	NM	NM	7.6	8.3
EW-10	NM	NM	NM	7.4	NM	NM	7.4	7.8
MW-8	NM	NM	NM	7	NM	7.4	7.1	7.3

Notes:

The pH of RegenOx® PetroCleanze™ at 4% is 11.

NM = Not measured

Figures



OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
BOTHELL	MPortacio	3/2011	TOC	3/11	KE	3/11	BT-141533-A1

XREF Files:
IMAGE Files: Bothell_site.jpg
File: N:\Project\draft\AT&T\141533\Drawings\Bio-Augmentation Report\BT-141533-A1.dwg Layout: FIGURE 1 User: maria.portacio Mar 01, 2011 - 1:54pm

BOTHELL

WASHINGTON

APPROX. SCALE

0 1000 2000 FEET

N

SOURCE: Aerial Image Acquired from Google Map 2011.

12100 NE 195th Street, Suite 150
Bothell, Washington 98011
Phone (425) 485-5000
Fax. (425) 486-9766

Shaw® Shaw Environmental, Inc.

FIGURE 1

SITE LOCATION MAP

AT&T DATA CENTER
20307 NORTH CREEK PARKWAY
BOTHELL, WASHINGTON

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
BOTHELL	MPortacio	TOC	KE	BT-141533-B1
	3/2011	3/11	3/11	

AT&T BUILDING #9

MW-5
MW-8
EXISTING UST
OW-1
B28
B19
B27
OW-2
OW-3
B20
B26
B21
B25
EW-10
GENERATOR BUILDING
GTE
MW-6
EW-9
MW-1
EW-8
EW-7
EW-6
EW-5
EW-4
EW-3
EW-2
EW-1
MW-7
MW-4
MW-3
MW-2
N87°43'07"W
662.06'
DELTA=25°14'56"
L=130.00
UGP

N

SCALE
0 30 60 FEET

LEGEND:

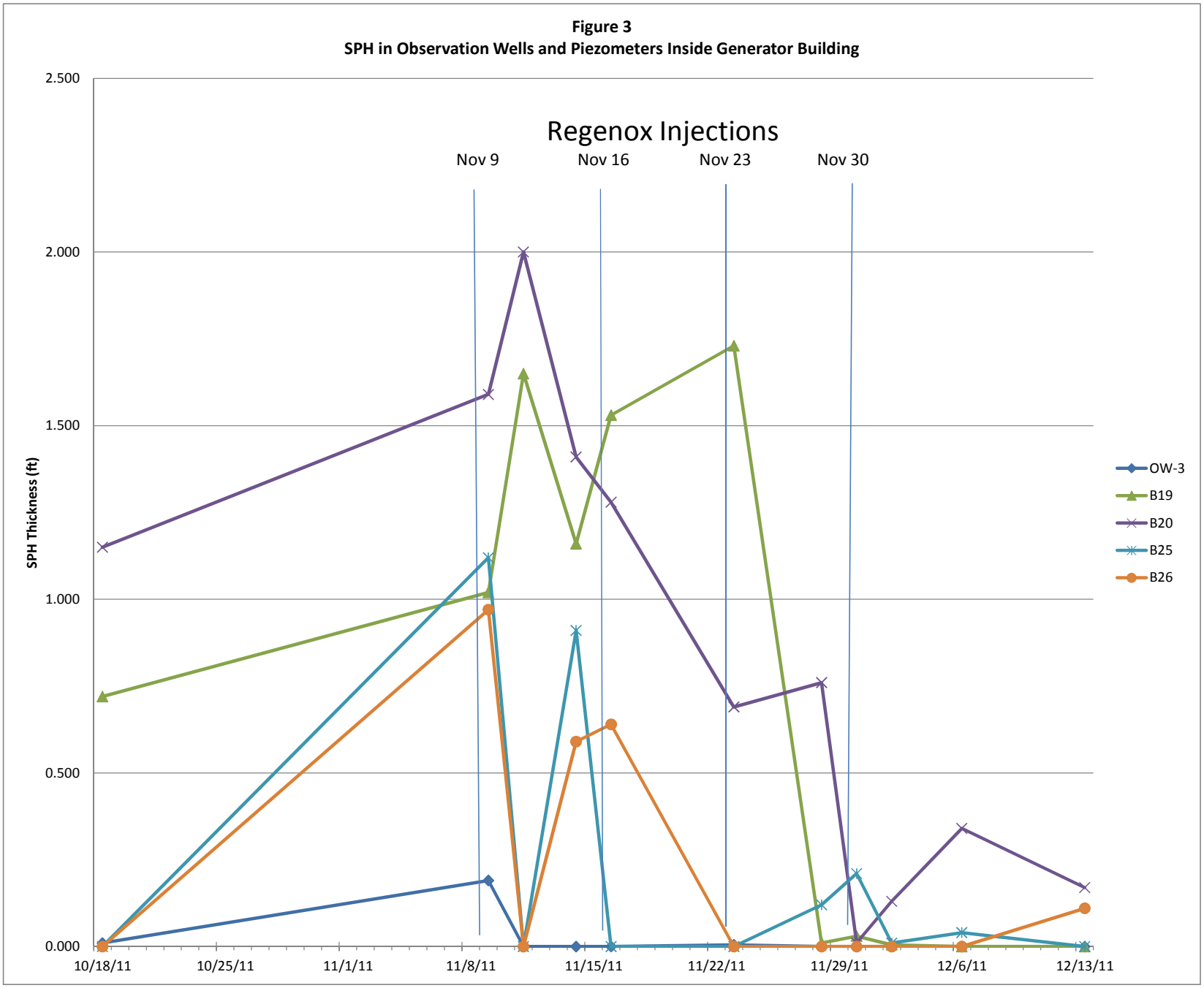
- MONITORING WELL LOCATION
- EXTRACTION WELL LOCATION
- OBSERVATION WELL LOCATION
- PSC PIEZOMETER LOCATION
- PROPERTY LINE
- IMPERMEABLE LINER

12100 NE 195th Street, Suite 150
Bothell, Washington 98011
Phone (425) 485-5000
Fax. (425) 486-9766
Shaw® Shaw Environmental, Inc.

FIGURE 2
GROUNDWATER MONITORING, EXTRACTION AND OBSERVATION WELL LOCATION MAP
AT&T DATA CENTER
20307 NORTH CREEK PARKWAY
BOTHELL, WASHINGTON

XREF Files: PGL-WAstamp x9588gen1 9588_32-srv x9588elec PACE36x24_SITE IMAGE Files: A$C22A16B95.dib
KEN_ENGSEAL_FINAL.tif norrow1.gif at&t logo.tif
File: N:\Project\Draft\141533\Drawings\Bio-Augmentation Report\BT-141533-B1.dwg Layout: PUSH PROBE BORING User: maria.portacio Mar 01, 2011 - 1:57pm

Figure 3
SPH in Observation Wells and Piezometers Inside Generator Building



Attachment 1

RegenOx® PetroCleanze™ and Part A™ Material Data Safety Sheets

RegenOx® – PetroCleanze™

Material Safety Data Sheet (MSDS)

Last Revised: April 29, 2011

Section 1 – Supplier Information and Material Identification

Supplier:

REGENESIS
1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesis.com

Chemical Description:	A mixture of sodium silicate solution, sodium hydroxide, sodium tripoly-phosphate and ferrous sulfate.
Chemical Family:	Inorganic Chemicals
Trade Name:	RegenOx® PetroCleanze™ (Activator Complex)
Product Use:	Used for environmental remediation of contaminated soils and groundwater.

Section 2 – Chemical Information/Other Designations

CAS No.	Chemical
1344-09-8	Silicic Acid, Sodium Salt, Sodium Silicate
7720-78-7	Ferrous Sulfate
1310-73-2	Sodium Hydroxide
7758-29-4	Sodium Tripolyphosphate

Section 3 – Physical Data

Form:	Semi Viscous Liquid
Color:	Dark Green to Black
Odor:	Odorless
Melting Point:	NA
Boiling Point:	NA
Flammability/Flash Point:	NA
Vapor Pressure:	NA

Section 3 – Physical Data (cont)

Density	1.1 – 1.3 g/cm^3
Solubility:	Miscible
pH (3% solution):	13

Section 4 – Hazards Identification

Corrosive:	May cause burns. Harmful by inhalation, in contact with skin and if swallowed. Casues skin and eye irritation. Causes irritation to mouth, esophagus and stomach if swallowed. In case of accident or if you feel unwell, seek medial advice. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. If swallowed, do not induce vomiting, give plenty of water. Never give anything by mouth to an unconscious person. Wear suitable protective clothing, gloves, eye/face protection. Spilled material is very slippery.

Section 5 – Reactivity Data

Stability:	Stable under normal conditions
Conditions to Avoid:	None.
Incompatibility:	Avoid hydrogen fluoride, fluorine, oxygen difluoride, chlorine trifluoride, strong acids, strong bases, oxidizers, aluminum, fiberglass, copper, brass, zinc, and galvanized containers.

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep in a tightly closed container (steel or plastic) and store in a cool, well ventilated area away from all incompatible materials (acids, reactive metals, and ammonium salts). Store in a dry location away from heat above 60 degrees C and colder than 10 degrees C. Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers.
Handling:	Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Use with adequate ventilation. Do not use product if it is brownish-yellow in color.

Personal Protective Equipment (PPE)

Engineering Controls:	General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Safety shower and eyewash station should be within direct access.
Respiratory Protection:	Use NIOSH-approved dust and mist respirator where spray mist exists. Respirators should be used in accordance with 29 CFR 1910.134.
Hand Protection:	Wear chemical resistant gloves.
Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
Skin Protection:	Try to avoid skin contact with this product. Gloves and protective clothing should be worn during use.
Other:	
Protection Against Fire & Explosion:	Product is non-explosive and non-combustible.

Section 7 – Measures in Case of Accidents and Fire

Spill or Leakage:	Keep unnecessary personnel away; isolate hazard area and do not allow entrance into the affected area. Do not touch or walk through spilled material. Stop leak if possible without risking injury. Prevent runoof from entering into storm sewers and ditches that lead to natural waterways. Isolate the material if at all possible. Sand or earth may be used to contain the spill. If containment is not possible, nuetralize the contaminated area and flush with large quantites of water.
Extinguishing Media:	Material is compatible with all extinguishing media. The following protective equipment for fire fighters is recommended when this material is present in the area of a fire: chemical googles, body-covering protective clothing, chemical resistant gloves and rubber boots.

First Aid:

Eye Contact:	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a medical specialist.
Inhalation:	Remove affected person to fresh air. Give artifical respiration if individual is not Breathing. If breathing is difficult, give oxygen. Seek medical attention.
Ingestion:	If the individual is conscious and not convulsing, give two-four cups of water to dilute the chemical and seek medical attention immediately. DO NOT induce vomiting. Seek medical attention.
Skin Contact:	Wash affected areas with soap and a large amount of water. Remove contaminated clothing and shoes.

Section 8 – Accidental Release Measures

Personal Protection:	Wear chemical goggles, body-covering protective clothing, chemical resistant gloves and rubber boats.
Environmental Hazards:	Material sinks when mixed with water. High pH of this material is harmful to aquatic life. Only water will evaporate from a spill of this material.
Small Spill Cleanup:	Mop and neutralize liquid and discharge to sewer in accordance with federal, state and local regulations.
Large Spill Cleanup:	Keep unnecessary personnel away; isolate hazard area and do not allow entrance into the affected area. Do not touch or walk through spilled material. Stop leak if possible without risking injury. Prevent run off from entering into storm drains and ditches that lead to natural waterways. Isolate the material if at all possible. Sand or earth may be used to contain the spill. If containment is not possible, nuetralize the contaminated area and

flush with large quantites of water.

Section 9 – Information on Toxicology

Toxicity Data

Sodium Silicate: When tested for primary eye irritation potential according to OECD Guidelines, Section 405, a similar sodium silicate solution produced corneal, iridal and conjunctival irritation. Some eye irritation was still present 14 days after treatment, although the average primary irritation score has declined from 29.7 after 1 day to 4.0 after 14 days. When tested for primary skin irritation potential, a similar sodium silicate solution produced irritation with a primary irritation index of 3 to abraded skin and 0 to intact skin. Human experience confirms that irritation occurs when sodium silicates get on clothes at the collar, cuffs, or other areas where abrasion may exist.

The acute oral toxicity of this product has not been tested. In a study of rats fed sodium silicate in drinking water for three months, at 200, 600 and 1800 ppm, changes were reported in the blood chemistry of some animals, but no speifec changes to the organs of the animals due to sodium silicate administraton were observed in any of the dosage groups. Another study reported adverse effects to the kidneys of dogs fed sodium silicate in their diet at 2.4g/kg/day for 4 weeks, whereas rats fed the same dosage did not develop any treatment-related effects. Decreased numbers of births and survival to weaning was reported for rats fed sodium silicate in their drinking water at 600 and 1200 ppm.

Ferrous Sulfate: LD50 Oral (rat): 319 mg/kg; not a suspected carcinogen.

Sodium Hydroxide: Irritation data: skin, rabbit: 500 mg/24H severe; eye rabbit: 50 ug/24H severe. Investigated as a mutagen. Not a known carcinogen. No environmental toxicity found or determined.

Sodium Tripolyphosphate: Harmful if swallowed, inhaled or absorbed through skin. Causes severe irritation. Material is irritating to mucous membranes and upper respiratory tract. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. To the best of our knowledge the chemical, physical and toxicological properties have not

been thoroughly investigated.

Section 10 – Information on Ecology

Ecotoxicological Information:	Based on 100% solid sodium silicate, a 96 hour median tolerance for fish of 2,320 mg/l; a 96 hour median tolerance for water fleas of 247 mg/L; a 96 hour median tolerance for snail eggs of 632 mg/L; and a 96 hour median tolerance for Amphipoda of 160 mg/L.

Section 11 – Regulations

TSCA Inventory Listed:	Yes
CERCLA Hazardous Substance (40 CFR Part 302)	
Listed Substance:	No
Unlisted substance:	Yes
SARA Title III, Sections 302/303 (40 CFR Part 355) Emergency Planning Notification	
Extremely Hazardous Substance:	No
SARA Title III, Sections 311/312 (40 CFR Part 370) Community Right-to-Know	
Acute: Yes	**Chronic: Yes**
SARA Title III, Sections 313 (40 CFR Part 372) Toxic Chemical Release Reporting	
Community Right-to-Know	
Extremely Hazardous Substance:	**No**

Section 12 – Disposal Considerations

Waste Disposal Method

Waste Treatment:	Neutralize and landfill solids in an approved waste facility operated by An authorized contactor in compliance with local regulations.
Package Treatment:	The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

Section 13 – Shipping/Transport Information

USDOT:	Hazard Class 8 Corrosive Substance
Proper Shipping Name:	Corrosive liquid, basic, inorganic, n.o.s.
UN/NA:	UN3266
Packing Group:	PGIII

Section 14 – Other Information

HMIS Rating:	Health 3, Flammability 0, Reactivity 1, Contact 1.
Label Hazard Warning:	Danger! Corrosive. May be harmful if swallowed. Harmful in inhaled. Causes burns to any area of contact. Reacts with water, acids and other materials.

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

RegenOx® – Part A (Oxidizer Complex)

Material Safety Data Sheet (MSDS)

Last Revised: June 24, 2010

Section 1 – Supplier Information and Material Identification

Supplier:



1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesis.com

Chemical Description:	A mixture of sodium percarbonate [$2Na_2CO_3 \cdot 3H_2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel.
Chemical Family:	Inorganic Chemicals
Trade Name:	RegenOx® – Part A (Oxidizer Complex)
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Chemical Information/Other Designations

CAS No.	Chemical	Percentage
15630-89-4	Sodium Percarbonate	60 -100 %
5968-11-6	Sodium Carbonate Monohydrate	10 – 30 %
7699-11-6	Silicic Acid	< 1 %
63231-67-4	Silica Gel	< 1 %

Section 3 – Physical Data

Form:	Powder
Color:	White
Odor:	Odorless
Melting Point:	NA
Boiling Point:	NA

Section 3 – Physical Data (cont)

Flammability/Flash Point:	NA
Vapor Pressure:	NA
Bulk Density:	0.9 – 1.2 g/cm^3
Solubility:	Min 14.5g/100g water @ 20 ºC
Viscosity:	NA
pH (3% solution):	≈ 10.5
Decomposition Temperature:	Self-accelerating decomposition with oxygen release starts at 50 ºC.

Section 4 – Reactivity Data

Stability:	Stable under normal conditions
Conditions to Avoid/Incompatibility:	Acids, bases, salts of heavy metals, reducing agents, and flammable substances
Hazardous Decomposition Products:	Oxygen. Contamination with many substances will cause decomposition. The rate of decomposition increases with increasing temperature and may be very vigorous with rapid generation of oxygen and steam.

Section 5 – Regulations

TSCA Inventory Listed:	Yes
CERCLA Hazardous Substance (40 CFR Part 302)	
Listed Substance:	*No*
Unlisted Substance:	*Yes*
SARA, Title III, Sections 313 (40 CFR Part 372) – Toxic Chemical Release Reporting: Community Right-To-Know	
Extremely Hazardous Substance:	No
WHMIS Classification:	C, D2B
Canadian Domestic Substance List:	Appears

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Oxidizer. Store in a cool, well ventilated area away from all sources of ignition and out of the direct sunlight. Store in a dry location away from heat and in temperatures less than 40 °C.
	Keep away from incompatible materials and keep lids tightly closed. Do not store in improperly labeled containers.
	Protect from moisture. Do not store near combustible materials. Keep containers well sealed.
	Store separately from reducing materials. Avoid contamination which may lead to decomposition.
Handling:	Avoid contact with eyes, skin and clothing. Use with adequate ventilation.
	Do not swallow. Avoid breathing vapors, mists or dust. Do not eat, drink or smoke in the work area.
	Label containers and keep them tightly closed when not in use.
	Wash hands thoroughly after handling.

Personal Protective Equipment (PPE)

Engineering Controls:	General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mists. Maintain adequate ventilation at all times. Do not use in confined areas. Keep levels below recommended exposure limits. To determine actual exposure limits, monitoring should be performed on a routine basis.
Respiratory Protection:	For many conditions, no respiratory protection is necessary; however, in dusty or unknown conditions or when exposures exceed limit values a NIOSH approved respirator should be used.
Hand Protection:	Wear chemical resistant gloves (neoprene, rubber, or PVC).

Section 6 – Protective Measures, Storage and Handling (cont)

Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves (neoprene, PVC or rubber) and protective clothing should be worn during use.
Other:	Eye wash station.
Protection Against Fire & Explosion:	Product is non-explosive. In case of fire, evacuate all non-essential personnel, wear protective clothing and a self-contained breathing apparatus, stay upwind of fire, and use water to spray cool fire-exposed containers.

Section 7 – Hazards Identification

Potential Health Effects

Inhalation:	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath, and irritations to mucous membranes, nose and throat.
Eye Contact:	Causes irritation, redness and pain.
Skin Contact:	Causes slight irritation.
Ingestion:	May be harmful if swallowed (vomiting and diarrhea).

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage:	Eliminate all ignition sources. Evacuate unprotected personnel and never exceed any occupational exposure limit. Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.
Extinguishing Media:	Water

First Aid

Eye Contact:	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.
Inhalation:	Remove affected person to fresh air. Seek medical attention if the effects persist.
Ingestion:	If the individual is conscious and not convulsing, give two-four cups of water to dilute the chemical and seek medical attention immediately. **Do Not** induce vomiting.

Section 8 – Measures in Case of Accidents and Fire (cont)

Skin Contact:	Wash affected areas with soap and a mild detergent and large amounts of water.

Section 9 – Accidental Release Measures

Precautions:

Cleanup Methods:	Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.

Section 10 – Information on Toxicology

Toxicity Data

LD50 Oral (rat):	2,400 mg/kg
LD50 Dermal (rabbit):	Min 2,000 mg/kg
LD50 Inhalation (rat):	Min 4,580 mg/kg

Section 11 – Information on Ecology

Ecology Data

Ecotoxicological Information:	NA

Section 12 – Disposal Considerations

Waste Disposal Method

Waste Treatment:	Dispose of in an approved waste facility operated by an authorized contactor in compliance with local regulations.
Package (Pail) Treatment:	The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name:	Oxidizing Solid, N.O.S. [A mixture of sodium percarbonate [$2Na_2CO_3 \cdot 3H2O_2$], sodium carbonate [Na_2CO_3], sodium silicate and silica gel.]
UN Number:	1479
Hazard Class:	5.1
Labels:	5.1 (Oxidizer)
Packaging Group:	III

Section 14 – Other Information

HMIS® Rating	Health – 1 (slight)	Reactivity – 1 (slight)
	Flammability – 0 (none)	Lab PPE – goggles, gloves, and lab coat

HMIS® is a registered trademark of the National Painting and Coating Association.

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

Attachment 2

Ecology UIC Approval

-----Original Message-----
From: Shaleen-Hansen, Mary (ECY) [mailto:maha461@ECY.WA.GOV]
Sent: Thursday, November 03, 2011 1:38 PM
To: Generous, Christopher
Subject: FW: AT&T Center

Chris,

The current remediation efforts at the AT&T Center, UIC site 31089, include injecting RegenOx B into 3 UIC wells to release separate phase hydrocarbons from soil particles.

The site has an impermeable liner located down gradient of the injection zone and up gradient of the property boundary. This barrier will help maintain hydraulic control of the injected products and reaction products.

Observation wells and extraction wells will be monitored for the presence of separate phase hydrocarbons and remediation products in the ground water.

From the information I have received, the UIC well injections are rule authorized as long as hydraulic control is maintained.

Mary Shaleen Hansen
Dept of Ecology
Water Quality Program
PO Box 47600
Olympia, WA 98504
(360)407- 6143
maha461@ecy.wa.gov