CytoCulture
ENVIRONMENTAL
BIOTECHNOLOGY
A DIVISION OF CYTOCULTURE INTERNATIONAL INC.

89 NOV 27 AM 11:47

September 1989

Mr. William Meckel
Source Control Division
EAST BAY MUNICIPAL UTILITY DISTRICT
Mail Stop 59 P.O. Box 24055
Oakland, CA 94623

RE: Wastewater Discharge Permit (Groundwater Treatment)
EBMUD Account No. 001-00002
Sixth monthly report of treatment and discharge operations for **AUGUST 1989**

CytoCulture/Sybron Chemicals are herein reporting on the results for the **sixth** month of continuous biological treatment of diesel-contaminated groundwater and discharge of the treated water into an EBMUD interceptor at the former P.I.E. Nationwide truck terminal in Emeryville. Laboratory analytical results are enclosed along with our Daily Facility Log Sheets.

SUMMARY OF EVENTS AND OPERATIONS IN **AUGUST**

Operating Conditions at Beginning of Month

At the end of July, both bioreactor systems were in continuous operation processing diesel-contaminated groundwater at a rate of 2.5 to 3 gpm (3,400 to 4,000 gpd). Free product was collected routinely after the 9 day system interruption caused by theft damage (compressor motor). From the system start up on March 2 through July 31, approximately 291,000 gallons of contaminated groundwater had been treated by the combined north and south bioreactor systems.

All treated groundwater **effluent** discharges registered as non-detectable for benzene, toluene, xylene and ethyl benzene. Except for some low levels of TPH diesel detected during the first few days of the month (unusually high levels of free product were being recovered), the system effluent a healthy bacterial floc settled out in about one hour to leave a clear, transparent and odorless supernatant. Samples of this treated water are available for inspection.

Groundwater Treatment in August

For the first three weeks of August, the north and south extraction trenches were pumping contaminated groundwater consistently through both bioreactor systems at net flow rate of nearly 3 gpm. The oil skimmer operating in the east well of the

124 WASHINGTON AVENUE POINT RICHMOND CA 94801
415/233-6660 FAX 415/233-3777

south extraction trench recovered free product intermittently (lower rate than in the previous two months). Approximately 40 gallons of "aged diesel oil" were recovered and stored in tight lid drums on site.

During long periods of normal operation, the treated effluent is monitored weekly and the groundwater influent is monitored biweekly. An effluent sample (E-72) taken for routine analysis confirmed a week later that the system was discharging treated groundwater with non-detectable levels of BTXE and total petroleum hydrocarbons (TPH).

The corresponding INFLUENT sample (I-73) on August 8 was reported to contain 570 ppm TPH diesel and 51 ppm TPH as gasoline. This is the most gasoline ever detected in groundwater during this treatment operation. The BTXE readings were low, however, with 1 ppb benzene, 11 ppb xylene and 1 ppb ethyl benzene. A week later, the effluent (E-73) was maintaining non-detectable levels of BTXE and TPH.

Routine ammonium and phosphate readings indicated that the nutrient levels were normal. Visual inspection of the cultures confirmed the presence of a good floc, but some free product was discovered in the bioreactors.

As the dry summer season progressed, groundwater levels in both trenches dropped, leading to intermittent pumping, particularly noticeable in the north trench (automatic sensors turn off the well pumps when the water table drops beyond a set point). By August 22, the flow rate from the north trench began to wane and the overall system effluent discharge rate dropped to 2 gpm. Later that week the flow rate was reduced to 1-2 gpm, with nearly all the flow coming only from the south trench. Influent groundwater was diverted to the north basin to keep both bioreactor cultures active when little or no water was being pumped from the north trench.

On August 23, the south trench INFLUENT (I-74) was reported to have 184 ppm TPH as diesel (no longer any gasoline, although the xylene level was shown to be 25 ppb). The corresponding effluent sample (E-75) was all non-detectable levels of BTXE and TPH. By the end of the month, the influent flow rate had dropped to an average of 1.5 gpm. On August 30, INFLUENT (I-76) levels of TPH as diesel was found to be 340 ppm, with no detectable levels of BTXE. The corresponding effluent discharge (E-77) had non-detectable levels of BTXE and TPH.

Aside from the decreasing flow rate caused by the falling water table in the dry season, the system was operating normally without interruption for the entire month.

SUMMARY OF GROUNDWATER TREATMENT RATES

Dates	Average Flow	Net Volume
August 1-31	2.8 gpm (4,000 gpd)	124,000 gal
Estimated volume of treated water in March-July:		297,000 gal
Total groundwater treated to date:		421,000 gal

LABORATORY ANALYSIS OF GROUNDWATER TREATMENT SAMPLES

Tests run by Curtis & Tompkins, Ltd. on samples collected by CytoCulture field technicians:

1) EPA 602 - Volatile Aromatic Hydrocarbons in Water
2) EPA 8015 (modified) - Total Extractable Petroleum Hydrocarbons in Aqueous Solutions (TPH/TEH)

ND = Not Detectable; Detection limits for BTXE, ND = 1 ug/L; for TPH, ND = 0.5 mg/L

			ug/L (ppb)			Diesel mg/L(ppm)
No.	Date	Description / Comment	Benz.	Tol.	Xyl.	TPH/TEH
E-72	8/8	Combined N/S Effluent 3 gpm	ND	ND	ND	ND
I-73	8/8	South trench **INFLUENT**	1	ND	11	570 diesel, 51 gasoline
E-73	8/15	Combined N/S Effluent 3 gpm	ND	ND	ND	ND
I-74	8/23	South trench **INFLUENT** 2-3 gpm	ND	ND	25	184
E-75	8/23	Combined N/S Effluent	ND	ND	ND	ND
I-76	8/30	South trench **INFLUENT** 1.5 gpm	ND	ND	ND	340
E-77	8/30	Combined N/S Effluent 1.5 gpm	ND	ND	ND	ND

Effluent treated water discharged into the EBMUD interceptor at the end of August was at non-detectable levels of BTXE and total extractable petroleum hydrocarbons. Upon standing 20 minutes to allow the bacterial floc to settle, this treated water appears clear and odorless. Independent monthly sampling and testing for priority pollutants by EBMUD confirm these results.

GENERAL OPERATION NOTES

Aeration and mixing are continuous, providing saturated oxygen levels in the water and little accumulation of sediment on the bottom of the tanks. The aeration blower and air compressor for powering the pneumatic well pumps in the extraction trenches performed very well in the field. After proper adjustment, the well pumps themselves now easily deliver 2 gpm apiece (there are two wells per trench), although the tidally influenced north well works intermittently.

Daily observations of the turbidity, color and foam accumulation confirmed that the bioreactors were maintaining healthy bacterial cultures. Continual diammonium phosphate addition is supposed to keep ammonium nitrogen levels at 10 ppm or greater, and ortho phosphate levels at 5 ppm or greater, to ensure adequate nutrients for full degradation of the diesel COD. When the bioreactors were overwhelmed with free-product, the nutrient addition rate is increased to support the greater biomass.

All discharges of treated water leaving either bioreactor system are directed first to the 2,000 gallon aerated holding tank. This tank continues to serve as a final "polishing" step in the biological treatment process by extending the actual retention rate of contaminated water within the system.

Soil infiltration with treated water and bacterial cultures will utilize the effluent from the 2,000 gallon aerated holding tank which is now being discharged into the EBMUD interceptor.

UPDATE ON REINFILTRATION PLANS

CytoCulture plans to construct a series of infiltration galleries under the parking lot pavement along both sides of building D (upfield of both the north and south extraction trenches in an attempt to achieve some "hydraulic control" of infiltrated water). Please refer to CytoCulture's Phase II Report and Operational Plan for details on the proposed infiltration program for seeding contaminated soil with bacteria.

No progress has been made with RWQCB or DHS with respect to the reinfiltration program. Our last conversations with DHS suggested they would be interested in monitoring our reinfiltration system, but cautioned against beginning any treatment without direct input from RWQCB.

CytoCulture Bioremediation Project
for P.I.E. Nationwide former Truck Terminal Site
Emeryville, CA

Laboratory Analytical Results for August 1989
including BTXE and TPH/TEH Data
provided by Curtis & Tompkins, Ltd.

Each sample data set is preceded by the
corresponding Chain of Custody sheet

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers _____

Job Description PIF

Job Number C.YTO

Client Contact _____ Recorder _____

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
S									S			E-72	90	08	08	1030	AT 3 spls
S									S			I-73	90	08	08	1030	AT 3 spls

ANALYSIS REQUESTED														
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method- BTXE	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's					
						S	S							
						S	S							

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) 8/9

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17969
CLIENT: CYTO CULTURE
PROJECT NAME: PIE

DATE RECEIVED: 08/08/89
DATE ANALYZED: 08/11/89
DATE REPORTED: 08/14/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSINE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
17969-1a	E-72	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
17969-2a	I-73	51*	ND(0.5)	570**	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

*Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C6-C9 boiling range.

**Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C12-C22 boiling range.

QA/QC SUMMARY

RPD, %	5.8
Spike: % Recovery	111

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17969
CLIENT: CYTO CULTURE
JOB NAME: PIE

DATE RECEIVED: 08/08/89
DATE ANALYZED: 08/08/89
DATE REPORTED: 08/14/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
17969-1b	E-72	ND(1)	ND(1)	ND(1)	ND(1)
17969-2b	I-73	1	ND(1)	11	1

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	5
%RECOVERY	95

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers

Job Description PIE

Job Number CYTO

Client Contact

Recorder

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
✓									✓			E-23	89	08	15	1550	at 3pm

ANALYSIS REQUESTED														
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method-	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's					

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) 8/17

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18061
CLIENT: CYTO CULTURE
JOB NAME: PIE

DATE RECEIVED: 08/17/89
DATE ANALYZED: 08/18/89
DATE REPORTED: 08/22/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
18061-1B	E-7	ND(1)	ND(1)	ND(1)	ND(1)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	5
%RECOVERY	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18061
CLIENT: CYTO CULTURE
PROJECT NAME: PIE

DATE RECEIVED: 08/17/89
DATE ANALYZED: 08/21/89
DATE REPORTED: 08/22/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18061-1A	E-7 8/15	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	2
Spike: % Recovery	100

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, CA 94710
Phone: 415-486-0900
FAX: 415-486-0532

Samplers: Rob Greenwood

Job Description: PLE Emeryville

Job Number: Cyto

Client Contact: Ruonwood

Recorder: RG

Matrix: Water	Soil	Waste	Oil	#Containers	Method Preserved: H_2SO_4	HNO3	Ice	None	Other	Sample Number	Sampling Date: Yr	Mo	Dy	Time	SAMPLE NOTES
X								X		I - 74	89	08	23		Influent - South
X								X		E - 75	89	08	23		Effluent comb @ 2-3gpm

ANALYSIS REQUESTED	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	CAM 17 Metals	EPA PP Metals (#)	TPH Method- TEH	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pest's&PCB's
							X	X		
							X	X		

Laboratory Notes :

1 wk normal turn-around

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Robert Gould 8/23/89 11:57	
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18096
CLIENT: CYTO CULTURE INTERNATIONAL
LOCATION: PIE EMERYVILLE

DATE RECEIVED: 08/23/89
DATE ANALYZED: 08/29/89
DATE REPORTED: 08/29/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18096-1	I-74 8/23	ND(0.5)	ND(0.5)	184*	ND(0.5)
18096-2	E-75 8/23	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

* Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on largest peaks within C13-C19 boiling range.

QA/QC SUMMARY

RPD, %	12
Spike: % Recovery	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18096-1
CLIENT: CYTO-CULTURE INTERNATIONAL
PROJECT: PIE EMERYVILLE
SAMPLE #: I-74

DATE RECEIVED: 08/23/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/29/89

EPA 602: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
Benzene	ND	1
Toluene	ND	1
Ethyl Benzene	ND	1
Total Xylenes	25	1
Chlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = None Detected

QA/QC SUMMARY

SPIKE RECOVERY %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18096-2
CLIENT: CYTO-CULTURE INTERNATIONAL
PROJECT: PIE EMERYVILLE
SAMPLE #: E-75

DATE RECEIVED: 08/23/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/29/89

EPA 602: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
Benzene	ND	1
Toluene	ND	1
Ethyl Benzene	ND	1
Total Xylenes	ND	1
Chlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = None Detected

QA/QC SUMMARY

SPIKE RECOVERY %	89

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Chain of Custody Form

Samplers: RvW

Job Description: PIE - Energetic

Job Number: cytoCulture

Client Contact: Ryan Wedell

Recorder: RvW

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
	Water	Soil	Waste	Oil			H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
-1	X									X		I - 76	89	08	30	1200	Influent @ 1.5gpm
-2	X									X		E - 77	89	08	30	1200	Effluent

ANALYSIS REQUESTED																
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method- TSH	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's							
						X	X									
						X	X									

Laboratory Notes : 1 wk turnaround

Chain of Custody Record	
Relinquished by: (signature) Date/Hr: RVanWedell	Received by (signature) 8/30/89 Belinda Peters 14:35
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18150
CLIENT: CYTOCULTURE
PROJECT NAME: PIE EMERYVILLE

DATE RECEIVED: 08/30/89
DATE ANALYZED: 09/01/89
DATE REPORTED: 09/07/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18150-1a	I-76	ND(10)	ND(10)	340*	ND(10)
18150-1b	E-77	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

* = Hydrocarbon Fingerprint pattern does not match Hydrocarbon samples. Quantitation based on total area within C12 to C22 boiling range.

QA/QC SUMMARY

RPD, %	3
Spike: % Recovery	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18150
CLIENT: CYTOCULTURE
PROJECT NAME: PIE EMERYVILLE

DATE RECEIVED: 08/30/89
DATE ANALYZED: 08/31/89
DATE REPORTED: 09/07/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
18150-1b	I-76	ND(1)	ND(1)	ND(1)	ND(1)
18150-2b	E-77	ND(1)	ND(1)	ND(1)	ND(1)

QA/QC SUMMARY

%RPD	3
%RECOVERY	91

Daily Facility Log Sheets for August 1989

CytoCulture - PIE Bioremediation Project, Emeryville

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJ

DATE: 7 Aug TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1 Pressure 81

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0+1½ Pressure 80

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2470 Temperature 150 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 15 27 % South: 15 / 70 33 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:
Cleaned NE Aerator Heads
Skimmed oil South
Tested Shut Downs N/S

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: AW

DATE: 4 Aug TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1 Pressure 81

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill B Discharge 0+1½ Pressure 81

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2518 Temperature 155 Oil W

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 15 29 % South: 15 / 20 29 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skimmed Oil South
Blow Aictor Heads

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: AR

DATE: 6 Aug TIME: 1300 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill A+/ Discharge 0+/ Pressure 8/

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 6 Discharge 0+1/2 Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2567 Temperature 150 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 15 21 % South: 15 / 20 21 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: AW

DATE: 8 Aug TIME: 1030 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 6+1 Discharge 0+1 Pressure 8/

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 6 Discharge 0+1/2 Pressure 8/

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2612 Temperature 140 Oil ✓W

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 8/ in. South system: 8/ in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.25 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 15 15 % South: 15 / 20 15 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 8 Aug South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-72 TPH/TEH: ✓ BTXE: ✓ Comment: 2000 P.S.I.

Sample No. I-73 TPH/TEH: ✓ BTXE: ✓ Comment: South Well

OPERATIONAL CHANGES TODAY:

Skimmed S

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: POD

DATE: 10 Aug TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 6+1 Discharge 0+1 Pressure 80

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill 6 Discharge 0+1½ Pressure 81

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2662 Temperature 150 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 30 10 % South: 15 / 20 10 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skinner oil S, Shifted All Well Flow to W B/a (Changing Gasket)

Cleaned All 2000 Gal Aerators

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: PR

DATE: 11 Aug TIME: 1215 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 6+1 Discharge 0+1 Pressure 81

East well flow setting: 1/2 West well flow setting: @ 1/2

NORTH TRENCH: Refill 6 Discharge 0+1½ Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2686 Temperature 140 Oil W

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 93 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 100 % South: 15 / 20 100 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: 11 Aug 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skimmed oil N
Shifted All Flow to S Bio
Refilled N/S Nutrient Tanks

Returned Well flow to normal

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: MCV

DATE: 12 Aug TIME: 1100 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 04 Discharge 042 Pressure 21

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 6 Discharge 0412 Pressure 21

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2705 Temperature 150 Oil W

Air Filter drain checks: 1) — 2) — 3) —

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 99 % South: 15 / 20 99 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skimmed Oil

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RJ

DATE: 13 Aug TIME: 1945 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 61 Discharge 01 Pressure 81

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 6 Discharge 01 1/2 Pressure 81

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2218 Temperature 150 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 98 % South: 15 / 20 98 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skimmed Oil South & North

Blew out Airators

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: MCJ

DATE: 14 Aug TIME: 1330 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 04 Discharge 04 Pressure 8

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 0 Discharge 04 1/2 Pressure 8

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2732 Temperature 150 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 85 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 98 % South: 19 / 20 97 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DD

DATE: 15 Aug TIME: 1900 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1½ Pressure 8 1/2

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0+1¾ Pressure 8 1/2

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2788 Temperature 140 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 93 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3.0 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 95 % South: 15 / 20 95 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-74 TPH/TEH: ___ BTXE: ___ Comment: _____

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY: Skimmed Oil South / Blew All Airators / Adjusted S/N Control Va
[illegible] Lock North

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJ

DATE: 16 Aug TIME: 2230 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 04 Discharge 04 1/2 Pressure 81

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill 6 Discharge 04 3/4 Pressure 81

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2813 Temperature 145 Oil W

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 16 170 93 % South: 15 120 93 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

System Shut Down 1900 – 2300 while Change Effluent Tank

Skimmed Oil S

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RG/DV

DATE: 8/18/04 TIME: 1115 HIGH TIDE: —

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1.5 Pressure 82

East well flow setting: 0.5 West well flow setting: 0.5

NORTH TRENCH: Refill B Discharge 0+2 Pressure 82

South well flow setting: 0.5 North well flow setting: 0.5

COMPRESSOR CHECKS: Hours 2852.6 Temperature 142 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓ 4) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 79 in. Blower: 80 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 90 % South: 15 / 20 90 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY: Skimmed oil - S

Fix air lock South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJ V

DATE: 20 Aug TIME: 1430 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1½ Pressure 81

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0+1½ Pressure 81

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2904 Temperature 135 Oil N

Air Filter-drain checks: 1) ✓ 2) ✓ 3) ✓ ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 88 % South: 15 / 20 87 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 20 Aug South Units: 19 Aug 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Blew Airators N/S, Skimmed O.I S, Checked Controller Air Lines
adjusted blower air flow, Tested Shut Downs N

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RVW

DATE: 8/22 TIME: 3:00 PM HIGH TIDE: —

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill Bal Discharge 0+9½ Pressure 80

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0+4 Pressure 80

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2952 Temperature 90° Oil good ½

Air Filter drain checks: 1) ✓ 2) ___ 3) o

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: ___ in. Blower: 82.5 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: Inter. 1-2 GPM South Trench: 1-2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2-3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20/20 70 % South: 20/20 80 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 8/20 South Units: 8/19 2,000 Gal. Unit 8/19

CULTURE OBSERVATIONS: Water Temperature: ___ Deg.C.

DOURs: — [NH4]: — [PO4]: —

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No.___ TPH/TEH:___ BTXE:___ Comment:___

Sample No.___ TPH/TEH:___ BTXE:___ Comment:___

OPERATIONAL CHANGES TODAY:

all OK

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: Rob Greenwell

DATE: 8/23 TIME: 11 A HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill BR Discharge 01 2.5 Pressure [redacted] 80

East well flow setting: [redacted] ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0.2 Pressure 18

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2972.15 Temperature 105° Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓ ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 83 in. Blower: 825 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 01 GPM South Trench: < 1 spm GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1-2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20/20 60 % South: 20 / 20 75 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit) 04 - bt well mw → 5,7

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. J-24 TPH/TEH: ✓ BTXE: ✓ Comment: 5

Sample No. E-26 TPH/TEH: ✓ BTXE: ✓ Comment: _____

OPERATIONAL CHANGES TODAY:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: R. Leonard

DATE: 8/26 TIME: 12n HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill BR1 Discharge 02 Pressure 81

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill 0 Discharge D+1.5 Pressure 79

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 3044 Temperature 95° Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓ ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: ≈1.5 GPM South Trench: ≈1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20 / 20 45 % South: 20 / 20 65 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit) 8/5

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY: