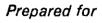
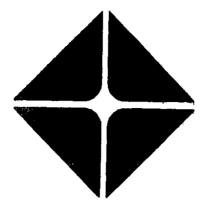
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report. HW902003. 1994-02. Remedial-	-
action - Surface - Soils - Vol 2.	





Atlantic Richfield Company

515 South Flower Street Los Angeles, California 90071

REMEDIAL ACTION REPORT

CONTAMINATED SURFACE SOILS

SINCLAIR REFINERY SITE WELLSVILLE, NEW YORK

VOLUME II

Prepared by



GEOSYNTEC CONSULTANTS

5775 Peachtree Dunwoody Road Atlanta, Georgia 30342

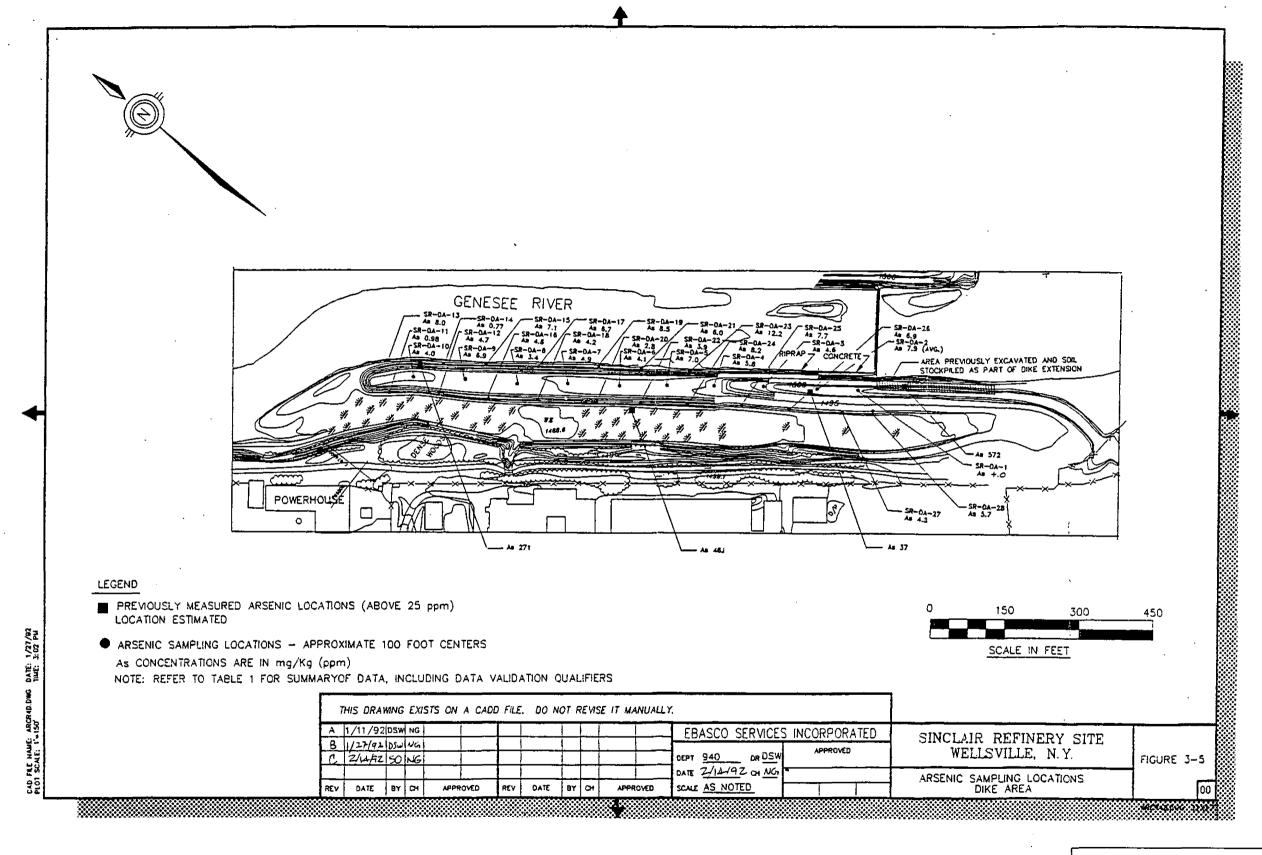
Project Number GQ3201

February 1994

APPENDIX C

DRAWINGS

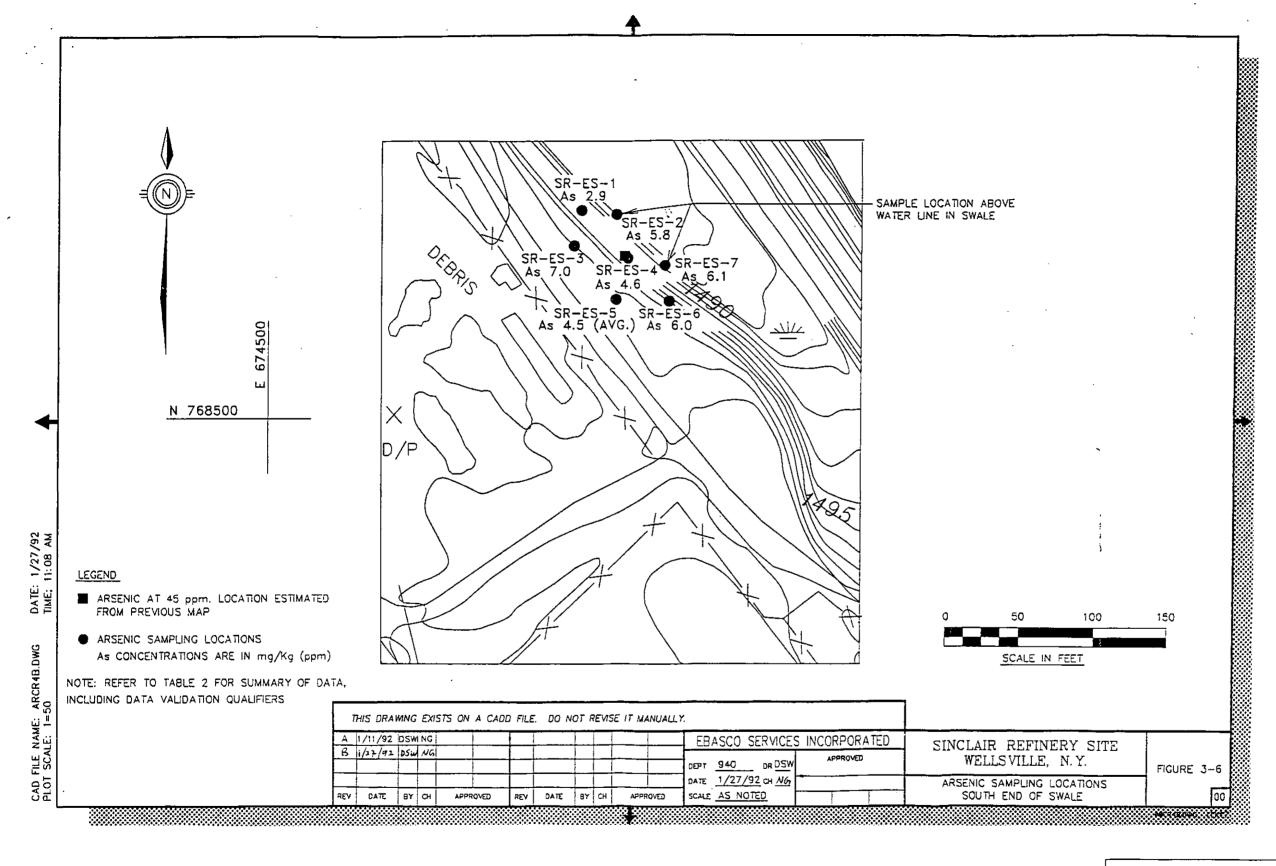
- 1 to 5, Ebasco Sampling Locations
- 6 to 12, Remediation Record Drawings
- Construction Drawings AR22 to AR24



GEOSYNTEC CONSULTANTS
ATLANTA, GEORGIA

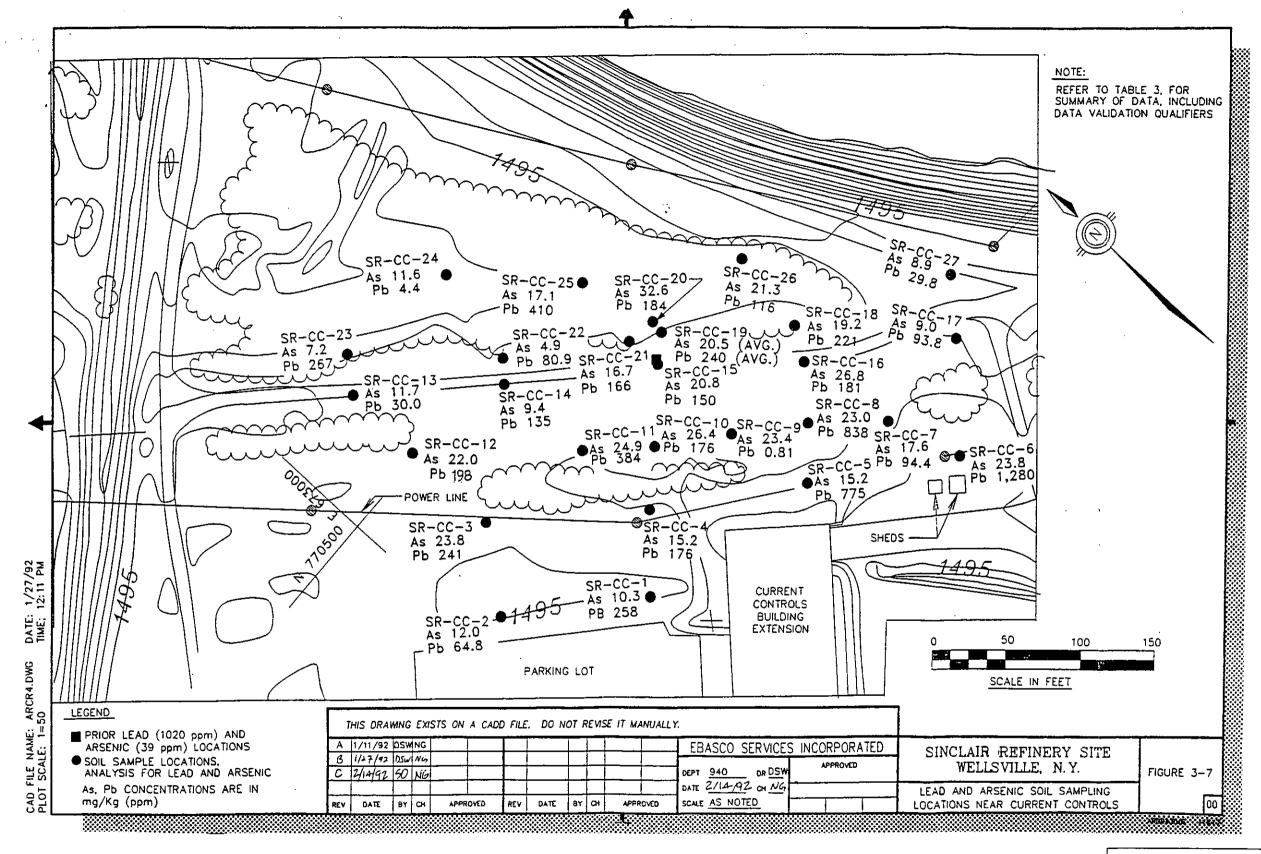
PROJECT NO. GQ3201-R19 FIGURE NO. 1
DOCUMENT NO. GA940111 FILE NO. DF

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GEOSYNTEC CONSULTANTS
ATLANTA, GEORGIA.

PROJECT NO. GQ3201-R19	FIGURE NO.	2	
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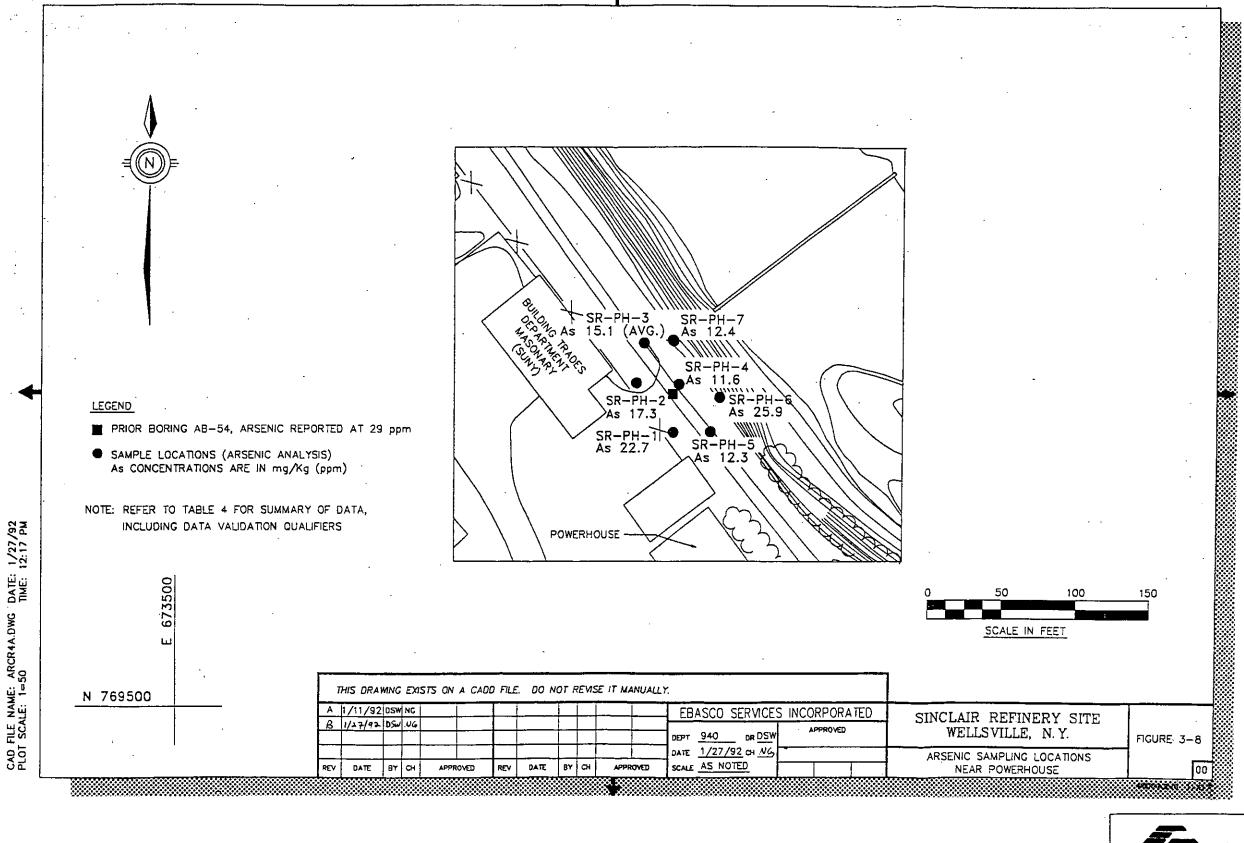




PROJECT NO. GQ3201-R19 FIGURE NO. 3

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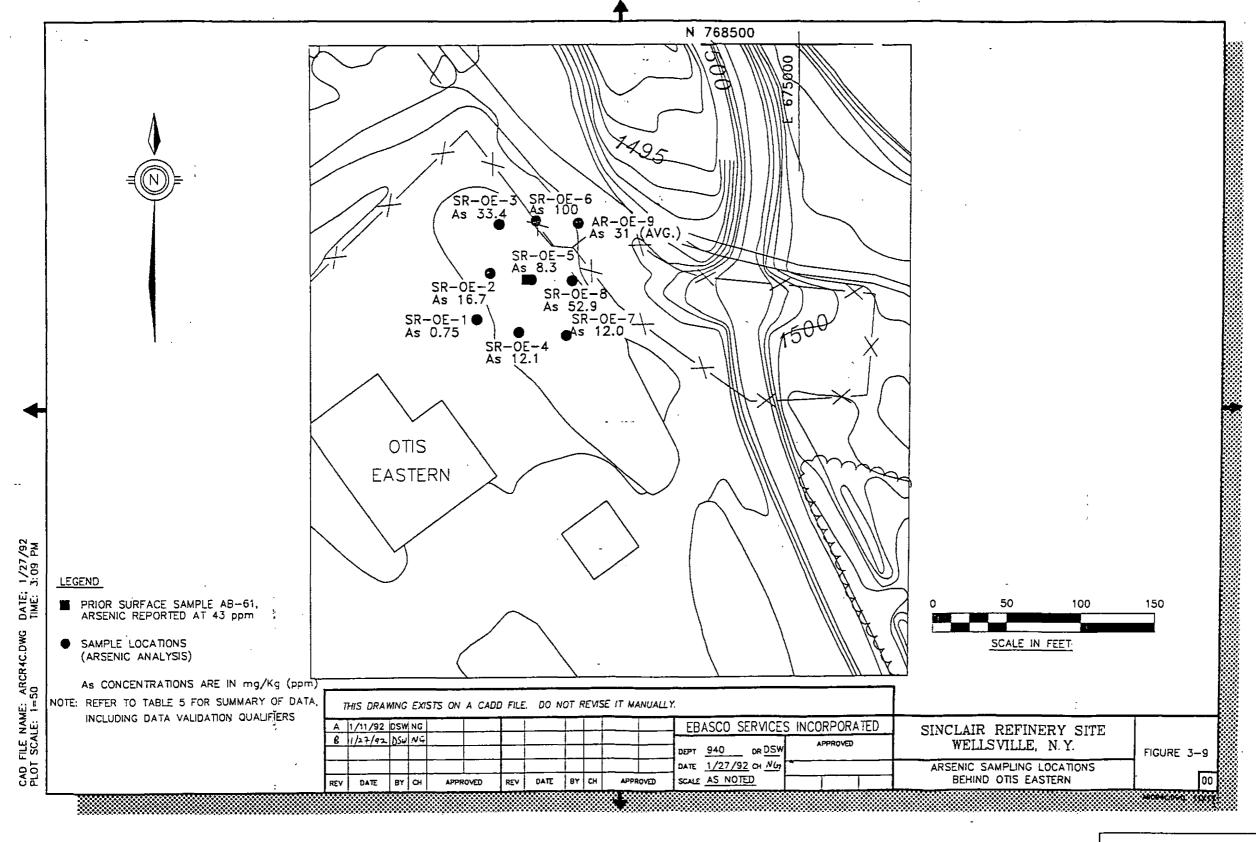
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GEOSYN	ITEC CON	SULTANTS
ATI	ANTA, GEOR	GIA
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PROJECT NO. GQ3201-R19 FIGURE NO. 4

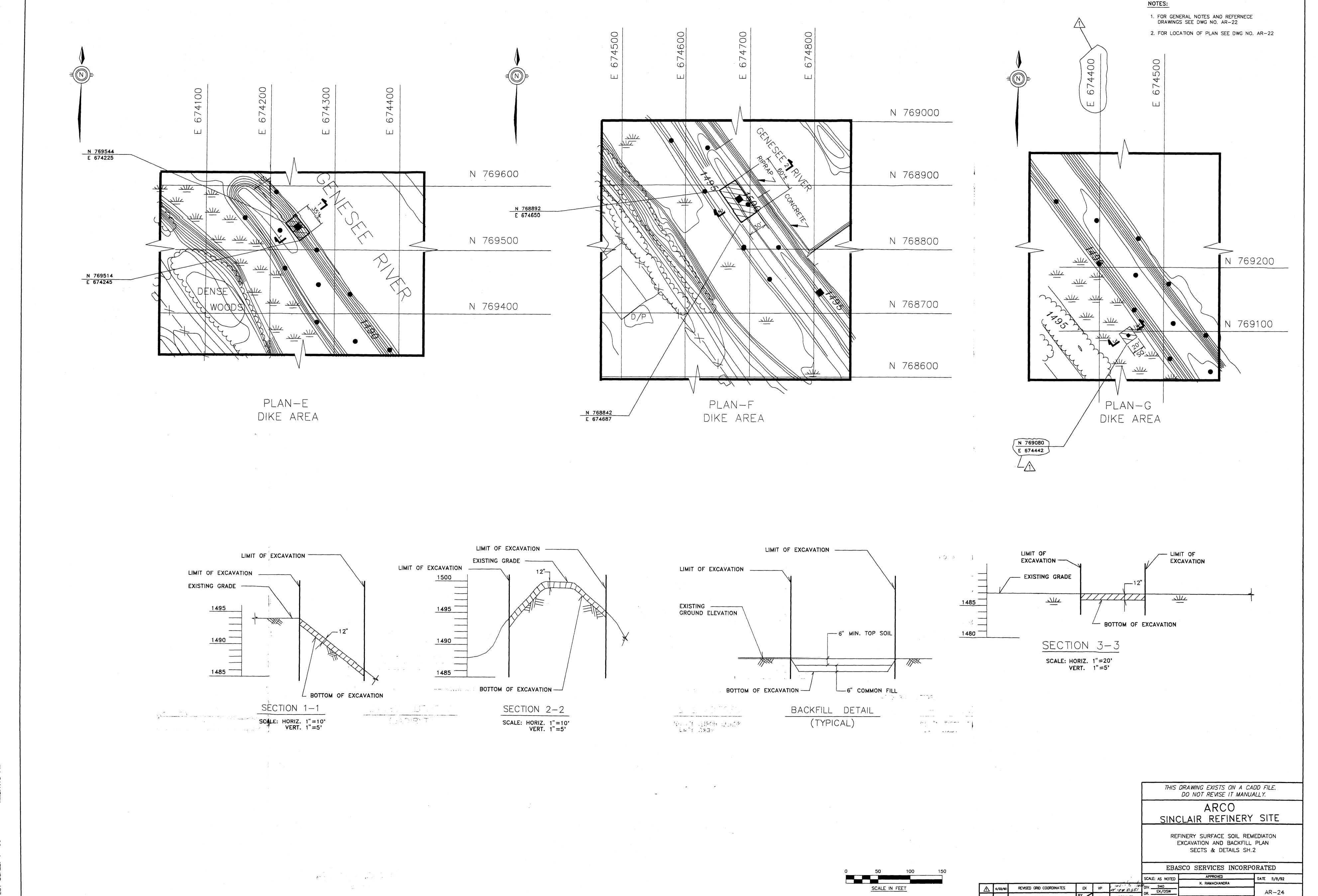
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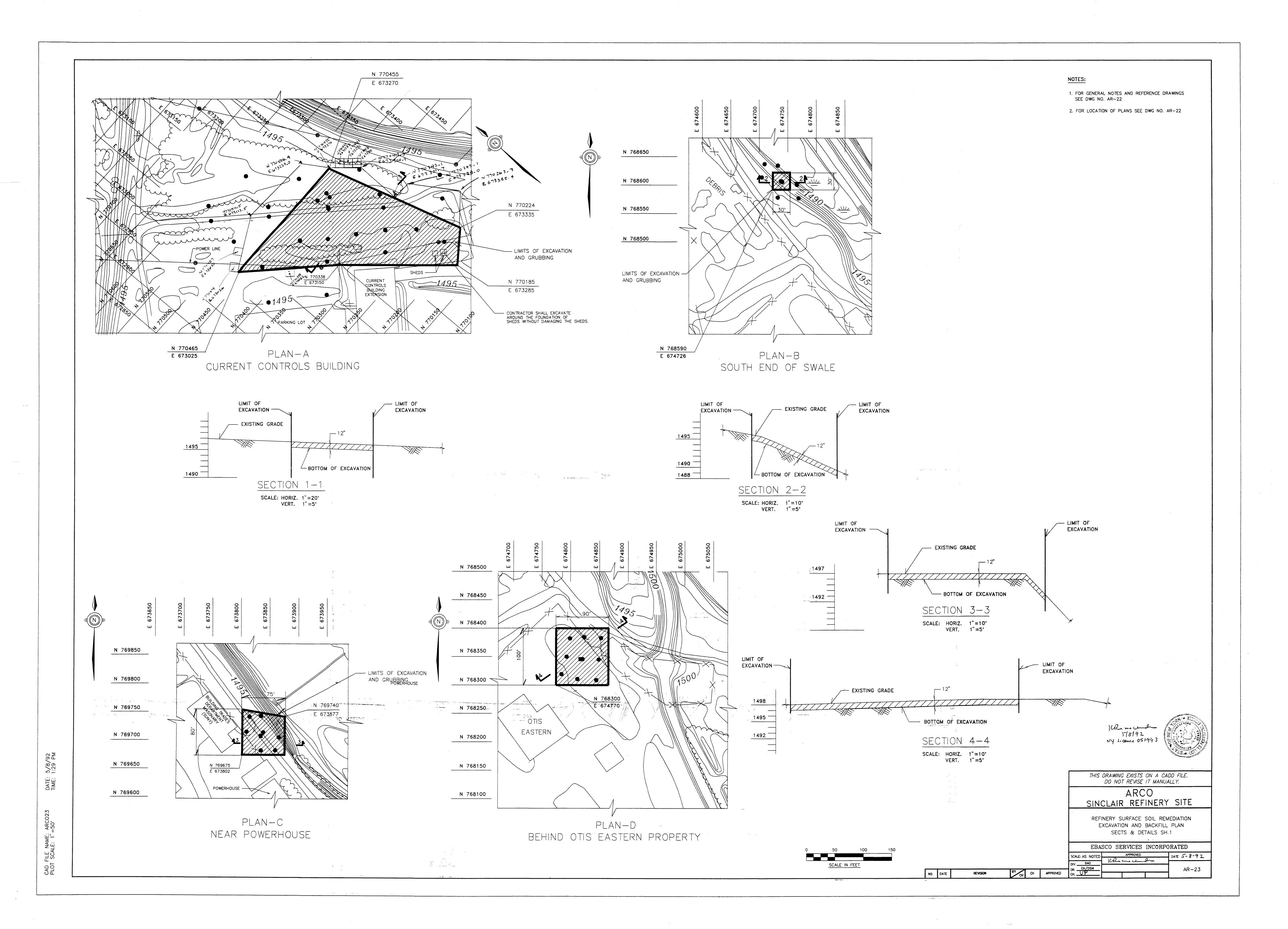
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ATLANTA, GEORGIA

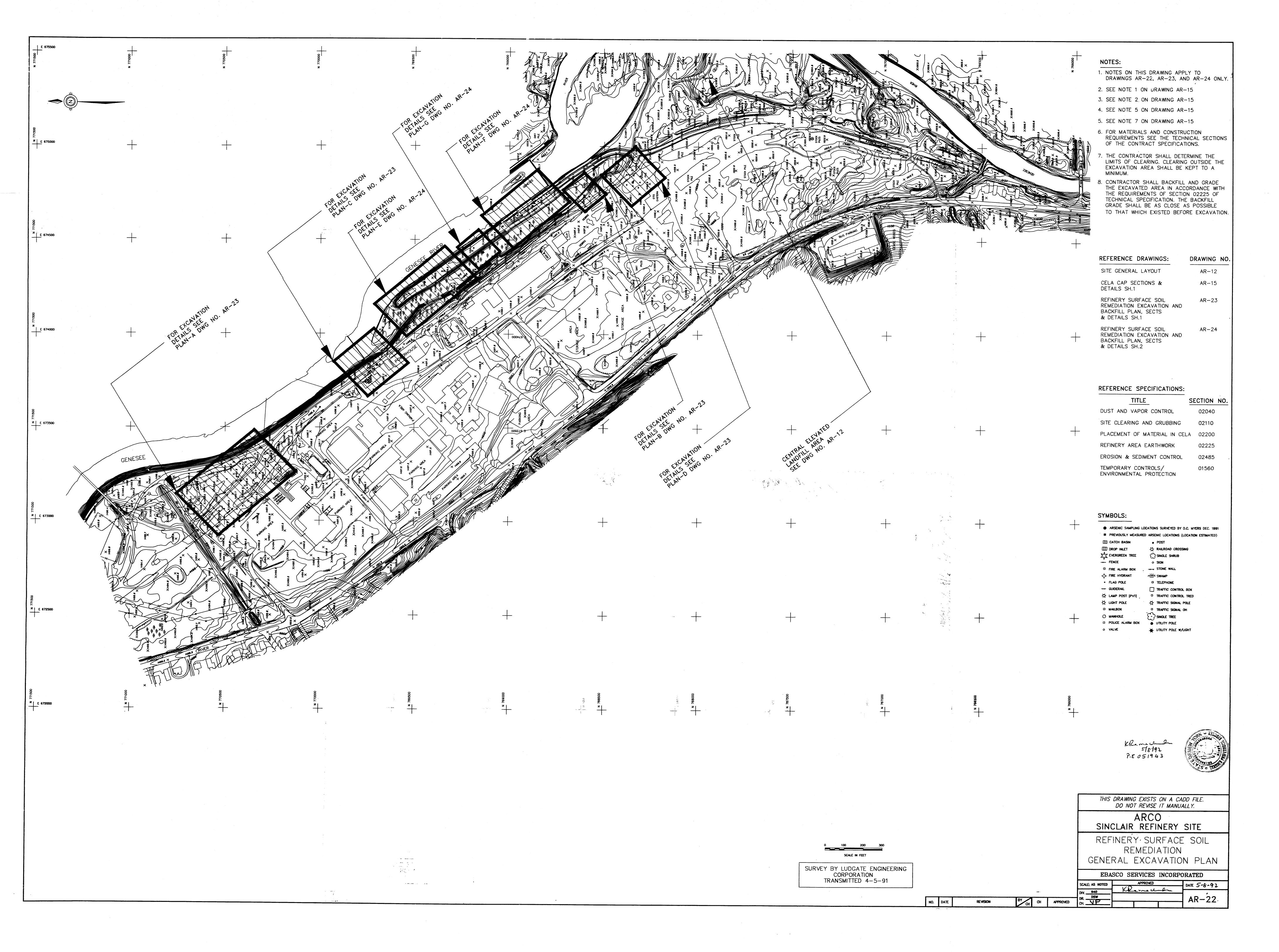
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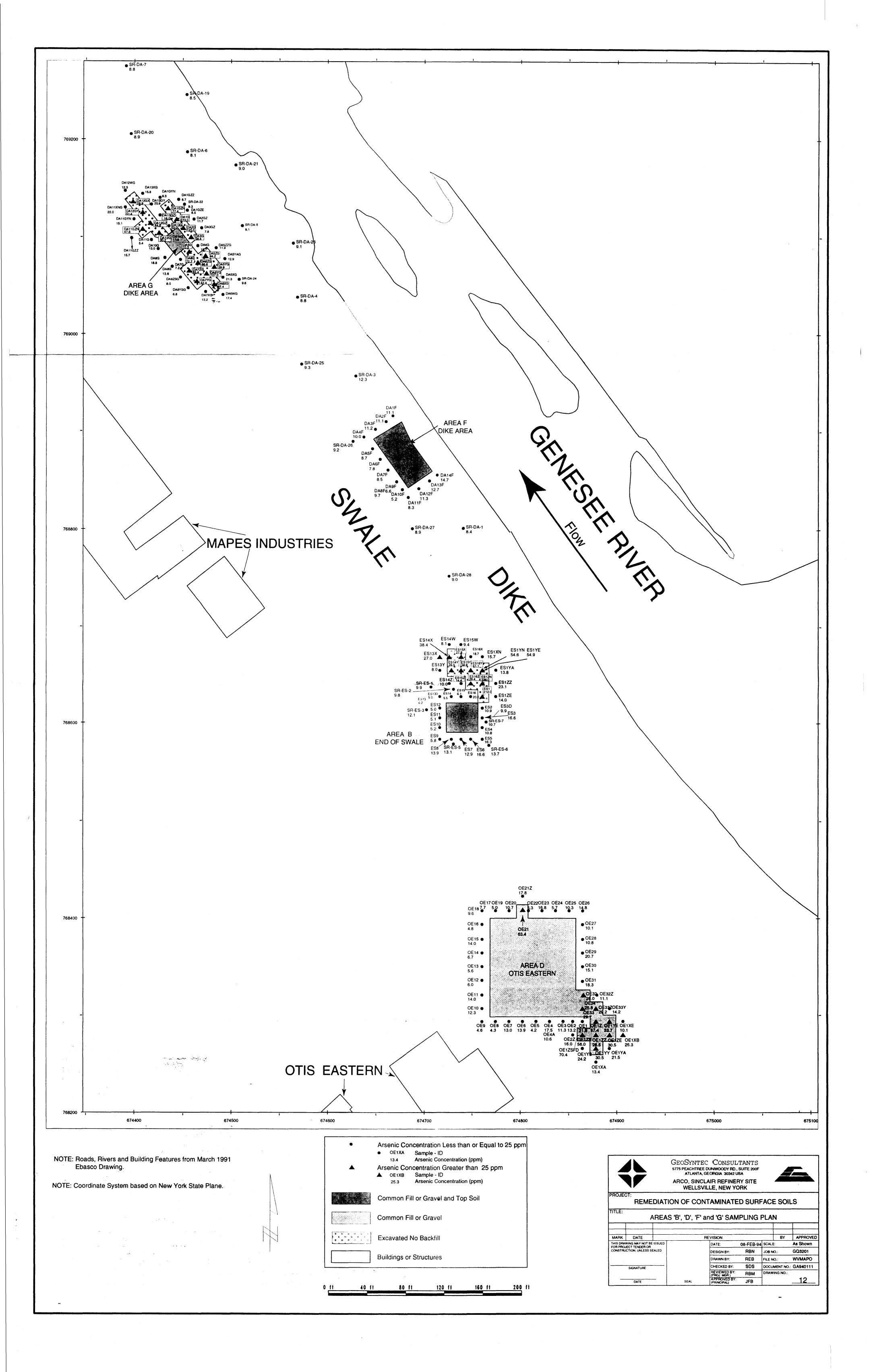
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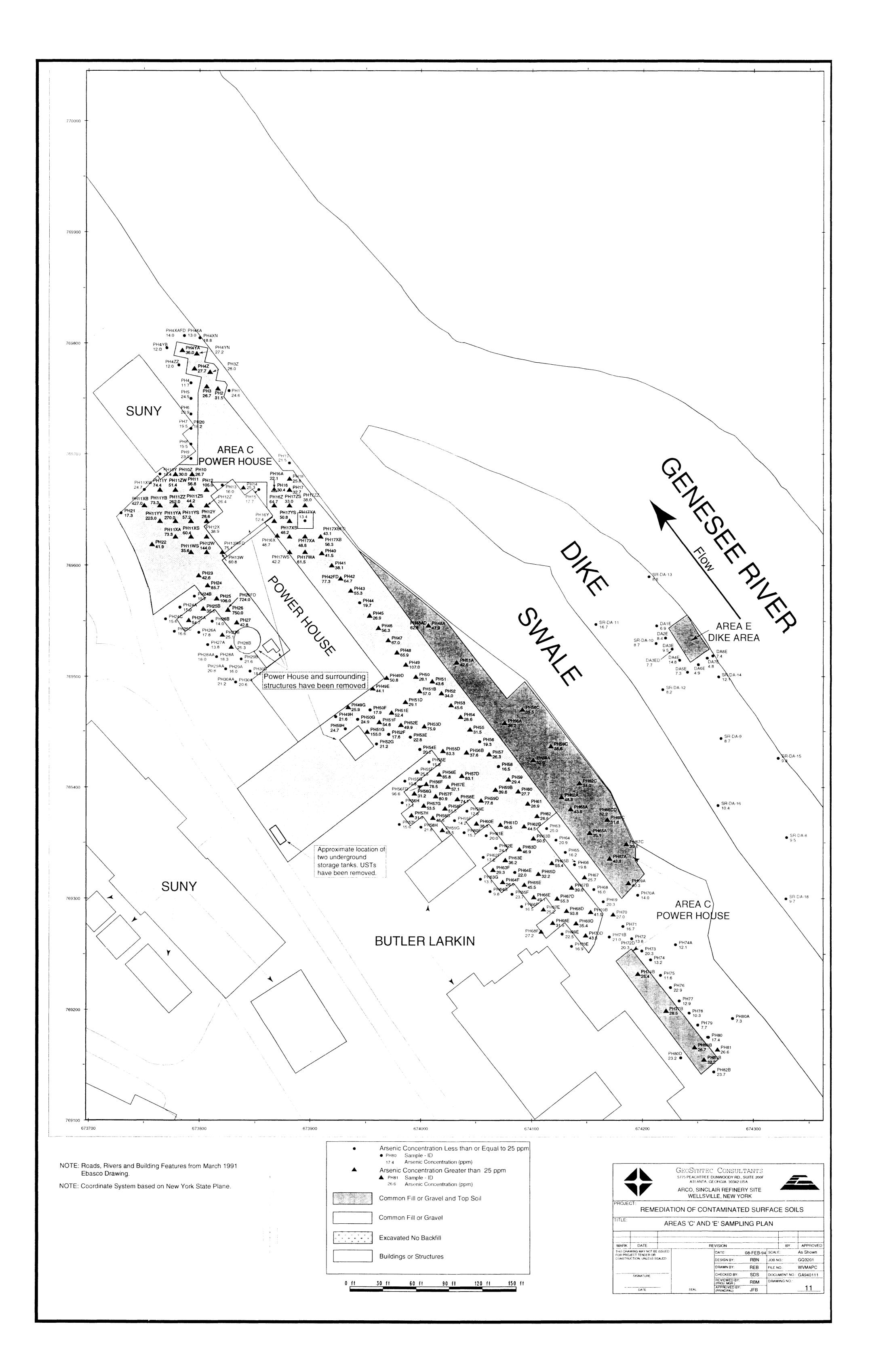


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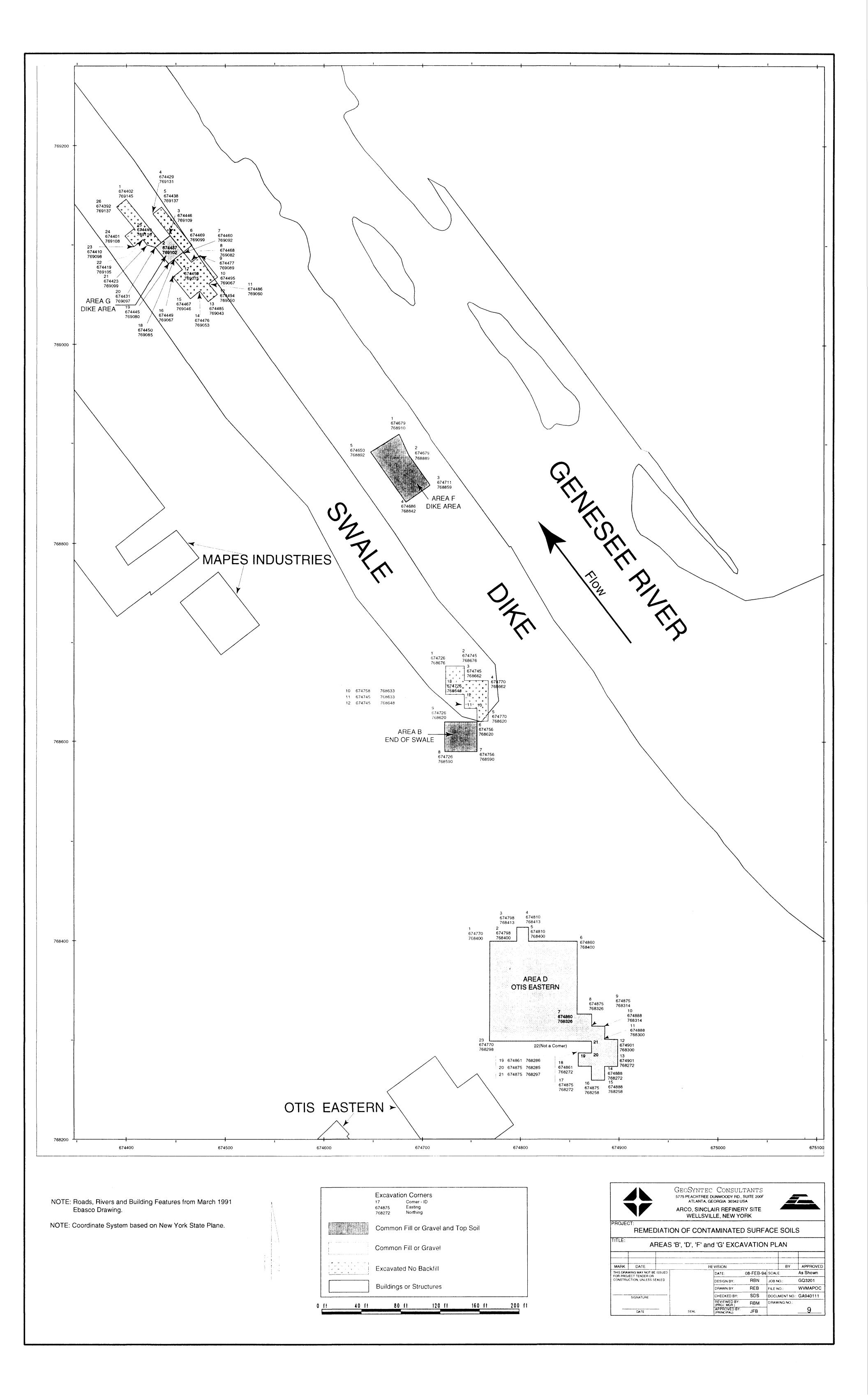


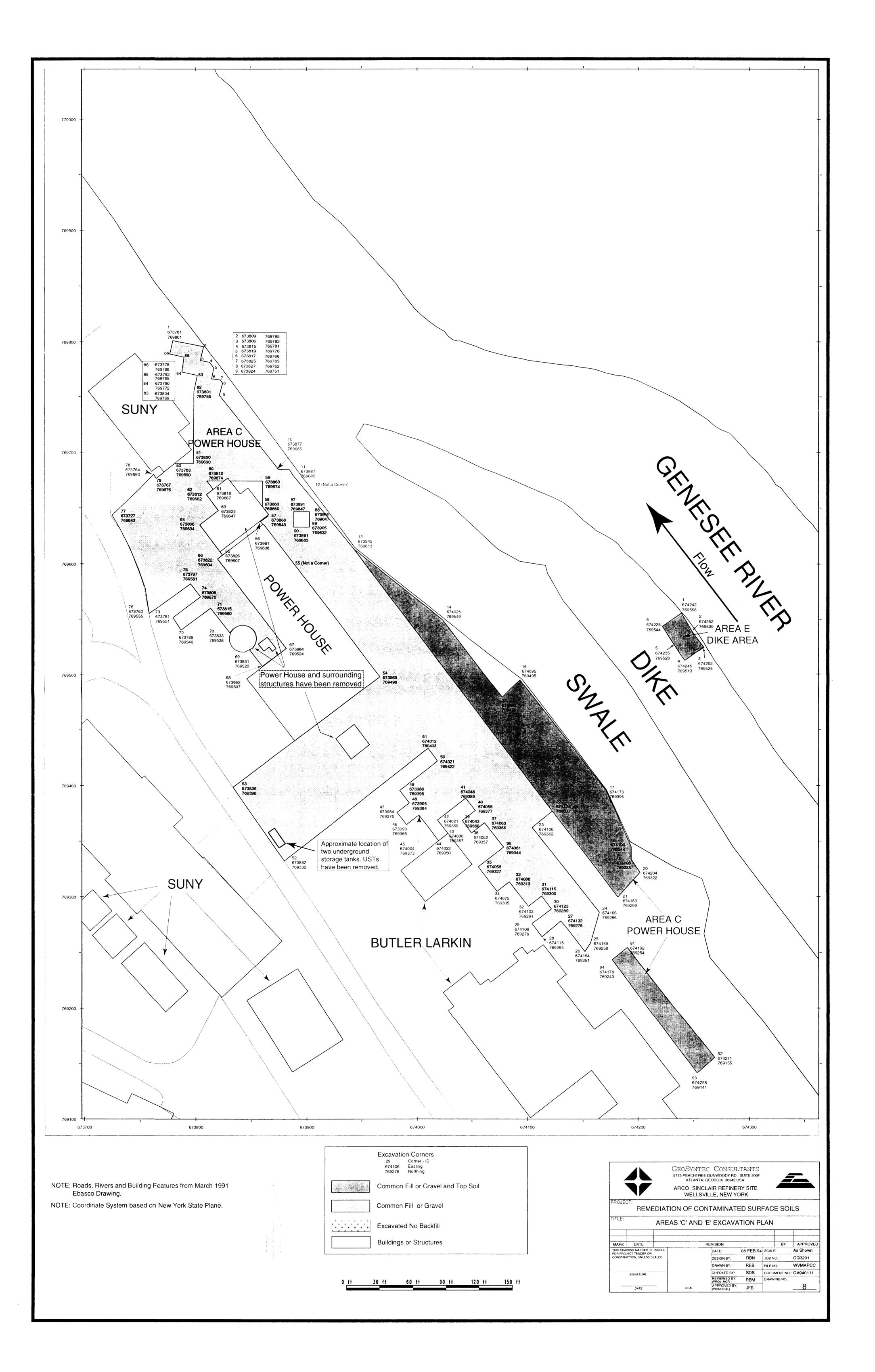




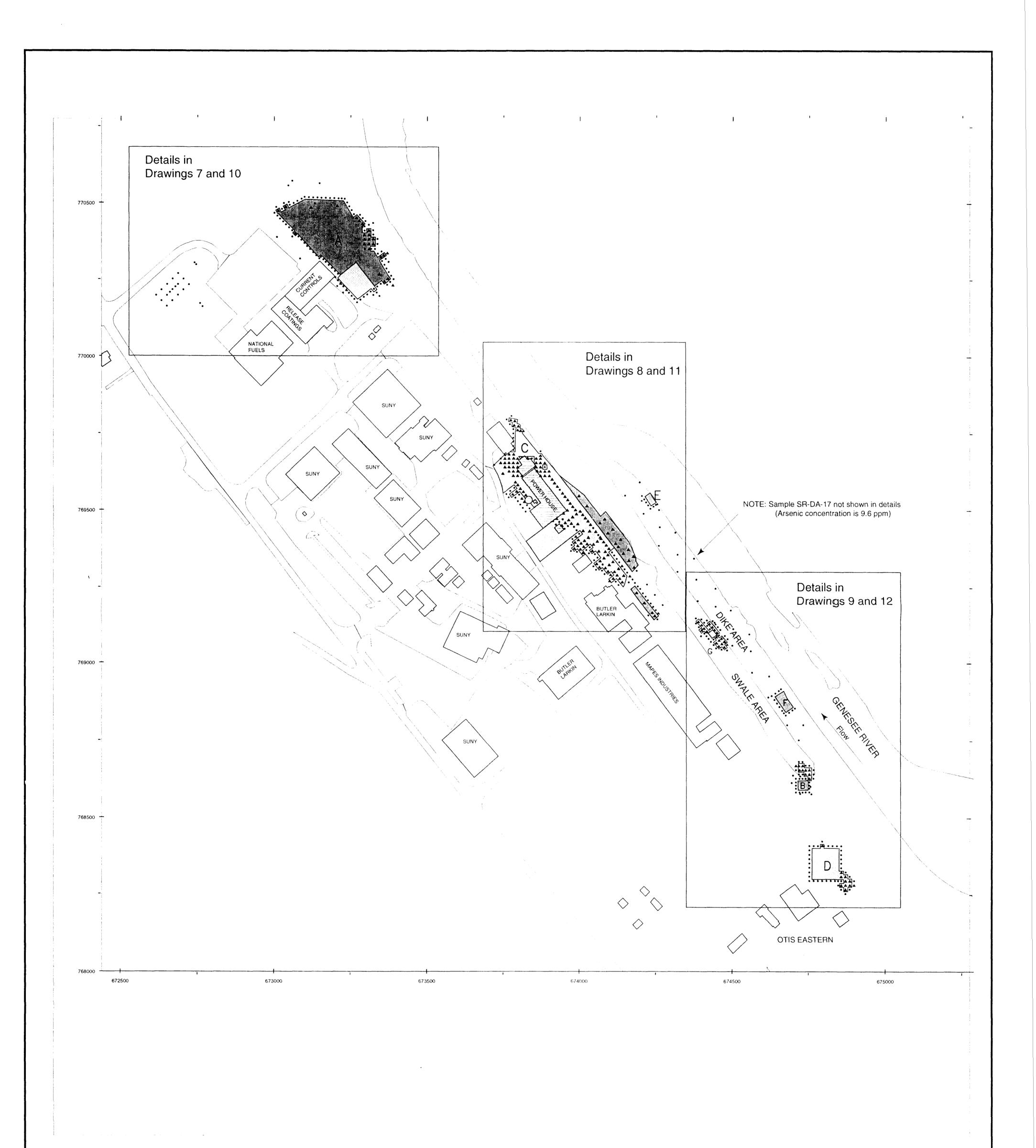












NOTE: Roads, Rivers and Building Features from March 1991 Ebasco Drawing.

NOTE: Coordinate System based on New York State Plane.

•	Arsenic Concentration Less than or Equal to 25 ppm
•	Arsenic Concentration Greater than 25 ppm
	Common Fill or Gravel and Top Soil
	Common Fill or Gravel
* * * * * * * *	Excavated No Backfill
	Buildings or Structures
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APPENDIX D

CONSTRUCTION QUALITY CONTROL FORMS

- Form A-1, Clearing and Grubbing
- Form A-16, Erosion and Sediment Control
- Form A-19, Excavation
- Form A-20, Collection and Analysis of Surface Soil Samples
- Form A-21, Placement of Common Fill

FORM A-1 CLEARING AND GRUBBING

FORM A-1
SHEET OF
INSPECTION DATE 07-17-9-3

	ACCEPT		
VERIFICATION INSPECTION	/		
- AREA TO BE CLEARED IS STAKED BY THE SURVEY CREWS TO CONFORM WITH THE CONTRACT DRAWINGS.			
- AREA TO BE GRUBBED IS STAKED BY THE SURVEY CREW TO CONFORM WITH THE CONTRACT DRAWINGS.		••	
- AREA IS FREE OF TREES, BRUSH, LOGS, LIMB WOOD, RUBBISH AND OTHER OBSTRUCTIONS.	<u> </u>		
- STUMPS, ROOTS LARGER THAN 1-1/2 INCHES IN DIAMETER AND DECAYED MATTER REMOVED TO A 12" DEPTH FROM AREA REQUIRING GRUBBING.			
DUST CONTROL			
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FORM A-1		
SHEET	OF	
INSPECTION	DATE	117-141-97

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- AREA TO BE GRUBBED IS STAKED BY THE SURVEY CREW TO CONFORM WITH THE CONTRACT DRAWINGS.	•••	
- AREA IS FREE OF TREES, BRUSH, LOGS, LIMB WOOD, RUBBISH AND OTHER OBSTRUCTIONS.	,	
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FORM A-1
SHEET OF
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- AREA IS FREE OF TREES, BRUSH, LOGS, LIMB WOOD, RUBBISH AND OTHER OBSTRUCTIONS.	<u>/</u>		
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CLEARING AND GRUBBING

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- STUMPS, ROOTS LARGER THAN 1-1/2 INCHES IN DIAMETER AND DECAYED MATTER REMOVED TO A 12" DEPTH FROM AREA REQUIRING GRUBBING.			
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FORM A-1 SHEET ____ OF ____ INSPECTION DATE <u>()8-02-93</u>

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- AREA TO BE GRUBBED IS STAKED BY THE SURVEY CREW TO CONFORM WITH THE CONTRACT DRAWINGS.		• •	
- AREA IS FREE OF TREES, BRUSH, LOGS, LIMB WOOD, RUBBISH AND OTHER OBSTRUCTIONS.			
- STUMPS, ROOTS LARGER THAN 1-1/2 INCHES IN DIAMETER AND DECAYED MATTER REMOVED TO A 12" DEPTH FROM AREA REQUIRING GRUBBING.			
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	- AREA TO BE CLEARED IS STAKED BY THE SURVEY CREWS TO CONFORM WITH THE CONTRACT DRAWINGS.			
	- AREA TO BE GRUBBED IS STAKED BY THE SURVEY CREW TO CONFORM WITH THE CONTRACT DRAWINGS.		··	
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	- STUMPS, ROOTS LARGER THAN 1-1/2 INCHES IN DIAMETER AND DECAYED MATTER REMOVED TO A 12" DEPTH FROM AREA REQUIRING GRUBBING.			
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	ACTION TAKEN WATER TRUCK	<u> </u>		
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- AREA TO BE GRUBBED IS STAKED BY THE SURVEY CREW TO CONFORM WITH THE CONTRACT DRAWINGS.			••••
- AREA IS FREE OF TREES, BRUSH, LOGS, LIMB WOOD, RUBBISH AND OTHER OBSTRUCTIONS.			
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FORM A-1
SHEET OF INSPECTION DATE 08-/7-93

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FORM A-16 EROSION AND SEDIMENT CONTROL

FORM A-16
SHEET OF OF O7-30-93

1.	MATERIAL	ACCEPT	REJECT	N/A
٠	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
2.	PLACEMENT			
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		·	
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EROSION AND SEDIMENT CONTROL

FORM A-16
SHEET OF
INSPECTION DATE 08-04-93

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	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
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FORM A-16
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EROSION AND SEDIMENT CONTROL

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3. LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u> </u>	
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FORM A-16
SHEET OF
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FORM A-16
SHEET OF
INSPECTION DATE 09-30-93

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INSPECTION DATE ____/0/1/93

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3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.			
4.	REMARKS Check Sidinent R	arriers	, 0.1	۷
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	INSPECTOR Charles S. Baher.		DATE	10/4/93
	REVIEWED BY		DATE	

EROSION AND SEDIMENT CONTROL

FORM A-16
SHEET ___ OF __ I
INSPECTION DATE __ 10/5/93

	MATERIAL	ACCEPT	REJECT	N/A
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
	PLACEMENT			
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u></u> .	
	REMARKS Check Sidinen	Rarriers	5 ().	K.
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	INSPECTOR Charles Bake			14/5
	INSPECTOR Charles Salue		DATE	10/0

EROSTON	AND	SEDIMENT	CONTROL.

FORM A-16
SHEET _____OF ___
INSPECTION DATE ______O/__/93

1.	MATERIAL	ACCEPT	REJECT N/A
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		
2.	PLACEMENT		
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		
4.	REMARKS Check Sidinent	Barriers	, O.K.
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		; -	
	INSPECTOR		DATE 10/6/93
	REVIEWED BY		DATE

ERO	SION AND SEDIMENT CONTROL	FORM A-16 SHEET OF
1.	MATERIAL	ACCEPT REJECT N/A
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.	<u></u>
2.	PLACEMENT	
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.	
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.	
4.	REMARKS Check Sidinent	Barriers, O.K.
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INSPECTOR Charles Baker

REVIEWED BY ____

DATE 10/7/93

DATE ____

EROSTON	AND	SEDIMENT	CONTROL

FORM A-16
SHEET ___/ OF _/
INSPECTION DATE _/0/8/93

WARRIAN	ACCEPT	REJECT	N/A
MATERIAL			
- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
PLACEMENT			
- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.			
REMARKS Check Sidinen 1	٠	. () [
REMARKS _ Check Sidinen!	Jarrier)	<u> </u>	<u></u>
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INSPECTOR Charles Bohi	<u></u>	DATE	10/8/
		DATE	

EROSTON	AND	SEDIMENT	CONTROL

FORM A-16
SHEET / OF /
INSPECTION DATE 10/11/93

MATERIAL	ACCEPT	REJECT	N/A
- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
PLACEMENT			
- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		· ·	
LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.			
REMARKS Check Sidinent	garriers	, O.K	
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INSPECTOR Charles Behr	· · · · · · · · · · · · · · · · · · ·	DATE _	Inli

FROSTON	AND	SEDIMENT	CONTROL.

FORM A-16
SHEET ___ / OF __ l
INSPECTION DATE __ 10/12/93

	A GENTLA I	ACCEPT	REJECT	N/A
	ATERIAL			
	MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
P	LACEMENT			
-	SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
	OCATION OF EROSION AND SEDIMENT ONTROL MEASURES.			
10	EMARKS Check Sidinen 18		() k	<i>,</i>
K	EMARKS OF COMMENCE OF	<u>MYTEV</u>		
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1	NSPECTOR Charles	aher	DATE	10/12/93
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FORM A-16
SHEET / OF /
INSPECTION DATE 10/13/43

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COMP	LIES W	ITH CE	RTIFIE		FICATE		/		
	MENT C	ONTROL	PLAN.				_		
PLACEM	ENT		,						
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EROSTON AND SEDIMENT CONTROL				
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FORM A-16 SHEET / OF / INSPECTION DATE /0/14/93

		ACCEPT	REJECT N/A
1.	MATERIAL		,
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		
2.	PLACEMENT		
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u> </u>
4.	REMARKS Check Sidinen	Barriers	, O.K.
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	INSPECTOR Charles B.	hu	DATE <u>/0//4/93</u>
	REVIEWED BY	<u> </u>	DATE

EROSION	AND	SEDIMENT	CONTROL

FORM A-16
SHEET _____ OF ____
INSPECTION DATE ______/5/93

- MANUFACTURER'S LA COMPLIES WITH CER SEDIMENT CONTROL PLACEMENT - SILT FENCES AND O CONTROL MEASURES AS SHOWN ON CERTI	TIFIED EROSION A PLAN.		<u>/</u> -		
- SILT FENCES AND O CONTROL MEASURES	THER EROSION				
CONTROL MEASURES	THER EROSION	•			
SEDIMENT CONTROL	ARE INSTALLED FIED EROSION AND	·		. 	
LOCATION OF EROSION	AND SEDIMENT			<u> </u>	·
REMARKS Chec	k Sidinen	Rary	er5	, O. k	<i>)</i>
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	REMARKSChec	REMARKS Check Sidinen	REMARKS Check Sidinent Barri	REMARKS Check Sidinent Barriers	REMARKS Check Sidinent Barriers, O.K

FROSTON	AND	SEDIMENT	CONTROL.

FORM A-16
SHEET / OF /
INSPECTION DATE 10/16/93

- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN. PLACEMENT - SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN. LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES. REMARKS Check Scd. men Rarviers O. K. INSPECTOR DATE 10/10/9-		ACCEPT	REJECT	N/A
COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN. PLACEMENT - SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL MEASURES. REMARKS Check Scdiment Conviers (O.K.)	MATERIAL			
SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN. LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES. REMARKS Check Sediment carriers, O.K.	COMPLIES WITH CERTIFIED EROSION A			
CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN. LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES. REMARKS Check Schmen Jarriers (O.K.	PLACEMENT	,		
REMARKS Check Sidinent Barriers, O.K.	CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND	·	·	
INSPECTOR DATE 10/16/9-	REMARKS Check Sidinen	1 garriers	, O. k	<u>ر. </u>
INSPECTOR DATE 10/16/9-				
INSPECTOR DATE 10/14/9-		·		
INSPECTOR DATE 10/14/9-				
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INSPECTOR DATE 10/16/9-				
INSPECTOR DATE 10/16/9-				
	INSPECTOR		DATE	10/16/9-

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FORM A-16 SHEET / OF / INSPECTION DATE 10/18/93

_		A.CCEPT	REJECT	N/A
1.	MATERIAL			
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
2.	PLACEMENT			
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u> </u>	
4.	REMARKS Check Sidinent	arriers	0.1	۷
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	INSPECTOR Charles Bah	u	DATE	10/18/93
	REVIEWED BY		DATE	

EROSTON	AND	SEDIMENT	CONTROL
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FORM A-16
SHEET ___/ OF _/
INSPECTION DATE ___/0/19/93

1.	MATERIAL	ACCEPT	REJECT	N/A
1.				
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		·	
2.	PLACEMENT	,		
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.			
4.	REMARKS Check Sidinen	garriers	, 0.1	۷٠
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	INSPECTOR Charles B	elic:	DATE	10/19/93
	REVIEWED BY		DATE	

EROSION	AND	SEDIMENT	CONTROL

FORM A-16
SHEET / OF /
INSPECTION DATE 10/20/93

. M	MATERIAL	ACCEPT	REJECT	N/A
_	MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
F	PLACEMENT			
-	SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
	OCATION OF EROSION AND SEDIMENT			
. F	REMARKS Check Sidinen	Barriers	, 0.	۷
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	INSPECTOR Charle Ban	hu	DATE	10/20
	REVIEWED BY		——— DATE	

EROSTON	AND	SEDIMENT	CONTROL

		ACCEPT	REJECT	N/A
ı.	MATERIAL	ACCEFI	RED ECT	N/A
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
2.	PLACEMENT			
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u> </u>	· .
4.	REMARKS Check Sidinen)	COURT	. ().	۷. ا
••	Removed Sediment Barr	•	•	
	at Valley Steel site			· · · · · · · · · · · · · · · · · · ·
	Barrier still in Swale an	· e a	···	
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	INSPECTOR		DATE	10/21/93
	REVIEWED BY		DATE	

EROSTON	AND	SEDIMENT	CONTROL

FORM A-16
SHEET / OF !
INSPECTION DATE 10/22/93

MATERIAL		ACCEPT	REJECT	N/A
- MANUFACTURER'S LABEL OR COMPLIES WITH CERTIFIED EN SEDIMENT CONTROL PLAN.				
PLACEMENT				
- SILT FENCES AND OTHER EROS CONTROL MEASURES ARE INST. AS SHOWN ON CERTIFIED EROS SEDIMENT CONTROL PLAN.	ALLED			
LOCATION OF EROSION AND SED	IMENT		<u> </u>	-
REMARKS Check Sco	linen }	arriers	, O. k	<u> </u>
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PROSTON	AND	SEDIMENT	CONTROL.

FORM A-16
SHEET __/ OF _/
INSPECTION DATE _/0/23/93

1.	MATERIAL	ACCEPT	REJECT N/A	`
	- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.		<u>.</u>	
2.	PLACEMENT			
	- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.			
3.	LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.		<u> </u>	
4.	REMARKS Check Sidinen	garrier 5	, O.K.	
				
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	INSPECTOR Charles Behin	· · · · · · · · · · · · · · · · · · ·	DATE <u>/0/2</u>	3/93
	REVIEWED BY		DATE	

DOGLOV NID CERTURIUM COMMON	FORM A-16 SHEETOF
EROSION AND SEDIMENT CONTROL	INSPECTION DATE 10 25/9
1. MATERIAL	ACCEPT REJECT N/A
- MANUFACTURER'S LABEL OR CERTIFICATE COMPLIES WITH CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.	
. PLACEMENT	
- SILT FENCES AND OTHER EROSION CONTROL MEASURES ARE INSTALLED AS SHOWN ON CERTIFIED EROSION AND SEDIMENT CONTROL PLAN.	
. LOCATION OF EROSION AND SEDIMENT CONTROL MEASURES.	
. REMARKS _ Check Sidinen]	Barriers, O.K.
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INSPECTOR	Charles Baker	DATE 10/25/93
REVIEWED BY		DATE

FORM A-19 EXCAVATION



FORM A-19
SHEET _/_ OF _/
INSPECTION DATE _7-30

			
	ACCEPT	REJECT	ΝÃ
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	S	- Andrews	
2. DUST CONTROL			
ACTION TAKEN NONE REQUIRE		·	·
3. LOCATION:			
COORDINATES			
			
4. REMARKS EXCAVATED REFINERY AND	1545 B F	E.,	
			
INSPECTOR Chini Bally Funda	wich Meast	DATE 8/6	6-92
REVIEWED BY prathan Francks		DATE 8/1	1/92

AUG 1 1 1992



FORM A-19 SHEET / OF / INSPECTION DATE 8/10/42

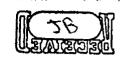
	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			·
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2. DUST CONTROL			
ACTION TAKEN WATER THERE	ISED TO C	ONTHUL DUS.	
	·	·	
3. LOCATION:			
COORDINATES <u>REFINERY</u> ATEA "A"-C	WARENT CON	mo <u>cs</u>	
	<u> </u>		
4. REMARKS BECAN EXCLUSTION - YEARFI	ED PORTLO	N OF ALEA	*
BACKFILLED. PERFORMED COM			
DENSIN = 98.5 % DENSIM = 81.4%	ERAUE DEN	4 CETESTED & CETESTED	· :
INSPECTOR Chin Boilg		DATE <u> </u>	192
REVIEWED BY Jonathan Bearies	·	date <u>8/i/</u>	92



FORM A-19
SHEET | OF |
INSPECTION DATE 8-11-92

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		ACCEPT	REJECT	Ν̈́A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS . SURVEYED BY THE SURVEYOR.			_
2.	DUST CONTROL	-		
	ACTION TAKEN WATER TRUCK USED	To CONT	roc Dus-	<u> </u>
	WHEN NEEDED			
 4. 	COORDINATES PLAN A " REMARKS FINISHED PLACING STON			PRTION
	OF THE AREA EXCAVATED			<u> </u>
	REVIEWED BY jonathan Grandes	nis Balo	DATE <u>8-1</u> DATE <u>8//2</u>	

AUG 1 3 1992



FORM A-19
SHEET __ ! OF _ !
INSPECTION DATE § - 12 - 9L

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN NONE REQUIRED IN	EXCAVA	TION - HAUL	ROADS
	WERE WATERED WITH WATER	TRUCK.		·
3.	LOCATION:			·
	COORDINATES CURRENT CONTROLS P.	LAN "A"		
		4.1	2	
4.	REMARKS DURING EXCAUATION A GAS C	INE WAS	UROKEN.	
	INSPECTOR Frederick Wasto Mis	Roll	DATE 8-/2	-92
•		fully	DATE <u>8/13/</u>	
)	REVIEWED BY Another Brandes		DRIE <u>9/13/</u>	
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AUG 1 4 1992

FORM A-19
SHEET / OF /
INSPECTION DATE 8/3/12

	ACCEPT	REJECT	N/A
VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.		 .	
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	EKCAVATION	STILL IN	Progress
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
DUST CONTROL			
ACTION TAKEN NOT NECESSARY	,		
LOCATION:			
COORDINATES REFINERY ANEW A"-	Consor C	DNMOCS	
REMARKS DAN FULER OF NATIONAL	FUEL L	OCATED C	4.5
HE WILL BE ON-SITE TOMORISM OTHER REFINEY MEAS. GAS LINE EXCOUNTED BY HAND & EXPOSEDE	TO WEAR TEN TEN	T CONTROL DATE 8-13	3-92
	- EXCAVATION LIMITS STAKED BY SURVEY CREW. - EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. DUST CONTROL ACTION TAKEN	VERIFICATION INSPECTION - EXCAVATION LIMITS STAKED BY SURVEY CREW. - EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. DUST CONTROL ACTION TAKEN	VERIFICATION INSPECTION - EXCAVATION LIMITS STAKED BY SURVEY CREW. - EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. DUST CONTROL ACTION TAKEN - LOCATION: COORDINATES REMARKS - LOCATED CANADAM FULLER LINE ADJACENT TO ANY BEHIND NUMBER CONTROL HE WILL BE ON-SITE TOMANSW TO WASTE ANY USS LINE OTHER REFINEY MEAS. GAS LINE & CUMENT CONTROL EXCAVATED BY MAKES. GAS LINE & CONTROL EXCAVATED BY MAKES. DATES DATE BY MAKES. DATES EXCAVATED BY MAKES. DATES EXCAVATED BY MAKES. DATES DATE BY MAKES. DATES EXCAVATED BY M

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			· .
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN HAUL ROADS WEER	WATERED	AS NEED	ED.
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3.	LOCATION: COORDINATES CONTROLS A	REA-	DECEMBEL 1	
\$.	REMARKS ROGER NORTH OF GEOSYNTEC INS			
•	INSPECTOR Findencia & Martino Reviewed By Collin P. Surkow		DATE <u>8-14-</u>	-
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		ACCEPT	REJECT	N/A
1	. VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		·	
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			·
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.		م	`	
	ACTION TAKEN NONE REQUIRED	(RAIN	٥٧)	
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3.	COORDINATES CUERENT CONTROLS	_	M C C	
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4.	REMARKS ELEVATIONS WERE VERIFIED	By GE	O-CON PERSO	UNEL.
_	INSPECTOR Tuderick & Mostile		DATE 8-15	5-92
	REVIEWED BY Colling of Sukan		DATE <u>8-17-</u>	92

FORM A-19
SHEET _ j OF _ l
INSPECTION DATE 8-17-9z

		ACCEPT	REJECT	N/A
1	. VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		 · .	·
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			<u>/</u>
2.	DUST CONTROL			
	ACTION TAKEN WATERED ROADS	As RE	QUIRED.	
		· 		
3.	LOCATION:		. 1 0.4	
	COORDINATES CURRENT CONTROLS	-	DECEME	
4.	REMARKS MOVED SHEDS TO EXCAV	ATE Soi	L UNDER	
				_
•	INSPECTOR Frederick & Markets REVIEWED BY Colling checkon		DATE 8-17-9	
•			·	

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.	_		
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
 POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. 			
2. DUST CONTROL ACTION TAKEN WATERED HAUL ROA	os As Ne	0.303.	
ACTION TAKEN			
·			`
3. LOCATION: COORDINATES CURRENT CONTROLS		AUG 1919	392 1
4. REMARKS FINISHED EXCAVATION (N CURRE	NT CONTRO	ous
INSPECTOR Fudurick of Mostile REVIEWED BY Collins of Surface		DATE 8-18 DATE 8-19	

ACC	EPT REJECT	N/A		
1. VERIFICATION INSPECTION				
- EXCAVATION LIMITS STAKED BY SURVEY CREW.		·		
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.				
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.				
2. DUST CONTROL				
ACTION TAKEN WATERED HAUL ROADS	As Required	<u> </u>		
		·		
3. LOCATION: COORDINATES OTIS EASTERN	AUG 19 PEREN	1992 D		
4. REMARKS EXCAUATION WAS STARTED TODAY AND IS				
APPROXIMATELY 50% COMPLETE No S	FILL HAS BEEN	PLACED.		
REVIEWED BY (SChar & Scikoca	DATE <u>8-19</u>			

FORM A-19
SHEET _ I OF _ I
INSPECTION DATE 8-19-92

		ACCEPT	REJECT	N/A
1	. VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			•
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			_
2.				
	ACTION TAKEN HAUL ROADS WATERE	o As N	EEDED.	
		· · · · · · · · · · · · · · · · · · ·		
3.	LOCATION:	<u> </u>	GERMEN	
	COORDINATES OTIS EASTERN	_	AUG 2 0 1992	
4.	REMARKS FINISHED EXCAUATING	AND STA	RTED PLACE	ing.
	FILL ELEVATIONS WERE	ACCEPT	ABLE	
	INSPECTOR Friderick & Mostite		DATE <u>\$-19</u>	-92
•	REVIEWED BY Celling Suhaw		DATE 8-26	1-92

	ACCEPT	REJECT	N/A		
1. VERIFICATION INSPECTION					
- EXCAVATION LIMITS STAKED BY SURVEY CREW.					
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.					
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	s 				
2. DUST CONTROL			:		
ACTION TAKEN NONE REQUIRE	ED				
3. LOCATION: COORDINATES POWERHOUSE PLAN C 4. REMARKS FINISHED EXCAVATION BACKFILL TO BEGIN TOMORROW.					
INSPECTOR Trederick J. Mastelle REVIEWED BY Calling Service		DATE <u>8-2</u> DATE <u>8-2</u>	1-92		

AUG 2 5 1992

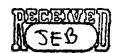
FORM A-19
SHEET 1 OF 1
INSPECTION DATE §-21-92

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.		-	
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.		-	
2. DUST CONTROL			
ACTION TAKEN AS REQUIRED	-,		
3. LOCATION: COORDINATES PLAN F AREA			
4. REMARKS AREA WAS EXCAVATE VERIFIED.	ED AND	ELEVATIO	
REVIEWED BY Jonathan Sames		date <u>8-2(-</u> date <u>8/25/</u>	92



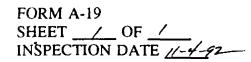
FORM A-19
SHEET _ / OF _ /
INSPECTION DATE 8-24-92

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			·
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2. DUST CONTROL			
ACTION TAKEN NONE REQUIR	ED		
3. LOCATION: COORDINATES PLAN G AREA	- A.		
4. REMARKS AREA WAS EXCAVAT	red HN.	D ELEVATIO	NS
INSPECTOR Frederich Morbits REVIEWED BY Amathan Branks		date <u>8-24-</u> date <u>8/35/</u> 9	92



FORM A-19
SHEET _/_ OF __/
INSPECTION DATE 11/3/92

IX.	EFINER I JOIN ACE BOID ADMINISTRA
	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. * SURVEYING, STAKING & SAMPLING IS RESPONSIBILLING OF CHOSHAITEE
	The state of the transfer of the contract
2.	DUST CONTROL
<i>*</i>	ACTION TAKEN NOW REDURED
3.	LOCATION:
	COORDINATES
4.	REMARKS EXCAVATED 2 ANEAS AT CITIS FASTERN 1 2 ANEAS AT THE PRINTINGSE; And LICATIONS ALE ANOIR THE HAVE RUAD. Excavated areas 21, 32-33 At Otis Eastern and areas 2-3, 16-17-18 at Powerhouse. See Attached Map
	REVIEWED BY forathan Reanels DATE 11/4/92



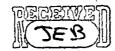
	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.*			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.*		-	
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.*			
* RESTONSIBILITY OF GEOSYNTEC 2. DUST CONTROL			
ACTION TAKEN NONE RESUMED			
3. LOCATION:			
COORDINATES	· .		
4. REMARKS EXCAVATED THE FOLLOWING L	OCATIONS A	T CONCOT CON	mous:
CC-282, CC-384, CC-307, CC- CC-282, CC-342, CC-314, CC			
AND CC-26.	<i>)),</i> (
INSPECTOR		DATE _//- 4/	-92-
REVIEWED BY <u>function</u> <u>Sciences</u>		DATE il 7/4	12_

NOV : 6 1992

FORM A-19
SHEET _/_ OF _/
INSPECTION DATE //-5-92_

	АССЕРТ	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.**	~	<u> </u>	
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.*			
 POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR* 	S		
+ RESPONSIBILITY OF C.EDSYNTER			
2. DUST CONTROL			
ACTION TAKEN NOWA REQUIRED			
·		· · · · · · · · · · · · · · · · · · ·	·
3. LOCATION:			
COORDINATES			
4. REMARKS <u>EXCAUNTED ADDITIONAL DEFINERY AND</u>	EAS AS FOU	wws:	
COURTENT CONTROLS: 76,2,4	22 , /72:	5, 164, 1745	:
INSPECTOR And Banks REVIEWED BY Another Branches		DATE	92

NOV ₹ 7 1992



FORM A-19
SHEET / OF /
INSPECTION DATE //-6-92

				·
		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION		, e	
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		· · ·	
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.		-	
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2:	DUST CONTROL			
	ACTION TAKEN NONE REDVINSE			
				
3.	LOCATION:			
	COORDINATES	 		
4.	REMARKS EXCAVATED SEATTLE TANK	47	DITS BASTE	en/
	property per request	BY A	neo. 🍇	
) ·	REVIEWED BY fruither Brandos	·	DATE _//-6	;-92 /92

G_{FO}	SYNTEC	CONSULTANTS
UEU	DINIEC	COMPORTATION

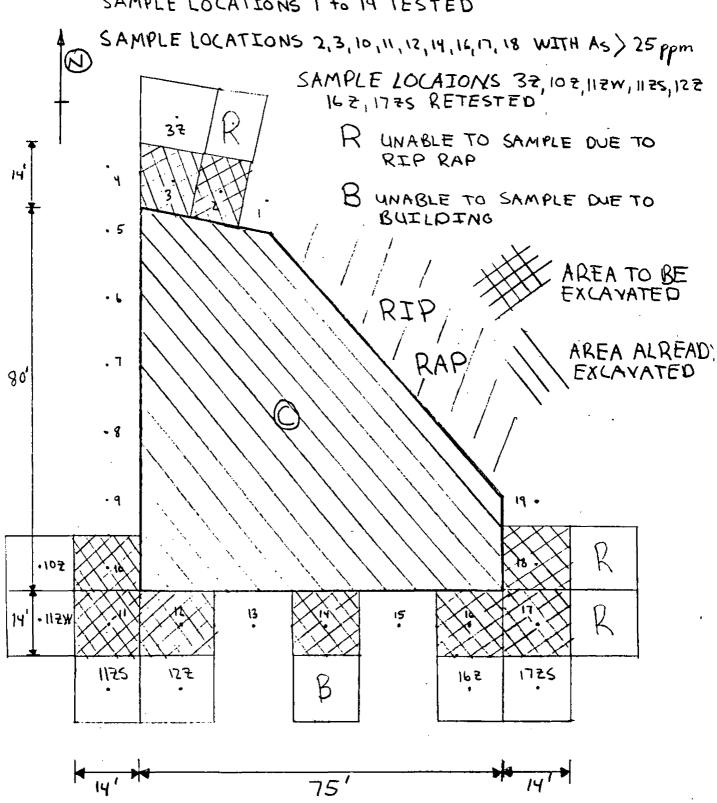
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Task No.:

Written by:	Date:_	<u> </u>	мм	<u>DD</u>	Reviewed by:	 Date:/	<u>/</u>	DD
Client:	Project:			_	Project/Proposal No.:	Task No.:		

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SAMPLE LOCATIONS 1 to 19 TESTED





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Written	1 by:			Date:	<u>-//-</u>	Reviewe	xd by:		D	ate:/_M	<u>-</u> /_
										Γask No.:	
			<u> </u>	REA D	-						
	42	MPLE	LO C/	ATIONS	, I To	34 OR	IGINA	LLY T	ESTED		
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FORM A-19 SHEET / OF 3 INSPECTION DATE 07-30-93

		ACCEPT	REJECT	N/A
l.	VERIFICATION INSPECTION	/		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			/
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	- 4		
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN	· · · · · · · · · · · · · · · · · · ·		·
3.	LOCATION:	•		
	COORDINATES			
ļ				
4.	REMARKS INSTALLATION	OF SILT	FENCE	,
	EROSION CONTROL			
		1		
	INSPECTOR DAN TEMING,	JR	DATE <u>07</u>	30-93
	REVIEWED BY		DATE	
1				

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			•
- EXCAVATION IS COMPLETED TO LIMIT SHOWN ON CONTRACT DRAWINGS.	s ·		
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	ONS		
2. DUST CONTROL ACTION TAKEN WATER TR	!// 12	·	
ACTION TAKEN WATER	1001	 	·
		· · · · · ·	
•			
3. LOCATION:			
COORDINATES PHZ7 PHZ6			
PHZGFD PHZ	25		
4. REMARKS WEST SIDE POL	PERHOUSE	- -	
· · · · · · · · · · · · · · · · · · ·			
INSPECTOR DAN DEMING REVIEWED BY	JR_	date <u>08</u>	

FORM A-19 SHEET / OF 3 INSPECTION DATE 08-03-93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	-		<u> </u>
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	· ——		_
2. DUST CONTROL			
ACTION TAKEN WATER TRU	<u> </u>		·
			
3. LOCATION: COORDINATES PHZ3 PHZ5 PHZ4 PHZ513	PHZ5A		
4. REMARKS WEST SIDE POWE	- FRHOUS	E	
INSPECTOR DEMING, JR REVIEWED BY		date <u>08</u> -	

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION	/		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.	/		
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	-		 /
	- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	'S		
2.	DUST CONTROL			
	ACTION TAKEN WATER TRUC	K	· · · · · · · · · · · · · · · · · · ·	··
			<u> </u>	
3.	LOCATION:			
	COORDINATES PHILY	PH49	M	
	PHILZ PHILX	PHS	3M	·
4.	REMARKS NORTH POWERNOUS	E, SOUTH S	POWER HC	ous E
	INSPECTOR DAN DEMING,	<u> </u>	DATE 08	3-04-93
	REVIEWED BY		DATE	

FORM A-19
SHEET / OF 3
INSPECTION DATE 08-05-93

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION	/		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	<u></u>		
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			$ \leq $
2.	DUST CONTROL			
	ACTION TAKEN WATER TRUC	12		
3.	LOCATION: COORDINATES PHIY PH498			
	PHIW PHSOE			
4.	REMARKS SOUTH POWERHOUSE	, NORT	H POWER	House
	INSPECTOR DAN DEMING, UN		date <u>08</u>	-0593
	REVIEWED BY		DATE	

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	s		
2.	DUST CONTROL			
	ACTION TAKEN WATER TRUC	ckep	LL ARE	545
3.	LOCATION: COORDINATES PHILY PHILY PHIL PHILY	PHZZ PHIBU	Eshq Oth	
4.	REMARKS & NORTH & NORT AREA	HWEST	POWERH	ouse
	INSPECTOR DAN DEMING, UT		date <u>Ob</u>	

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			,
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.	<u></u>		
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	<u>-</u>		 /
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			`
	ACTION TAKEN WATER TRUCK	- @ HAI	IL ROAD.)
	EXCAVATION & STOC	CKPILE		
	· · ·			ļ
3.	LOCATION: COORDINATES PHIGY PHITY	PH40	PH4Z P	+43
	PH17YF PH17WI PH48 PH49 PHSO		PH4ZFI PHG PH	(PH 21
4.	REMARKS EAST POWERHOUS			
			<u> </u>	
	INSPECTOR DEMING, UR		date <u>0</u> 8	-09-93
	REVIEWED BY		DATE	

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION	/		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.	<u></u>		
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	÷		
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL	O Vice		
	ACTION TAKEN WATER TRUCK		WATION,	
	HAUL ROAD, STOCK	LPILE		
3.	LOCATION:			
	COORDINATES CC 47 CC 44D	- PH4Y	N	
	CC43 PH4YA			
4.	REMARKS CURRENT CONTROL,	NORTHE	AST	
	POWERHOUSE AREA			
	INSPECTOR DAN DEMING VA	0	DATE 08-1	<u>0-93</u>
	REVIEWED BY		DATE	
			·	

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION	,		
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2. DUST CONTROL		÷	
ACTION TAKEN NO WATER TR	UCKQ	HAUL RO.	AD
		· 	
3. LOCATION:	·.	.	-0.1
COORDINATES ESIGN ESIGN ESIGN DAIZGX TO	_Esi	DAI	26N 26 263
4. REMARKS FXCAVATION S			
NO BACKFILL		<u> </u>	
INSPECTOR DAN DEMING,	UR_	DATE <u>08</u>	3-11-93
REVIEWED BY		DATE	
·			

FORM A-19
SHEET / OF 3
INSPECTION DATE 09-12-52

		ACCEPT	REJECT	N/A
I.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		· 	.
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.		·	
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			_
2.	DUST CONTROL			
	ACTION TAKEN WATER RPILIED	3.3.7	PRETOUR	(ZE)
	White Survice			· · · · · · · · · · · · · · · · · · ·
3.	LOCATION:		- ,	
	COORDINATES DAZG DAGG		G DASYG	
	DA3G DA5ZG	-	G DAGYG G DAGXG	
4.	REMARKS AREA"G", NORTH SU	UALE	ES15XB	
	NO BACLFILL. 6	TRA ARE		
			·	WALL
·	INSPECTOR DAN DEMINIO L'E		DATE 68	17-93
	REVIEWED BY		DATE	

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FORM A-19
SHEET / OF 3
INSPECTION DATE 08-13-93

		ACCEPT	REJECT	N/A
ı.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	-		
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
? <u>.</u> .	DUST CONTROL	7 3		
	ACTION TAKEN WATER TRUC	<u> </u>		· .
	•			
	-			
3.	LOCATION:	•	·	
	COORDINATES OE 33Z OE 1 YE		OEI	<i>yy</i>
	OE 17 OE 175	_ OE12	E	
4.	REMARKS EXCAVATION & BA	CKFILL	. 76	CATIONS
	(CONTIGOUS) OTIS &	EASTER	<u>N</u>	
	· .			,
	INSPECTOR		DATE <u>08</u>	3-13-93
	REVIEWED BY		DATE	
	·			•

FORM A-19 SHEET / OF 3 INSPECTION DATE 08-16-93

	·	ACCEPT	REJECT	N/A
l.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	<u>.</u>		
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN NONE	 	······································	<u>.</u>
3.	LOCATION:			
	COORDINATES		•	
		_ _		
4.	REMARKS CLEARING TREES	& BRU	/SH	
	ALONG W.A.G. TRAIL	BEHIN	D VALLE	
	INSPECTOR Dan Deming, 1		date <u>08</u>	16-93
	REVIEWED BY		DATE	

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.	$\sqrt{}$		
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			<u>~</u>
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	<u></u>		<u>/</u>
2.	DUST CONTROL			
	ACTION TAKEN RAIN		·	
3.	LOCATION:			
	COORDINATES <u>PH77B</u> 7. PH80B ?			
4.	REMARKS AREA ALONG W.A.G.	BEHIN	D VALLEY	<u>/</u>
	STEEL, CLEARING	3 8 CH	1PPING	
	INSPECTOR DAN DEMING	SR	DATE <u>08</u>	3:17:93
	REVIEWED BY		DATE	

FORM A-19 SHEET / OF 3 INSPECTION DATE 08-18-93

		ACCEPT	REJECT	N/A
I.	VERIFICATION INSPECTION	,		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			-
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	- /		
	- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	Z	 ·	
2.	DUST CONTROL			
	ACTION TAKEN WATER TRUC	CK		
			·	
3.	LOCATION:	-		
	COORDINATES			
				•
4.	REMARKS EXCAVATE BACKFILL			
	W.A.G. BEHIND L	YLLCEY	STEEC	
	INSPECTOR DAN DEMING, U	1R	DATE OS	-18-93
_				<u> </u>
	REVIEWED BY		DATE	.
	·			

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION	,		
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	NS	· · · · ·	
2.	DUST CONTROL			1
	ACTION TAKEN DATER TR	PUCK_		
			· · · · · · · · · · · · · · · · · · ·	
3.	LOCATION:	· .		
	COORDINATES AREA ALONG WA	16. 457666	<u>-</u>	
4.	REMARKS BACKFILL	· · · · · · · · · · · · · · · · · · ·		
		· · · · · · · · · · · · · · · · · · ·		
	INSPECTOR and	<u> </u>	DATE <u>O</u> E	3- <i>19-93</i>
	REVIEWED BY		DATE	
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FORM A-19			
SHEET	OF	·	
INSPECTION	DAT	E <u>09-30-9</u>	ì

	ACCEPT	REJECT	N/A
I. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			<u>/</u> ,
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	<u>. </u>		$\frac{1}{1}$
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	·		<u> </u>
2. DUST CONTROL			•
ACTION TAKEN WATER: TR	uc K		
3. LOCATION:			
COORDINATES			
4. REMARKS HAUL # SOIL FROM ALLEG. CO. CANDELL			
INSPECTOR		date <u> </u>	

 		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION	= =		-
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		•	V
-	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			<u>/</u>
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			<u> </u>
2.	DUST CONTROL			
	ACTION TAKEN NONE			
3.	LOCATION: COORDINATES STOCK PILE AREA	·. 		
				•
4.	REMARKS 194.75 Ex. Soil to A	Hlegany 6.95	Oty Lands	<u> </u>
	INSPECTOR CSB		DATE /8/	1/93
	REVIEWED BY	<u></u>	DATE	

FORM A-19
SHEET __/_ OF __/
INSPECTION DATE __/0/4/93

		ACCEPT	REJECT	N/A
ì.	VERIFICATION INSPECTION)
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	<u> </u>		<u> </u>
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	· · · · · · · · ·	· · ·	
2.	DUST CONTROL			ļ
	ACTION TAKEN Water Truck			
			_ 	
3.	LOCATION:	•		
-	COORDINATES STOCK PILE AREA		·	
	·	<u> </u>		
4.	REMARKS 208.38 tons Ex Soil	to Alle	gany Ctyl	andfill
	Total to Date 5	95.33 4	ons	
	INSPECTOR Charles Ba	ker	DATE 10	14/93
	REVIEWED BY		DATE	
	•			

N/A
,
· · · · · · · · · · · · · · · · · · ·
and [1]
0/05/93

FORM A-19
SHEET / OF /
INSPECTION DATE 10/6/93

. '		ACCEPT	REJECT	N/A
	•	ACCEPT	REJUCT	IVA
i.	VERIFICATION INSPECTION		•	
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		***************************************	<u></u>
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN NONE			<u> </u>
<u> </u>	· · · · · · · · · · · · · · · · · · ·			-
3.	LOCATION:			
	COORDINATES STOCK PILE AREA	<u>+</u>	·	
			,	0
4.	REMARKS 193.58 TONS Ex. So.	1 to Allpa	gany Cty L	andfill
	Total to Date 987.	82 You	<u>s</u>	
		•		1. /a=
	INSPECTOR Charlie Baher		DATE 10	16/93
	REVIEWED BY		DATE	
				•

FORM A-19
SHEET ____ OF ___
INSPECTION DATE _____/93

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			,
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	. —		<u></u>
	- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	S		
2			. ·	
	ACTION TAKEN Water Truck	·		
			_	
3	LOCATION:STOCKPILE AREA			
į				
4	I. REMARKS <u>212.73 fons Exse</u> Total to Date 1200		Pegany Cty	Landf:1
	INSPECTOR Charles Bahin	<u></u>	DATE <u>/</u>	/1/93
	REVIEWED BY		DATE	. <u>. </u>
			•	

FORM A-19
SHEET __/ OF _/
INSPECTION DATE 10/0/93

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			<u></u>
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			<u>/</u>
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.		···	<u>v</u> .
2.	DUST CONTROL			
	ACTION TAKEN Water Truck			
		· · · · · · · · · · · · · · · · · · ·	·	
3.	LOCATION: COORDINATES STOCK PILE AREA	·.		
4.	REMARKS 315.76. tons to Allega Total to Date 1516	any Cty 1	landf://	
	INSPECTOR Charles S. B.	alei	DATE <u>/0/</u>	8/93
	REVIEWED BY		DATE	

FORM A-19
SHEET ____ OF ____
INSPECTION DATE ____/93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2. DUST CONTROL	·		
ACTION TAKEN Water Truck		·	
3. LOCATION: COORDINATES STOCK PILE AREA 4. REMARKS NO Ex. So:1 - holida 119.70 Yors Backfill	y Land Tota	f:11 C/o:	119.7040
INSPECTOR Charlie Baker	<u> </u>	DATE/	0/11/93
REVIEWED BY		DATE	
			•

		ACCEPT	REJECT	N/A
i.	VERIFICATION INSPECTION		•	į
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			<u>v</u>
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.		·.	
2.	DUST CONTROL			
	ACTION TAKEN Water Truck	· · · · · · · · · · · · · · · · · · ·		
3.	LOCATION: COORDINATES STOCK PILE AREA	· · ·		
4.	REMARKS 295.67 Lons Ex Soil Le 20.60 Lons Back ?:11	Allegany	, Cty Land	<u>df:11</u>
7	Total to Date: 1811.98 E4. So:1	140.30	tons Buck	F:11
	INSPECTOR Charles S. Bale	<u> </u>	DATE _/0/.	12/93
	REVIEWED BY		DATE	
	,			-

FORM A-19
SHEET _ _ OF _ /
INSPECTION DATE _ 10 / 13 / 9 3

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	· —		
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
2. DUST CONTROL			-
ACTION TAKEN Water Truc	k .		
3. LOCATION:	: L		
4. REMARKS 196:29 Lons E4. So:1	to Allega	J	
Totals to Date: doo8.27 Lons &	14. So: 1	240.024	Ions Back
INSPECTOR Charles Bak	lu_	DATE _/	0/13/93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	· -		
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	S	 · ·	
2. DUST CONTROL			
ACTION TAKEN Water Truck			· .
3. LOCATION:	•		
COORDINATES STOCK PILE AREA			
			
4. REMARKS <u>200.75 Yous Ey So:/ 4</u>		ry County L	and fil
175.25 Lons Backfil Totals to Date dagg. 02 Lons Ey.	So:1 4,	15.27 Yous	Backfill
INSPECTOR	·····	DATE /	/14/93
REVIEWED BY		_ DATE	

FORM A-19
SHEET ___/_OF __/
INSPECTION DATE 10/15/93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	. —		
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	s		
2. DUST CONTROL			
ACTION TAKEN Water Truck	<u>′</u>		
3. LOCATION:		4. /.	
4. REMARKS <u>200.18 Yours</u> Ey. Soil 201.26 Yours Backfile	40 H11EGA 1	ny cry car	10 t. 11
Total to Date: 2409.20 tons E4. So:1	516.5.	3 Vons Bu	ckf:11
INSPECTOR Charles S./	Salu	DATE /0/	15/93
REVIEWED BY		DATE	

FORM A-19		,	
SHEET/_		_/_	
INSPECTION	DATE	[10/	16/93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			_
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.	· ——		
- POST EXCAVATION SAMPLING LOCATION SURVEYED BY THE SURVEYOR.	NS		<u> </u>
2. DUST CONTROL			
ACTION TAKEN Water Truck			
3. LOCATION:	A		
4. REMARKS <u>No E4. So: 1 4000</u>	Ly		
301.15 tons Buckfi	Il Total	1 to Date	817.68 to
INSPECTOR Charles Bah	· · · · · · · · · · · · · · · · · · ·	DATE _/	0/16/93
REVIEWED BY	·	DATE	

FORM A-19
SHEET __/_OF _/
INSPECTION DATE 10/18/93

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.	-		
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	S	<u> </u>	
2. DUST CONTROL			
ACTION TAKEN Water Truc	<u>(c</u>	·	
3. LOCATION:	o Allegan 11 2.So:1 94	10.35 Yous	Back il

FORM A-19
SHEET __/_OF _/
INSPECTION DATE __/_93

EXCAVATION REFINERY SURFACE SOIL REMEDIATION

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		 ,	_
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	———	 ·	
2.	DUST CONTROL			
	ACTION TAKEN Water Truck	•	<u></u>	<u>.</u>
		· 		
3.	LOCATION: _COORDINATES _STOCK PILE AREA	·.		
4.		Alleg	any Cty. La	ndf:11
70	120.44 yours Dackfill tals 40 Date: 1999.36 yours Ex	So:/	1060.79 Km	s Backfi
	INSPECTOR Charles Beher	<u> </u>	DATE /	0/19/93
	REVIEWED BY		DATE	

FORM A-19
SHEET ___/ OF ___!
INSPECTION DATE 10/20/93

EXCAVATION REFINERY SURFACE SOIL REMEDIATION

	ACCEPT	REJECT	N/A
. VERIFICATION INSPECTION			,
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	· ·		<u></u>
2. DUST CONTROL			
ACTION TAKEN Water Truck		· · · · · · · · · · · · · · · · · · ·	
3. LOCATION:	٠.	•	
COORDINATES STOCK PILE AREA	6		
·		/	. /
4. REMARKS 198.01 Yous Ex. Soil	La H//pg.	eny Cty La	ndt: 11
10tals Lo Date: 319731 Lons E4.50:1	·	Yons Back	
10tals le llite: 3197.31 Louis E4.20.1	7770.75	THE GREA	-7-11
INSPECTOR <u>Charles S.B.</u>	sher	DATE 10/	20/93
REVIEWED BY		DATE	
			•

FORM A-19
SHEET _____ OF _____
INSPECTION DATE 10/21/93

EXCAVATION _ REFINERY SURFACE SOIL REMEDIATION

·		ACCEPT	REJECT	N/A
i.	VERIFICATION INSPECTION	~		ļ
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.		· ————	
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.			
2.	DUST CONTROL			
	ACTION TAKEN Water Truck		· · · · · · · · · · · · · · · · · · ·	
			· · · · · · · · · · · · · · · · · · ·	
3.	LOCATION:	· .	•	
_	COORDINATES STOCK PILE AREA		•	
	 			
4.	REMARKS 297.59 Yous Ey. So.	1 to Alleg	ang Cty L	<u>indf:</u> //
	Total to Date: 3494.	90 Vons	Ex. Si./	
	INSPECTOR Charles S. Ba	kee	DATE _/8/	21/93
	REVIEWED BY		DATE	

EXCAVATION _ REFINERY SURFACE SOIL REMEDIATION

	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- EXCAVATION LIMITS STAKED BY SURVEY CREW.			
- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.			
- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.	S		
2. DUST CONTROL	-		
ACTION TAKEN Water Truck	<u> </u>	 	· · · · · · · · · · · · · · · · · · ·
2 LOCATIONS	· .		
3. LOCATION:	6	•	
			·
4. REMARKS <u>296.65.4005</u> E4.50:1 x	6 Allega	ny Cty La	andf:11
Totals to Date: 3791.55 Yous E4. So	:1 145	3.20 Jons	Buckt: 11
INSPECTOR Charles Baker		DATE	10/72/93
REVIEWED BY		DATE _	
			•

FORM A-19
SHEET _____OF __/
INSPECTION DATE <u>(0/23/93</u>

EXCAVATION _ REFINERY SURFACE SOIL REMEDIATION

		ACCEPT	REJECT	N/A	
ı.	VERIFICATION INSPECTION				
	- EXCAVATION LIMITS STAKED BY SURVEY CREW.	· ———		~	
	- EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS.				•
	- POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR.		<u></u>		
2.	DUST CONTROL				
	ACTION TAKEN <u>Water Truck</u>	<u> </u>	<u> </u>		
	· · · · · · · · · · · · · · · · · · ·		<u>.</u> .		
3.	LOCATION: COORDINATES STOCK PILE AREA				
	· · · · · · · · · · · · · · · · · · ·				
4.	REMARKS 136.86 tons Ey. So: 1 4	lo Allega	ing Oty La	endf:11	
	136.12 tons Buckfill	451.0	ob tons	Topso: / Con	nple
70+	als to Date: 3927.81 tone E4. Soil complete	1589.32	tons Dac	Kt: 11	
	INSPECTOR Charlie Belie		DATE 1	0/23/93	
	REVIEWED BY		DATE		

FORM A-19
SHEET / OF /
INSPECTION DATE 10/25/93

EXCAVATION REFINERY SURFACE SOIL REMEDIATION

1. VERIFICATION INSPECTION - EXCAVATION LIMITS STAKED BY SURVEY CREW. - EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. 2. DUST CONTROL ACTION TAKEN Water Truck 3. LOCATION: COORDINATES STOCK PILE AREA 4. REMARKS \$30.67. Lons Backf: 11 Total La Date 1819.99 Complete INSPECTOR Chales S. Baler DATE 10/25/9.3 REVIEWED BY DATE		ACCEPT	REJECT	N/A
SURVEY CREW. - EXCAVATION IS COMPLETED TO LIMITS SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. 2. DUST CONTROL ACTION TAKEN Water Truck 3. LOCATION: COORDINATES STOCK PILT AREA 4. REMARKS 330.67 Lons Backf: 11 Total L. Date 1819.99 Complete INSPECTOR Chales S. Bales Date 10/25/9.3	1. VERIFICATION INSPECTION			
SHOWN ON CONTRACT DRAWINGS. - POST EXCAVATION SAMPLING LOCATIONS SURVEYED BY THE SURVEYOR. 2. DUST CONTROL ACTION TAKEN Water Truck 3. LOCATION: COORDINATES STOCK PILE AREA 4. REMARKS 330.67. Lons Backfill Total to Date 1819.99 Complete INSPECTOR Challes S. Baker Date 10/25/93	,			~
2. DUST CONTROL ACTION TAKEN Water Truck 3. LOCATION: GOORDINATES STOCK PILT ARTA 4. REMARKS A30.67 Lons Backfill Total to Date 1819.99 Complete INSPECTOR Charles S. Baker DATE 10/25/93				
3. LOCATION:		rs <u> </u>	<u> </u>	
3. LOCATION:	2. DUST CONTROL			
4. REMARKS <u>830.67</u> Lons Backf: 11 Total La Date 1819.99 Complete INSPECTOR Charles S. Baler DATE 10/25/93	ACTION TAKEN Water Truck			·
4. REMARKS <u>830.67</u> Lons Backf: 11 Total La Date 1819.99 Complete INSPECTOR Charles S. Baler DATE 10/25/93				·
Complete INSPECTOR Charles S. Baker DATE 10/25/93		4		
		11 Total	4 Date	<u>1819.9</u> 9 H
REVIEWED BY DATE	INSPECTOR Charles S. Bo	her	DATE <u>/</u> c	125/93
	REVIEWED BY		DATE	

FORM A-20 COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES

FIGURE 4-1

EBASCO SERVICES INCORPORATED FIELD CHANGE REQUEST

Project Name	INCLAIR REFINERY	Ebasco Work Charge Number	F	Field Change No. /
TO GEOSYNTE	<u>c</u>	Location WELLS V	ILLE, NY	Date <u>8-27-</u> 9z
Description: ONLY US INSTEAD	ING CUSTOD	LY SEALS ON	AND THE	Loolees.
	SAMPLES REMA	IN IN THE S E ACCESSED U		
THE COOLE	R ONLY WAS	DISCUSSED WI ABLE TO HIM. ure) Frederick	TH TOM O'	NEILL (EPA REP.)
Construction Ma	عند المنداد	32.	11/54	Dathe 82992
Distribution:	EPA Project Manage ARCO Project Manage BASCO Project Manage Duality Assurance Construction Manage Project Manage Construction Manage Project	ager anager a Manager	Others as R	equired



FORM A-20
SHEET 1 OF 1
INSPECTION DATE 9-18-92

	ACCEPT REJECT N/A
I. VERIFICATION INSPECTION	
- SURFACE SOIL SAMPLES COLLECTED PER PROJECT SAMPLING AND ANALY PLAN	
2. DUST CONTROL ACTION TAKEN NONE REG	UIRED
3. LOCATION OF SAMPLING: COORDINATES PLAN G	
CHAIN OF CUSTODY.	TODAY SEE ATTACHED MAPS FOR REFINERY AREAS MITTED ARE ATTACHED.
INSPECTOR Tuderick & Ma REVIEWED BY Anathan Brando	DATE 9-18-92 DATE 9/21/92





4075 Monroeville Blvd • Col Manroeville, Pennsylvania 15146 Tel (412) 856-7700

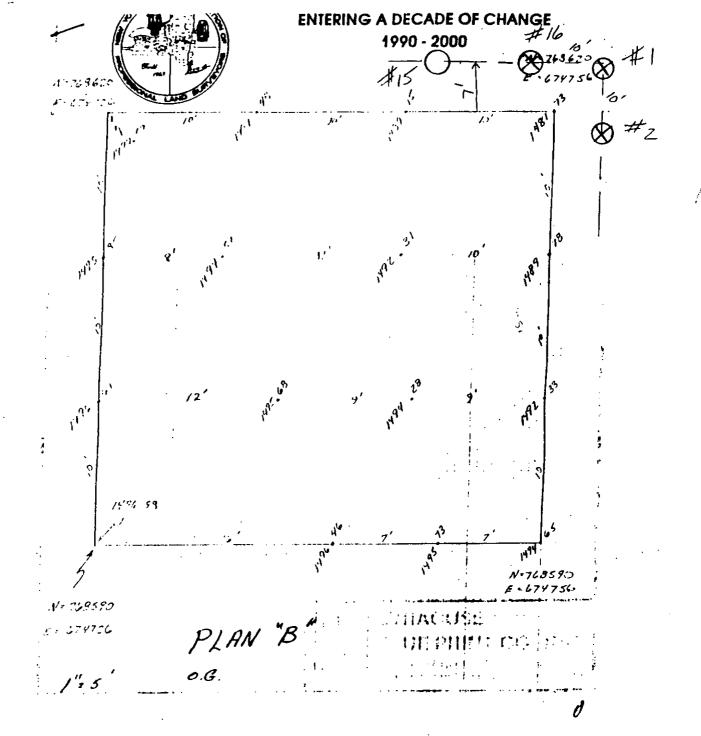
FAX 1412

→ One Building II •

GEOTECHNICAL CONTRACTING

PROJ. NO. PROJECT NAME/LOCATION SINCLAIR P1-0129 REFINERY **PARAMETER** NO. SAMPLERS: (Signature) OF MASTELE J. KLINE CON-TAINERS REMARKS STA. NO. DATE TIME STATION LOCATION 9-1792 1450 SR-DA-CONF-9-G SR-DA-CONF-8-G 1500 SR-DA-CONF-1-G 1 1507 SR-DA-CONF-6-6 Relinquished by: (Signature) Date / Time ALBORNE EXPRESS Relinquished by: (Signature) Date / Time Received by: (Signature) 19-18-92 PM CARRIER Relinquished by: Signature Relinquished by: (Signature) Date / Time Received but Classace) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Date / Time Remarks Personal for Laboratory by:

Distribution Original Accompanies Shapmant. Capy returned with Report.



SAMPLES! SR-ES-CONF-1 TO 16

LOCATIONS IN WET AREA IN SWALE

(MAP SHOWING OTHER SAMPLE LOCATIONS HAS ALREADY

BEEN SUBMITTED.)

SAMPLES: SR-OE-CONF-1 TO 34

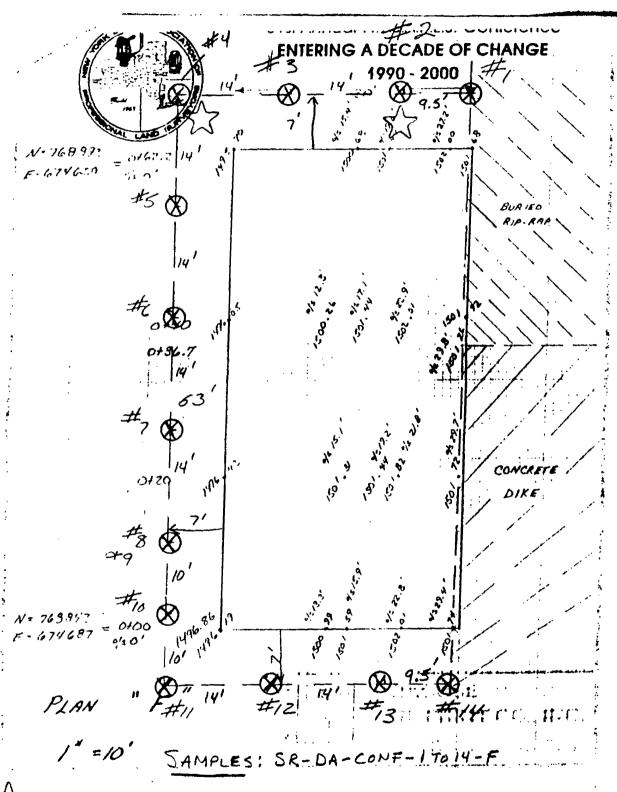
OF EPA SPLIT SAMPLES

4/4

SAMPLES! SR-PH-CONF-1 TO 19

SAMPLES WERE NOT TAKEN IN THE RIP RAP

W EPA SPLITS



WEPA SPLITS

PLAN "G" */ N:769108.11 E: 674445.12

SAMPLES: SR-DA-CONF-1 TO 14-G



FORM A-20 SHEET 3 OF 3 INSPECTION DATE 9-17-92

	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN
2.	ACTION TAKEN NONE REQUIRED
3.	LOCATION OF SAMPLING: COORDINATES PLAN 6" - SWALE DIKE AREA
4.	REMARKS FINISHED SAMPLING, SENT ALL BUT 4 SAMPLES TO LAB THEY WILL BE SENT OUT TOMORROW. THE SAMPLES COULD NOT BE TAKEN WITH SHELBY TUBES. THE SAMPLES WERE DUC OUT WITH A SHOVEL TO A DEPTH OF I FOOT AND A REPRESENTATIVE SAMPLE WAS TAKEN. SEE THE ATTACHED CHAIN OF CUSTODY.
	INSPECTOR Lederice Martin DATE 9-17-92 REVIEWED BY Jonathum Branches DATE 9/19/92

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2.	DUST CONTROL ACTION TAKEN NONE REQUIRE	ED	·	
	LOCATION OF SAMPLING: COORDINATES PLAN B - SWA REMARKS TINISHED SAMPLING		-< /\\ \(\)	· ·
4.	PORTION OF SWALE, SEE CUSTODY, HAD TO DIG O TO ROCKY FOR SHELBY			NOF WAS 2
	INSPECTOR Trederick Washing Reviewed By Anathan Brandes		date <u>9-17</u> date <u>9/19/</u>	92 12

FORM A-20
SHEET _ i _ OF _ 3
INSPECTION DATE _ 9-17-92_

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN	/		
2.	DUST CONTROL ACTION TAKEN NONE REQUIR	RED		
3.	LOCATION OF SAMPLING: COORDINATES PLAN F DIKE	AREA		
4.	REMARKS TINISHED SAMPLING	S. SEE	ATTACHED	·
		S	EP 1 8 1992 JEB	
	INSPECTOR Tudenich Market REVIEWED BY Anathan Branches	<u></u>	DATE <u>9-17</u> DATE <u>9/17/</u>	7-9z 192



GEOTECHNICAL CONTRACTING

Headquarters
4075 Monroeville Blvd. • Corpor
Monroeville, Pennsylvania 15146
Tel (412) 856-7700

FAX (412) 3

10 Building II • Suil

PROJECT NAME/LOCATION PI-0129 SINCLAIR REFINERY **PARAMETER** NO. SAMPLERS: (Stoneture) OF F MASTELE J. KLINE CON-REMARKS TAINERS TIME OF O GPAB. STA. NO. DATE STATION LOCATION 9-17-92 10856 SR-DA-CONF-14-F SR-ES-CONF-16 0949 11 SR-ES-CONF-1 (I 1003 1009 SR-ES-CONF-Z SD-DA-CONF-1-G L 1145 1156 SR-DA-CONF-2-6 ١, 1311 SR-DA-CONF- 3-6 46 1315 SR-DA-CONF-4-6 tt 1320 SR-DA-CONF-5-G ŧι SR-DA-CONF - 13-G 1526 . 133(SR-DA-CONF-14-G ι, SR-DA-CONF-12-G 1340 11 1350 SR-DA-CONF-11-G 11 SR-DA-CONF-10-G 1354 01 ALREGIENE EXPRESS Relinquished by: (Signeture) Date / Time Relinquished by: (Signature) Received by: (Signature) Date / Time rederich Master 19-1792 CARRIER Relinquished by: (Signature) Date / Time Received by: (Signature) Date / Time Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date / Time Received for Laboratory by: Date / Time Remarks (Signature) Distribution Original Accompanies Shipment. Copy returned with Report.

Original chain of Custody goes to Laboratory

Sam	0 / <u>2 9</u> plers (1	Please I	print)	AIR RE			of er	Number containers		/ / !	//	7	7	7	7	/	7	7	$\overline{/}$		
上.	<u> </u>	ASTE	LE	J.C	LINE		tain	혈혈	/	\$/								/ /	/ /	′ /	
		Comp.			dentification		Type of container	Nui of con	1		/				/_		\angle	\mathbb{Z}		Remarks	
1-6- 92	1435		X	SR-06	-CONF.	-27	YOZ GUBS	l	く											•	
a	1445		χ	SR-OE	-CONF	- 29	24	4													
u	1457		X	SR-c€	- CONF -	-30	11	1	-												
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¥	1615	<u> </u>	X	SR-DA	-conf-	5-F	u	**	-												
7	1626				-CONF-		11	64	-												
11	1637		ᅩ	SR-DA	- CONF -	6-F	• 1	er													
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CEIMIC Corporation 10 Dean Knauss Drive, Narragansett, RI 02882 (401) 782-8900 FAX (401) 782-8905

FORM A-20 SHEET Z OF Z INSPECTION DATE 9-16-92

	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN
2.	ACTION TAKEN NONE REQUIRED
3.	LOCATION OF SAMPLING: COORDINATES DIKE (PLAN F)
4.	REMARKS STARTED PLAN F TODAY AND SHOULD FINISH TOMORROW. SAMPLES WILL BE SHIPPED TOMORROW. SEP 17 1992 JEB
	NSPECTOR I reduced Wantilo DATE 9-16-92 REVIEWED BY frethern Boands DATE 9/17/92



FORM A-20
SHEET _ i _ OF _ Z
INSPECTION DATE <u>9-16-9</u> Z

	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN
2.	DUST CONTROL
	ACTION TAKEN NOWE REQUIRED
3.	LOCATION OF SAMPLING:
	COORDINATES OTIS EASTERN (PLAND)
4.	REMARKS COMPLETED OTIS EASTERN TODAY - SAMPLES
	JAKEN AND SHIPPED TODAY - SEE ATTACHED
	CHAIN OF CUSTODY. SR-OE-CONF-34 WAS
	A DUPLICATE OF SR-OE-CONF-33.
	INSPECTOR Trederich Waste DATE 9-16-92 REVIEWED BY frather Branch DATE
	REVIEWED BY frather Beards DATE

Original chain of Custody goes to Laboratory

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		Comp.			Identification		Type of container	Number of containers	8			/	//		/	//	/	/	/	Remarks
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FORM A-20		
SHEET/_	OF	
INSPECTION I	DATE	9-15-92

		ACCEPT	REJECT	N/A	
1	. VERIFICATION INSPECTION				
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			_	
2.	DUST CONTROL				
	ACTION TAKEN NONE REQUIRED	· · · · · · · · · · · · · · · · · · ·			
3.	LOCATION OF SAMPLING:				
	COORDINATES OTIS EASTERN (DEN D))			
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·4.	REMARKS ATTAINED IS 8 1004 OF	THE CHAIN OF	cusney for		
	SAMPLES SOLF DUT TOLAY. N	lo sampund	TODAY, ONLY		
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			DECISIMIE (TEB)		
	INSPECTOR Mis Bale		DATE _9-15		
)	REVIEWED BY fruttion branches		date <u>9/16/</u>	92	

Original chain of Custody goes to Laboratory

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FORM A-20
SHEET ___ OF ___
INSPECTION DATE 9-14-9-2_

	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN
2.	DUST CONTROL ACTION TAKEN NONE REQUIRED
3.	LOCATION OF SAMPLING: COORDINATES OTIS EASTERN (PLAN D)
4.	REMARKS 13 SAMPLES WERE TAKEN PLUS TWO
	DUPLICATES. ATTACHED IS THE CHAIN DE CUSTODY FOR THE SAMPLES SHIPPED TODAY. SR-OE-CONF-4A IS DUPLICATE OF 5.
	INSPECTOR Tuderick Wasteles DATE 9-14-92 REVIEWED BY Amethin Buncles DATE 9/15/72

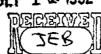
Original chain of Custody goes to Laboratory

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CEIMIC Corporation 10 Dean Knauss Drive, Narragansett, Rt 02882 (401) 782-8900 FAX (401) 782-8905

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SEP 1 2 1992



FORM A-20
SHEET ___ OF ___
INSPECTION DATE 9-11-9 Z.

		ACCEPT	REJECT	N/A
t.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2.	DUST CONTROL			
	ACTION TAKEN NONE REQUIR	2ED		
		· · · · · · · · · · · · · · · · · · ·		
	LOCATION OF SAMPLING: COORDINATES PLAN C" (POWER PLAN D (OTIS EAS	TERN)		·
1.	REMARKS TINISHED SAMPLING			
	STARTED PLAN D.			
	CHAIN OF CUSTODY FOR	SAMPLE	S SENT	10
	INSPECTOR Jealeuch Jenas REVIEWED BY Jonathan Branches		date <u>9/14/</u>	72. 2

Original chain of Custody goes to Laboratory

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SEP 1 1 1992



FORM A-20 SHEET _ I OF _ I INSPECTION DATE <u>9-10-92</u>

_		ACCEPT	REJECT	N/A
I.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2.	DUST CONTROL			
	ACTION TAKEN N/A			
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3.	LOCATION OF SAMPLING:		•	
	COORDINATES PLAN C (POWER HO	<u>∞s</u> ε)		
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4.	REMARKS ATTACHED CHAIN OF CUST	roby 15 Fo	OR SAMPLES	
	TAKEN 9-9-92 AND SENT WERE TAKEN TODAY	TODAY .	No SAMPLES	<u>.</u>
	Western		·	
	INSPECTOR Triderid Mostit	5	DATE <u>9-10-</u>	
	REVIEWED BY jonathan Branche		DATE <u>9/11/9</u>	<u>72</u>

Original chain of Custody goes to Laboratory

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CEIMIC Corporation 10 Dean Knauss Drive, Narragansett, RI 02882 (401) 782-8900 FAX (401) 782-8905

SEP 1 0 1992



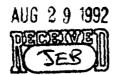
FORM A-20 SHEET / OF / INSPECTION DATE 9-9-92-

		ACCEPT	REJECT	N/A
1. VERIFICA	TION INSPECTION			
	E SOIL SAMPLES COLLECTED AS DECT SAMPLING AND ANALYSIS			
2. DUST CON	TROL			
ACTION TA	AKEN NONE REQUIRED			 -
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	OF SAMPLING: TES PLAN C POWERHOR	<i>∪</i> ≤ <i>€</i>		
	:			
4. REMARKS _	SAMPLES TAKEN AT	11 SAM	IPLING Poin	U7S]
4	SAMPLES SENT TO LAB	SEE AT	TACHED .	SHEET
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INSPECTOR	or prathan Burnets		DATE <u>9-9-</u>	92
REVIEWED I	BY Justhan Brownes		date <u>y-y-</u> date <u>y/i0/9</u>	<u>2</u>

Original chain of Custody goes to Laboratory

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CEIMIC Corporation 10 Dean Knauss Drive, Narragansett, RI 02882 (401) 782-8900 FAX (401) 782-8905



FORM A-20
SHEET 1 OF 1
INSPECTION DATE 8-28-92

		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN	<u>/</u>		
2.	DUST CONTROL			
	ACTION TAKEN NONE REQUIRED			
3.	LOCATION OF SAMPLING:			
	COORDINATES CURRENT CONTROLS	PLAN	A "	
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4.	REMARKS SAMPLES SR-CC-CONF-63 T	82 AL	D PLAN À	···
	HAS BEEN COMPLETED. SE	E THE A	TTACHED N	1AP
	FOR SAMPLING LOCATIONS A THOSE SAMPLING POINTS GREA WERE APPROVED BY TOM O'	TER THAI	J 14 FOOT (•
	INSPECTOR Frederick Mountains REVIEWED BY Justine & Branch		date <u>8-28</u> date <u>8/29</u> /	192

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Original chain of Custody goes to Laboratory

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CEIMIC Corporation 10 Dean Knauss Drive. Narragansett. RI 02882 (401: 782-8900 FAX (401) 782-8905

Original chain of Custody goes to Laboratory

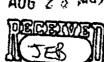
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FORM A-20 SHEET 1 OF 4 INSPECTION DATE 8-27-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

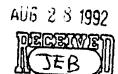
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1. VERIFICATION INSPECTION			
- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2. DUST CONTROL			
ACTION TAKEN NONE REQU	IRED		
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3. LOCATION OF SAMPLING:			,
COORDINATES PLAN F			
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4. REMARKS TOM O'NEILL (EPA REP.) TOOK	SPLIT S	SAMPLES
TROM SR-DA-CONF-4	-F, AND	SR-DA-CO	NF-2-F.
MAP WILL BE SUBMITT	ED WHE		
IS COMPLETED IN THAT	AREA.		
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INSPECTOR Tudend Modelle	<u> </u>	DATE 8-27	
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FORM A-20 SHEET 2 OF 4 INSPECTION DATE 8-27-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

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1.	. VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN	_	,	
2.	DUST CONTROL ACTION TAKEN NONE REQUIRED	>		
3.	LOCATION OF SAMPLING: COORDINATES OTIS EASTERN PLAN	"D"		
4.	REMARKS JOM O'NEILL (EPA REP. FROM SR-OE-CONF-4 AND MAP WILL BE SUBMITTED W IS COMPLETED IN THAT A	SR-C	E-CONF-	15.
	INSPECTOR <u>Ludwick</u> Moulton REVIEWED BY fruttar & Branks		DATE <u>8-27</u> DATE <u>8/28</u>	192



FORM A-20 SHEET 3 OF 4 INSPECTION DATE 8-27-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

·	ACCEPT	REJECT	N/A
1. VERIFICATION INSPECTION			
- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2. DUST CONTROL			
ACTION TAKEN NONE REQUI	RED		
3. LOCATION OF SAMPLING: COORDINATES POWER HOUSE PLA	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		
COORDINATES FOWER HOUSE 12A	2_0		
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4. REMARKS TOM O'NEILL (EPA R	EP.) TOOK	SPLIT SAM	PLES
TROM SR-PH-CONF-3 A	NO SR-PH	-CONF-6.	· .
MAP WILL BE SUBMITT		THE SAMPI	LING
IS COMPLETED IN THAT A	rea.		
INSPECTOR Treduich & Most	<u>ts</u> _	DATE 8-27	-92
REVIEWED BY Juntan & Branks		DATE 8/28	192
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FORM A-20 SHEET 4 OF 4 INSPECTION DATE 8-27-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

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2. DUST CONT	ROL			
ACTION TA	KEN NONE REQUIRED	>		
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COORDINAT	ES CURRENT CONTROLS	PLAN A	<i>f</i> "	,
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4. REMARKS	TOM O'NEILL (EPA REA)	SUPERVISED	THE SAM	1PCINE
	IND DECON. SAMPLES SR			
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INSPECTOR _ REVIEWED B	Trederich & Mostel Y prettisk & Branch		DATE <u>8-27</u> DATE <u>8/28</u>	
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Original chain of Custody goes to Laboratory

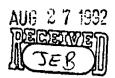
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Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

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FORM A-20
SHEET 1 OF 1
INSPECTION DATE 8-26-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

	ACCEPT REJECT N/A
1.	VERIFICATION INSPECTION
•	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN
2.	DUST CONTROL
	ACTION TAKEN NONE REQUIRED
3.	LOCATION OF SAMPLING:
	COORDINATES CURRENT CONTROLS PLAN A"
4.	REMARKS COPIES OF CHAIN OF CUSTODY FORMS ARE
ē	ATTACHED FOR SAMPLES TAKEN TODAY (43),
	A MAP OF THE AREAS WHERE SAMPLES WERE
	TAKEN WILL BE SUPPLIED UPON COMPLETION. SAMPLING AND DECON PROCEDURES WERE SUPERVISED
	By TOM ONEILL (EPAREP)
	INSPECTOR Fudural Mostlo DATE 8-26-92
,	REVIEWED BY Another E Bearries DATE 8/27/92

Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

Proj. # Project name P1-0:29 SINCLAIR REFINERY Samplers (Please print) F. MASTELE S McCALL M. MULLCOLY								Ų	$\overline{}$	7	7	7	7	7	7					
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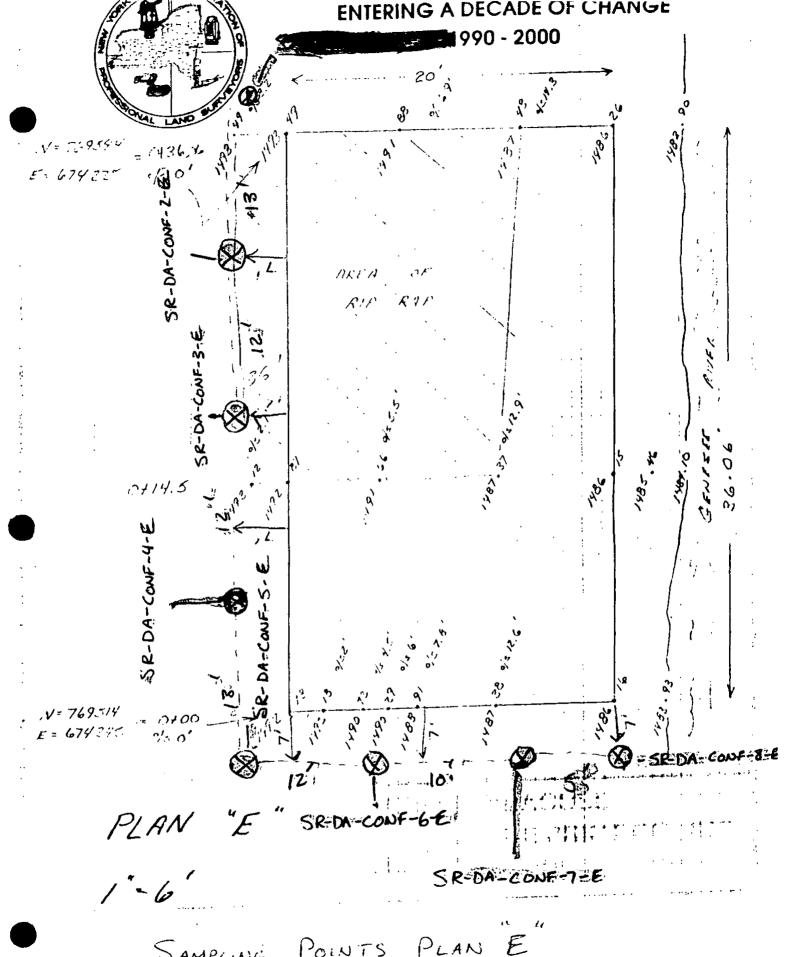


FORM A-20 SHEET Z OF Z INSPECTION DATE 8-25-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

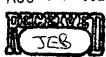
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		ACCEPT	REJECT	N/A
1.	VERIFICATION INSPECTION			
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
2.				
	ACTION TAKEN NONE REQUIT	2ED		
3.	LOCATION OF SAMPLING:			
	COORDINATES PLAN E AREA	•		
4.	REMARKS SEE ATTACHED MAD	FOR SA	MPLING F	OINTS.
-	TOM O'NEILL (EPA REP) IS	GOING T	O CHECK	WITH
	THE EPA ABOUT SAMPLING	IN RII	RAP AN	D
	ALONG BANK OF PLAN	E,		
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	INSPECTOR Treduck & Mas		DATE <u>8-2</u>	5-92
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POINTS PLAN SAMPLING

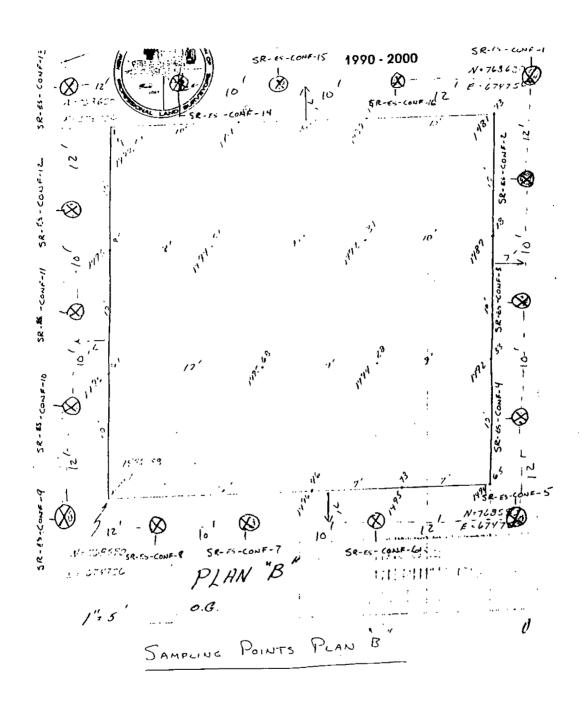
AUG 2 7 1992



FORM A-20
SHEET 1 OF 2
INSPECTION DATE 8-25-92

COLLECTION AND ANALYSIS OF SURFACE SOIL SAMPLES REFINERY SURFACE SOIL REMEDIATION

·	ACCEPT	REJECT	N/A
VERIFICATION INSPECTION			
- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN			
DUST CONTROL			
ACTION TAKEN NONE REQUIRE	<u> </u>		
LOCATION OF SAMPLING:		•	
COORDINATES PLAN B AREA			
<u> </u>	_		
REMARKS SEE ATTACHED MAP	FOR SAM	PLING POI	υτ _ς .
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DE OKAY FOR WET	AKERS	· .	
INSPECTOR Frederick Wastite	5	DATE <u>8-2</u>	5-92
REVIEWED BY for than & Brandos	· · · · · · · · · · · · · · · · · · ·	DATE <u>8/27/</u>	92
	- SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN DUST CONTROL ACTION TAKEN NONE REQUIRE LOCATION OF SAMPLING: COORDINATES PLAN B AREA REMARKS SEE ATTACHED MAP SAMPLES SR-SE-CONF-1, Z+16 EPA AGREED THAT BE OKAY FOR WET INSPECTOR TENDENGY WASLING.	VERIFICATION INSPECTION - SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN DUST CONTROL ACTION TAKEN NONE REQUIRED LOCATION OF SAMPLING: COORDINATES PLAN B AREA REMARKS SEE ATTACHED MAP FOR SAM SAMPLES SR-SE-CONF-1, Z+16 WERE N EPA AGREED THAT SHELBY BE OKAY FOR WET AREAS	VERIFICATION INSPECTION - SURFACE SOIL SAMPLES COLLECTED AS PER PROJECT SAMPLING AND ANALYSIS PLAN DUST CONTROL ACTION TAKEN NONE REQUIRED LOCATION OF SAMPLING: COORDINATES PLAN B AREA REMARKS SEE ATTACHED MAP FOR SAMPLING POINT SAMPLES SR-SE-CONF-1, 2 +16 WERE NOT TAKEN EPA AGREED THAT SHELBY TUBES WERE OKAY FOR WET AREAS. INSPECTOR TURBUILD WASTED DATE 8-2:



SAMPLES TAKEN

SAMPLES NOT TAKEN

Original chain of Custody goes to Laboratory

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		Comp.	Grab	Sample	Identification]	of con	4		Ι,	/		/	/	/	/	/	/	Remarks		
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11	<i>॥:క</i> ऽ			SR-ES-	cont-6		LL	11	1												. <u>.</u>	
į.	11:45		11	SR-ES-	CONFT		**	10		ŀ												
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Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

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FORM A-21 PLACEMENT OF COMMON FILL

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET / OF 2
INSPECTION DATE 8/10/12



1.	MATERIAL	ACC	EPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA				
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.				· ·
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS				
2.	PLACEMENT				
	- FILL IS PLACED IN HORIZONTAL LAYE	RS	-		
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMU	лм)	- -	-	
	- SURVEYOR VERIFIED SLOPES, THICKN AND ELEVATIONS.	ESS	_		
	- ALTERNATE METHOD OF PLACEMENT.				
3.	VERIFICATION TESTING				
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.		· ·		
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	 -	_		

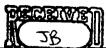
PLACEMENT OF COMMON FILL		
REFINERY SURFACE SOIL REMEDIATION (C	ONT'D)	

4.	DUST CONTROL ACTION TAKEN Waren muck used as Necessary
5.	LOCATION:
	COORDINATES <u>Connews</u> Cournous
6.	REMARKS BEGAN EXCAVATION - PORTION OF MEA VENIFIED A BACKFINED NUCLEAR DOSSITY TESTS PERFORMED AS FOLLOWS 1. DENSITY = 98.5 7. 2. DENSITY = 81.41. * * ANEA PERSONED & REFESTED, DENSITY = 85.4%.

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET 1 OF Z
INSPECTION DATE 3-12-92

AUG 1 3 1992



1.	MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			***************************************
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS		<u> </u>	
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
				1

FORM A-21
SHEET 2 OF 2
INSPECTION DATE 8-12-92

PLACEMENT OF	COMMON FILL	
REFINERY SURF	FACE SOIL REMEI	DIATION (CONT'D)

4.	DUST CONTROL
	ACTION TAKEN None REQUIRED
	LOCATION:
	COORDINATES CURRENT CONTROLS AREA (PLAN "A")

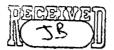
6. REMARKS NUCLEAR DENSITY TESTING PERFORMED IT WAS

97.8 90 @ 40' OFF D-0 AND 95.2% @ 15' OFF E-0

REVIEWED BY frether Rundo DATE 8/12/92

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION AUG 1 1 1992

FORM A-21
SHEET / OF 2
INSPECTION DATE 8/13/92



	1.	MATERIAL	ACCEPT	REJECT	N/A
		- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
		- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
		- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
	2.	PLACEMENT			
		- FILL IS PLACED IN HORIZONTAL LAYERS			
)		- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
		- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
		- ALTERNATE METHOD OF PLACEMENT.			
,	3.	VERIFICATION TESTING			
		- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
		- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
					1

FURM A-21
SHEET 2 OF 2
INSPECTION DATE 8/13/92

PLACEMENT OF COMMON FILL (EFINERY SURFACE SOIL REMEDIATION (CONT'D)

	•	
4.	DUST CONTROL ACTION TAKEN NONE TO NECESSARY	
5.	LOCATION: COORDINATES REFINELY AREA "A" - CIMENT CONTROLS	
6.	REMARKS	
:	INSPECTOR Mos Baily Frederick Wester DATE 8-13-92 REVIEWED BY Amelos DATE 8/14/92	

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET ___ OF ___
INSPECTION DATE <u>8-14-4</u>z

						_
	1.	MATERIAL	ACCEPT	REJECT	N/A	
		- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA		*****		
		- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	<u>/</u>			
		- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			<u>/</u>	
	2.	PLACEMENT	<i>,</i>			
		- FILL IS PLACED IN HORIZONTAL LAYERS				
)		- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	general contract to the contra			
		- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.	<u></u>		 ,	
		- ALTERNATE METHOD OF PLACEMENT.				
	3.	VERIFICATION TESTING		٠.		
		- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.				
		- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	·			

FORM A-21
SHEET Z OF Z
INSPECTION DATE 8-14-9Z

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL ACTION TAKEN HAUL ROAD WATERED AS NEEDED
5.	LOCATION: COORDINATES CURRENT CONTROLS
6.	REMARKS DENSITY TESTS WERE NOT PERFORMED TODAY, WILL BE TAKEN FIRST THING IN THE MORNING.

AUG 1 7 1992

REVIEWED BY Collin C. Inton DATE 8-14-92

DATE 8-14-92

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET <u>1</u> OF <u>Z</u> INSPECTION DATE <u>8-15-9</u>z

1.	MATERIAL	ACCEPT	REJECT	N/A	_
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA				
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.				
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS		····		
2.	PLACEMENT	<i>y</i>			
	- FILL IS PLACED IN HORIZONTAL LAYERS				
ì ,	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)				
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.				
	- ALTERNATE METHOD OF PLACEMENT.				
3.	VERIFICATION TESTING				
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.				
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.				
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PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTR					
	ACTION TAKE	N NONE	REQUIRE	0 (/	RAINY)	
						
5.	LOCATION:					
	COORDINATE	S CURRENT	CONTROL	<u>s</u>		
						
6.	REMARKS <u>u</u>	DORK WAS	TOPPED	BELAUSE	e of Excess	
	RAI	N. DENSITY	TESTS L	WERE F	ERFORMED AT	
	% PROCTOR	LOCATIONS U	HERE FIL	L WAS	PLACED.	,
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	2- 92.2	10.4	124.3	4 "	ALONG H LINE SO	
	- 95.3	9.1	128.5	4"	AT J-0	
	- 90.0	8.6	121.4	4 "	3 FT FROM K-O	
#5	- 96.2	9.1	129.8	. 4"	ALONG L CINE SO	
I	NSPECTOR +	rederich -	Mostiti	<u>د</u>	DATE 8-15-92	
R	REVIEWED BY	(dlm/	12 %	<u> </u>	DATE 8-17-42	



AUG 1 7 199

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET 1 OF 7
INSPECTION DATE Y-17-92

1	MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	-		
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
)	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	+		
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
	AUG 1 9 1992 DECESTIVED	·		

FORM A-21
SHEET Z OF Z
INSPECTION DATE 8-17-9z

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

| OUST CONTROL |
|--|---|
| OCATION: OORDINATES CURRENT CONTROLS | |
| EMARKS ROCER NORTH OF GEOSYNTEC SAID THAT SIZE IN THE FILL WAS ACCEPTABLE FOR CONTROLS, BUT WOULD NOT BE ACCEPTABLE TE: NUCLEAR DENSITY TESTING COOLD NOT BELAUSE THE TROXLER POWER SWITCH IS WILL BE REPAIRED ASAP. | 2 CURRENT SLE FOR THE CAP. - BE PERFORMED |
| | ATE <u>8-17-92</u>
ATE <u>8-19-92</u> |

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET / OF Z
INSPECTION DATE 8-18-9z

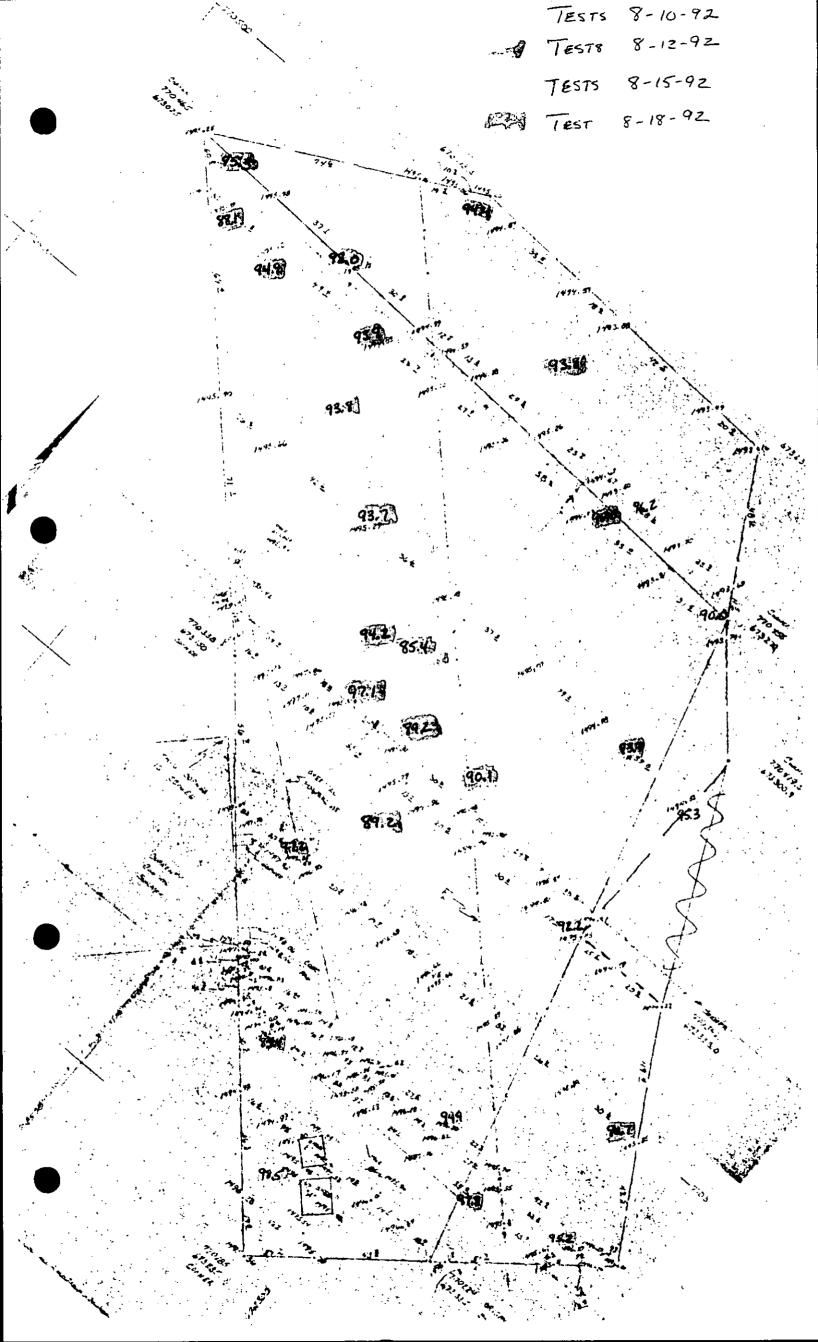
1.	MATERIAL	ACCEPT	; REJECT	N/A	
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			-	
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			-	
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS				
2.	PLACEMENT				
	- FILL IS PLACED IN HORIZONTAL LAYERS				
)	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)				
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.				
	- ALTERNATE METHOD OF PLACEMENT.				
3.	VERIFICATION TESTING				
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.				
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	· · ·		_	
	TO CO				

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

7.

4.	DUST CO	NTROL						
	ACTION 7	TAKEN _	WATER	ED HAUL	ROADS	. As	NEEDED.	
	_							
5.	LOCATIO	N:						
	COORDIN	ATES _C	URREN	r CONT	rocs			
								
6.	REMARKS	FINIS	HED F	LACING	FILL	AND	STARTED	PLACING
EL	SITY TE	TOP SO A MAP O				IS A	,	RFORMED. USED 134.9 PCF FOR STANDARD
.)	97,Z	131.2	DEPTH.	70 McISTUZ	<u>.E</u>	•	,	Proctor.
.)	90.7	122.4	4"	H. 7		Νοτε	E: THE TO	STAL NUMBER
)	93.7	126.4	4"	10.3				PLACED
)	95.0	128.2	4"	10.5			· ·	3800 TONS
) .	94.4	1273	4"	9.6			- 1.5	= 2533 CY
)	95.3	128.6	4"	9.4			1 TEST/10	ocy = 25
)	92.0	124.1	4"	10.4			7 (0)	
)	43.8	126.5	4"	9.9	Ą		27 WERE P Present Actui	
	EE ATTACHO INSPECTOR		~ . (~	ىلن_		AVAILABLE	8-18-92
]	REVI E WED	BY	!seCin	P Su	Low		_ DATE	8-19-92

(_)	ENSITY 2 Procto	TESTS e PCF	(CONT.) DEPTH	
9.	93.9	126.7	4"	11.1
) 94.9	128.0	4"	8.9
μ.)	88.1	118.9	4"	10.1
12.)	93.8	126.6	4"	10.9
/3.)	93.7	126.4	4"	10.4
14.)	92.1	131.0	4 "	8 · 1
15.)	85.4	115.2	<i>4"</i>	9.8
16.)	94.2	124.6	4"	109 (RETEST OF 15 Z FEET EAST)
17.)	89.2	120.3	4"	9.0
/E.)	90 i	121.6	4"	8. 7
19.)	92.7	125.0	4"	8.3



PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET <u>1</u> OF <u>2</u> INSPECTION DATE <u>8-19-9</u>z_

1	. MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA	_/_		
	 FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES. 	<u>/</u> *		
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT	•		
	- FILL IS PLACED IN HORIZONTAL LAYERS			 .
	 INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM) 	·		
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	· ———		
)			٠	

FORM A-21
SHEET Z OF Z
INSPECTION DATE §-19-92

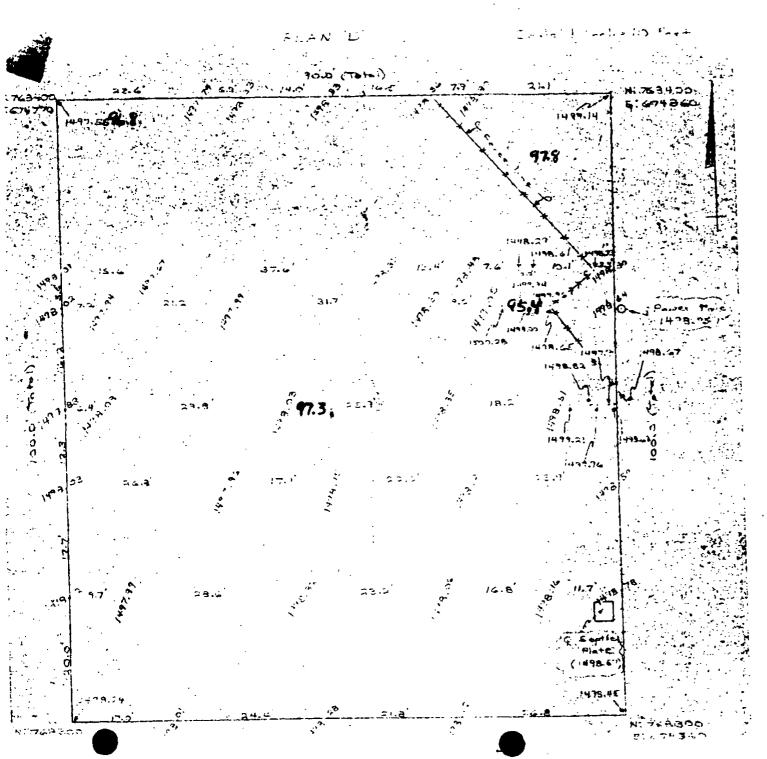
4. DUST CONTROL
ACTION TAKEN ROADS WATERED AS NEEDED
5. LOCATION:
COORDINATES OTIS EASTERN
6. REMARKS CHARLIE BAKER WAS INFORMED ADOUT THE LARGE STONE
IN THE MATERIAL I TRUCKLOAD WAS RETECTED.
ROBERT IVY IS CONCERNED ABOUT MAINTAINING THE PROPER QUALITY OF THE FILL MATERIAL.
SEE REMARKS
INSPECTOR Trederich Marteto DATE 8-19-92
REVIEWED BY Collin P. Section DATE 8-20-92
ক্ষি ত স্থাপেয় ক

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET _ OF Z INSPECTION DATE §-20-92

	· · · · · · · · · · · · · · · · · · ·			
1	. MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)		· 	
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			<u> </u>
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
)				
	,			

4. DUST CONTROL	
ACTION TAKEN None REQUIRED	
ACTION TIMES	
5. LOCATION:	
COORDINATES OTIS EASTERN	
· ————————————————————————————————————	
6. REMARKS COMPLETED LINERFILLING	Ans Roseins THE
OTIS RASTERN AREA.	
DENSITY TESTS 4" DEEP 134.9 PCF STANDARD	Przection
#1 9 PROCTOR 96 8 130-6 PCF 97 MOISTURE 9-1	Air. 2 1 1992
# 2 % PROCTOR 97.3 1312PCF	PEGEWE 1
#3 % Proctor 954 1287 PCF	
INSPECTOR + walnut - Wantelle	DATE 8-20-92
REVIEWED BY	DATE



OTIS EASTERN DENSITY TESTS

97.8 TESTS 9-19-92

TESTS 8-20-92

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

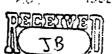
FORM A-21
SHEET / OF A
INSPECTION DATE 5- 30-72

1	MATERIAL	ACCEPT	: REJECT	N/A	
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA				
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	~~~		,	
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	<u>-</u>			
2.	PLACEMENT				
	- FILL IS PLACED IN HORIZONTAL LAYERS	<u> </u>			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			<u> /</u>	
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.				ļ
	- ALTERNATE METHOD OF PLACEMENT.			- sund	
3.	VERIFICATION TESTING				
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.	<i>L</i>		****	
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.				
			·		

4. DUST CONTROL ACTION TAKEN HAUL ROADS WATERED AS	Neenen
ACTION TAKEN THAT I WATERES AS	
5. LOCATION: COORDINATES PLAN B AREA	
COORDINATES FLAN S MEET	
6. REMARKS SOIL FOR FILL WAS COMPACTED	WITHA
DOZER BECAUSE IT WAS ON A	SLOPE AND
NOT SAFE FOR A ROLLER.	
	4" DEEP
TOP OF SLUPE 90 PROCTOR 90.3 121.8 PCF 90 MOISTURE 10.4	
#2 8 DOWN STOPE TOWARD DIKE % PROCTOR 87.2 117.6 % MOISTURE 9.0	ALIGNET 1 1952
INSPECTOR Frederick & Mostitu	DATE <u>8-20-92</u>
REVIEWED BY Children It Studies	DATE

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION AUG A Grant Habit

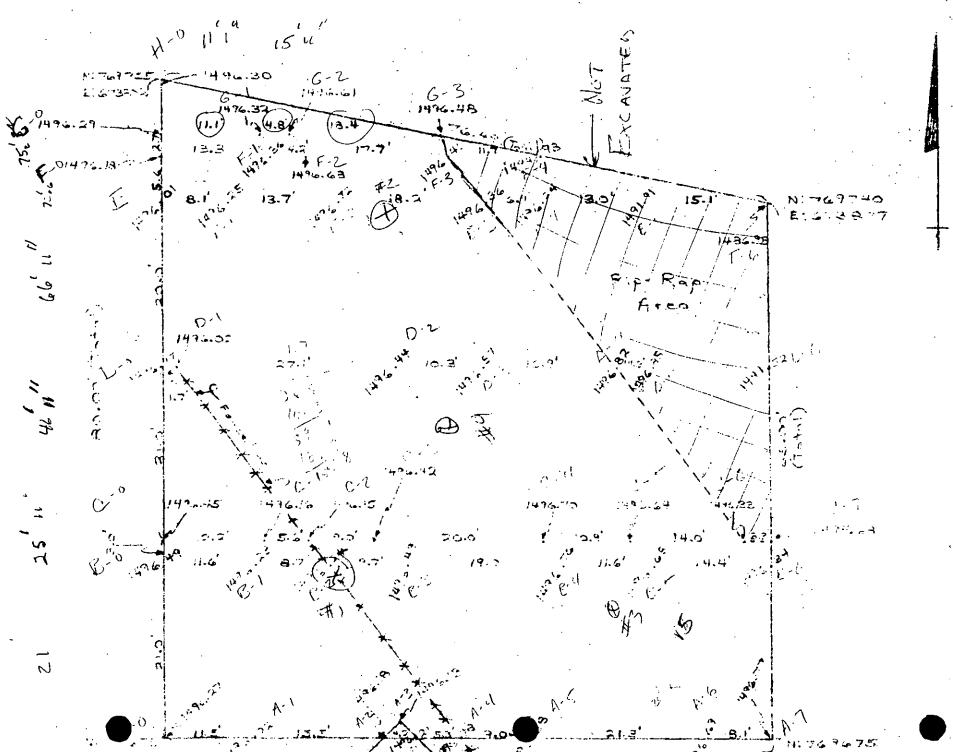
FORM A-21 SHEET 1 OF 2 INSPECTION DATE 8-21-92

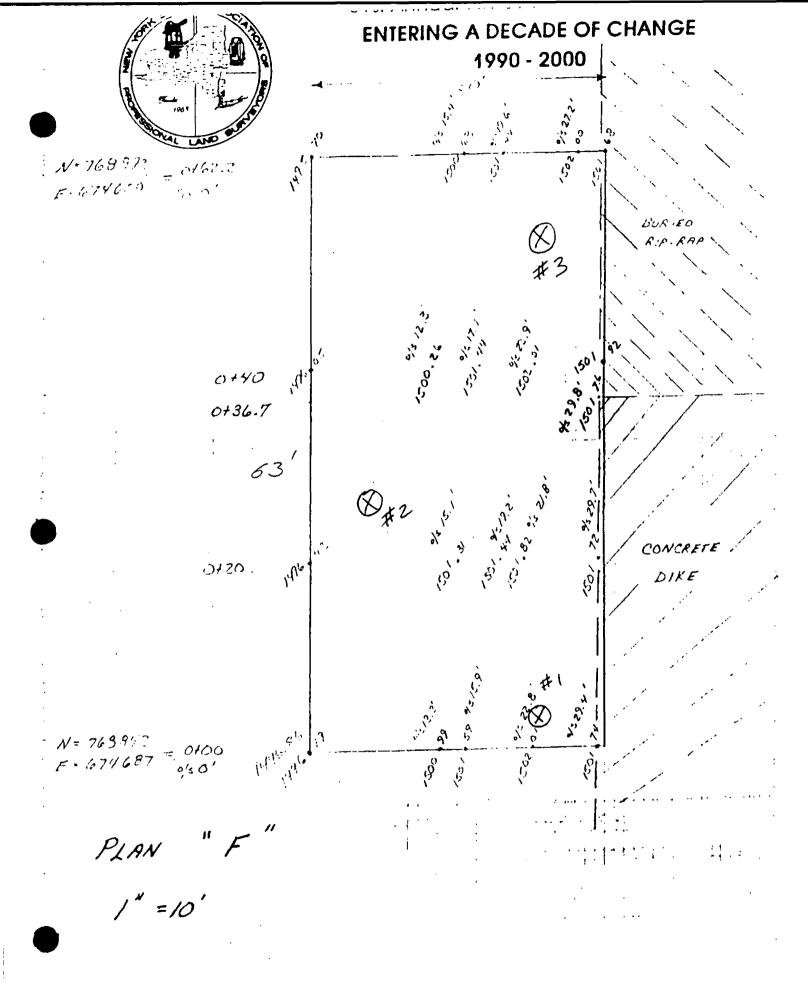


	1.	MATERIAL	ACCEPT	: REJECT	N/A
		- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
		- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	<u> </u>		
		- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	 		
	2.	PLACEMENT	,		
		- FILL IS PLACED IN HORIZONTAL LAYERS			
)		- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
,		- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
		- ALTERNATE METHOD OF PLACEMENT.			<u></u>
	3.	VERIFICATION TESTING			
		- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
		- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
					1

REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4. DUST CONTROL
ACTION TAKEN NOUE REQUIRED IN REFINERY AREAS
5. LOCATION:
COORDINATES POWERHOUSE (PLAN C)
AND DIKE PLANF
6. REMARKS PLAN F WAS COMPACTED USING TRACK HOE BUCKET
FOR SLOPES AND TRACKS FOR THE LEIR PORTIONS,
THE POWERHOUSE WAS DONE WITH A ROLLER
DENSITY TESTS
POWERHOUSE - USED 134.4 STANDARD PRICTOR 4" DEEP #1 9 PRICTIPE OU SEE ATTACHED MAD FOR 100 ATTACHED
1 % PROCTUR 916 131.6 PER ATTACHED MAP FOR LOCATIONS % MOISTURE 9.4
#2 % PROCTOR 95.4 128.7 PCF
% Moisture 4.4
3 70 PROCTOR 95.8 129.2 PCF
70 Moisture 4-6
#4 % PROCTOR 97.9 13x 1 PC1=
90 Muisture 9.0
INSPECTOR Tuderick & Mastet DATE 8-21-92
REVIEWED BY fonation Rundes DATE 8/25/92
PLANF - 134.4 PCF STANDARD PROJER 4"DEEP SEE ATTEMED MAP
ti % PROCTOR 96,3 129.8 PCF # 3 57 PROCTOR 91.0 122.7 PCF
46 170/5: ULE 9.0
7. PROCTOR 86.9 117.2 PCF % MOISTURE 7.0
70





PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET 1 OF Z
INSPECTION DATE 8-24-92

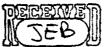
4 5 1992

		·	·
1. MATERIAL	ACCEPT	: REJECT	N/A
- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
 FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES. 			
- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2. PLACEMENT			
- FILL IS PLACED IN HORIZONTAL LAYERS			
- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
- ALTERNATE METHOD OF PLACEMENT.			
3. VERIFICATION TESTING			
- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			

4. DUST CONTROL ACTION TAKEN NONE REQUIRED
5. LOCATION: COORDINATES PLAN E AND PLAN G.
6. REMARKS PLAN E AND G WERE BOTH COMPACTED USING A TRACK HOE BUCKET, PLAN G COMPACTION WAS NOT TESTED BECAUSE OF ITS LOCATION. NUCLEAR DENSITY TESTS - 134.9 PCF STANDARD PROCTOR 4" DEEP PLAN E - SEE MAP # 4 % PROCTOR 79.3 107.0 PCF 70 MOISTURE 6.9
2 % PROCTOR 86.8 117.0 PCF # 3 RETEST AFTER RECOMPACTING % PROCTOR 88.3% 119.1 PCF % MOISTURE 7.0 # 3 % PROCTOR 78.1 105.5 PCF % MOISTURE 7.4
REVIEWED BY familian france. DATE 8/25/92

PLACEMENT OF COMMON FILL
REFINERY SURFACE SOIL REMEDIATION
1992

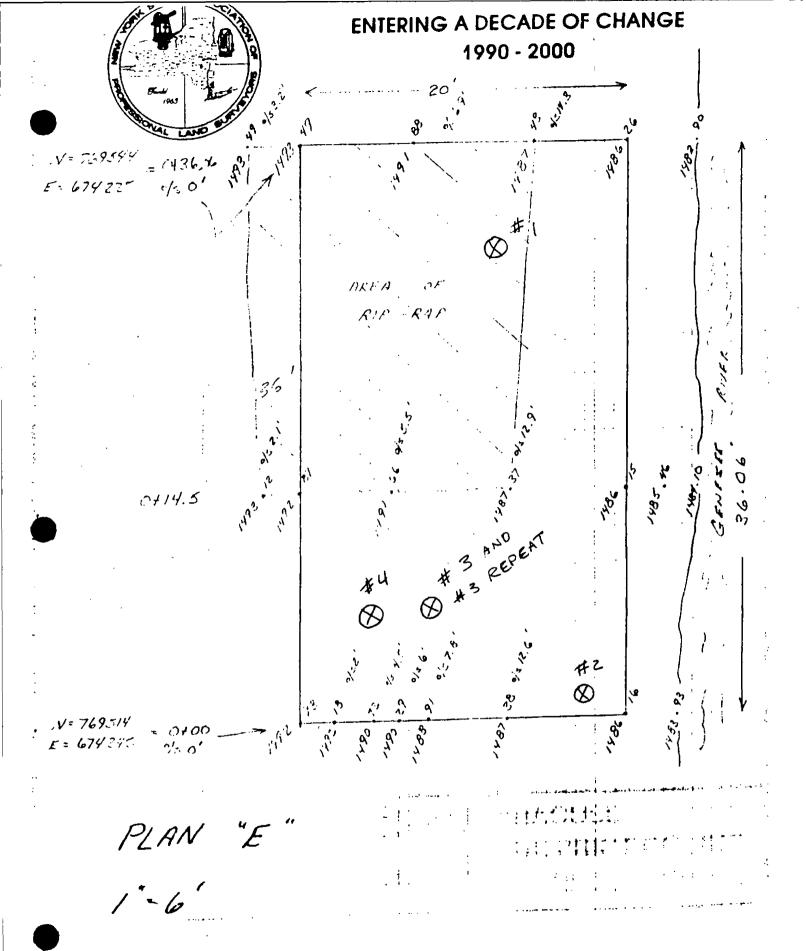
FORM A-21
SHEET _/_ OF _______
INSPECTION DATE #1.3 1/4



	1.	MATERIAL	ACCEPT	REJECT	N/A
		- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
		- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	_	****	
		- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
	2.	PLACEMENT			
	٠	- FILL IS PLACED IN HORIZONTAL LAYERS			
)		- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)		· ·	
		- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.*			
		- ALTERNATE METHOD OF PLACEMENT.			•
	3.	VERIFICATION TESTING			
		- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
		- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
					1

FORM A-21
SHEET Z OF Z
INSPECTION DATE 11.3 42

4.	DUST CONTROL ACTION TAKEN None Laure
5.	LOCATION: COORDINATES
6.	REMARKS CENTRED BAKKING OF THE 2 ADMINISTRATED BACKINGS. WHICH WERE EXCANTED TODAY AT CITS EXSTER! BACKINGS. OF THE 2 ARCAS WHICH WE'RE EXCANTED TODAY AT THE FEVER HOUSE WAS MY BATTALY COMPLETED. Areas Buckfilled: Otis Eastern 21, 32-33 Powerhouse 2-3, 16-17-18 See drawing with form A-19
	REVIEWED BY John Z. Ty (Logita) DATE 11-4-92



PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

75EB

FORM A-21
SHEET _/_ OF 2_
INSPECTION DATE _________

1.	MATERIAL	ACCEPT	REJECT	N/A
•	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.**			·
	- ALTERNATE METHOD OF PLACEMENT. PRESENTING OF GEOSTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	_		

FORM A-21
SHEET _2_ OF _2
INSPECTION DATE _//- 4-12

4.	DUST CONTROL ACTION TAKEN
5.	LOCATION: COORDINATES
6.	REMARKS Au ALEAS EXCENTED TOLDY WERE ZACHTURD WITH COMMON FOR AS HERE THE ANTAS NOT COMPLETELY BACKFOLD VESTERDAY AT THE POWERHOUSE TOP SON TO BE PLACED TOMARROW AT THE CONCENT. CONTROL LOCATIONS.
	INSPECTOR Some Bandes DATE 11-11-92 REVIEWED BY Smaller Bandes DATE 11/7/93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

NIN / 1982

7E&

]	. MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
2	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS* PLACEMENT			<u> </u>
	- FILL IS PLACED IN HORIZONTAL LAYERS	_	 ,	
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.*			·
3.	- ALTERNATE METHOD OF PLACEMENT. * RESPONSIBILITY OF SERSYNTEC VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.	·		
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
	· ·		•	

FORM A-21 SHEET 2 OF 2 INSPECTION DATE <u>//-5-</u>92

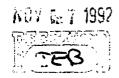
_		
	4.	DUST CONTROL ACTION TAKEN NONE _ FEDU-LED
	5.	LOCATION: COORDINATES
	6.	REMARKS BACKFINES AN ANEAS LISTED ON FORM A-19 WITH THE EXCEPTION of ANEA 76 AT COMENT CONTROLS.
		INSPECTOR DATE DATE
		REVIEWED BY function Branches DATE 11/7/92

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET / OF 2 INSPECTION DATE 11-6-92

2EB 1

1	. MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	_		
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			<u></u>
2.	PLACEMENT			
)	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	·	·	
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.*			
3.	- ALTERNATE METHOD OF PLACEMENT. * * * * * * * * * * * * * * * * * * *			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
				·



FORM A-21
SHEET ___ OF ___
INSPECTION DATE ______

4.	DUST CONTROL ACTION TAKEN None Zeames
5.	LOCATION: COORDINATES
6.	REMARKS BACKFILLED THE ANEA NO. CC-76 AT CUMENT CONTINUES WHICH WAS NOT BACKFILLED YESTERSAY. BACKFILLED THIS ENTINELY W/ COMMON FILL
4-5	BECAUSE of WET CONDITIONS. ALSO STOCKINED THE LINE TRENCH WHICH HAS DEEN EXCANATED THE BY OTHERS THE POWERHOUSE WITH COMMONFILL. EXCANATED MATERIAL I WAS THERE WAS HAVED TO THE CELA.
	INSPECTOR Som Ballos DATE 11-6-12 REVIEWED BY fruithing Brandos DATE 11/92

/LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET 2 OF 3 INSPECTION DATE 07-30-93

			
1. MATERIAL	ACCEPT	REJECT	N/A
- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	***********		
2. PLACEMENT			
- FILL IS PLACED IN HORIZONTAL LAYERS			
- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)		·	
- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
- ALTERNATE METHOD OF PLACEMENT.			
3. VERIFICATION TESTING			
- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			

FORM A-21
SHEET 3 OF 3
INSPECTION DATE 07-30-93

-	•		
	4.	DUST CONTROL ACTION TAKEN	
	5.	LOCATION: COORDINATES	
) .	6.	REMARKS	
•			
		INSPECTOR DAN JEMING, JR	DATE 07-30-93
)		REVIEWED BY	DATE

/LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET <u>2</u> OF <u>3</u> INSPECTION DATE <u>08-0</u>2-93

1.	MATERIAL	ACCEPT	REJECT	ÑΑ
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			$\sqrt{}$
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	: ————————————————————————————————————		·
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10	*********	

FORM A-21
SHEET 3 OF 3
INSPECTION DATE 08-02-93

4. DUST CONTROL ACTION TAKEN WATER TRUCK
5. LOCATION: COORDINATES PHZ6 PHZ7 PHZ5
6. REMARKS WEST SIDE POWER HOUSE
INSPECTOR DAN DEMING UR DATE 08-03-93
REVIEWED BY DATE

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF 3 INSPECTION DATE <u>08-0</u>3-93

1.	MATERIAL	ACCEPT	REJECT	Ń/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			/
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	· ————————————————————————————————————		
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.	_/		
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			-
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10		

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-03-53

4. DUST CONTROL ACTION TAKEN WATER TRUCK
5. LOCATION: COORDINATES PH23 PH25 PH25B PH24 PH25A
6. REMARKS IN EST POWERHOUSE
INSPECTOR DAN DEMING, UR DATE 08-03-93 REVIEWED BY DATE

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF 3 INSPECTION DATE <u>08-0</u>4-93

1. MATERIAL ACCEPT REJECT N/A	
- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA	_
- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	
- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	_
2. PLACEMENT	
- FILL IS PLACED IN HORIZONTAL LAYERS	_
- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	_
- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.	_
- ALTERNATE METHOD OF PLACEMENT.	_
3. VERIFICATION TESTING	
- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.	
- NUMBER OF PASSES FOR ALTERNATE (() METHOD OF PLACEMENT.	-

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-04-93

4. DUST CONT	; \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ER TRUCK	<u></u>	
5. LOCATION: COORDINAT	PH 112	PHIIX	PH49M PH53M	
6. REMARKS _	NORTH Pou	SERHOUSE,	SOUTH POWERHOUSE	- -
INSPECTOR	DAN DEN	MUG, UR	DATE <u>08-04</u>	<u>-93</u>
REVIEWED 1	BY		DATE	

ALACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET 2 OF 3 INSPECTION DATE 08-05-93

1	MATERIAL	ACCEPT	REJECT	N/A
 * .	- COMMON FILL SOIL OBTAINED FROM			• • • •
	THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			/
٠	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			·
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING		-	-
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10		

FORM A-21
SHEET 3 OF 3
INSPECTION DATE 08-05-93

4.	DUST CONTROL ACTION TAKEN WATER TRUCK
5.	LOCATION: COORDINATES PH49E SIE 53E 49G 53G 5/I 49K 49M 50E 5ZF 54E 5/G 49I 53I 5/K 5/M
6.	REMARKS SOUTH POWBRHOUSE, NORTH POWERHOUSE
	INSPECTOR DAN DEMING, JR DATE 08-05-93 REVIEWED BY

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET 2 OF 3 INSPECTION DATE 08-06-93

1.	MATERIAL	ACCEPT	REJECT	Ň/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			***************************************
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS		_	
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	· ————————————————————————————————————	****	
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING		·	
	- I DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10		

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08:06-93

4.	DUST CONTROL ACTION TAKEN WATER TRUCK
5.	LOCATION: COORDINATES PH49E PH54P PH54P PH53G PH53I PH53C PH53I
6.	REMARKS SOUTH POWERHOUSE, NORTH POWERHOUSE
	INSPECTOR DAN DEMING, UR DATE 08-06-93
	REVIEWED BY DATE

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET <u>2</u> OF <u>3</u> INSPECTION DATE <u>08-09-93</u>

•				
1.	MATERIAL	ACCEPT	REJECT	Ń/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	$\sqrt{}$		-
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.		-	
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10		

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-09-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL	
	ACTION TAKEN WATE TRUCK CHAUL F	CAOS
	LOCATION: COORDINATES PH 17 YB PH 41 PH 43 PKH PH 40 PH 51 PH 42 PH 441 PH 6 PH 56 PH 57 PH 57 REMARKS	5 17447 17449 46 17488 17450 17453 17454 17455
6.	EAST POWERHOUSE A	NREA
	INSPECTOR DAN DEMING, UR	19 09 cz
	INSPECTOR	DATE <u>08-09-93</u>
	REVIEWED BY	DATE
		•

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET <u>2</u> OF <u>3</u> INSPECTION DATE <u>08-10</u>-93

1. MATERIAL	ACCEPT	REJECT	Ń/A
- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS	<u> </u>		· · · · · · · · · · · · · · · · · · ·
2. PLACEMENT			
- FILL IS PLACED IN HORIZONTAL LAYERS	<u>~</u>)		
- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	W		
- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.		·	
- ALTERNATE METHOD OF PLACEMENT.			Now
3. VERIFICATION TESTING	•		
- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	<u>1D</u>		
7			

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-10-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL
	ACTION TAKEN WATER TRUCK
5.	LOCATION:
	COORDINATES CC47 CC44D PH4YN PH51A
	CC43 PH4YA PH48A
6.	REMARKS COURRENT CONTROL, NORTHEAST EAST
	POWERHOUSE, NORTH POWERHOUSE
	INSPECTOR DEMING UR DATE 08-10-93
	REVIEWED BY DATE

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET 7 OF 3 INSPECTION DATE 08-11-93

				
<u>l.</u>	MATERIAL	ACCEPT	REJECT	Ń/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT		·	
	- FILL IS PLACED IN HORIZONTAL LAYERS			
•	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING	•	•	
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			

FORM A-21
SHEET 3 OF 3
INSPECTION DATE 08-1\$-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

•	•	·	
	4.	DUST CONTROL \mathcal{N} .	
	5.	LOCATION: COORDINATES	
	6.	REMARKS NO BACKFILL	
			•
		INSPECTOR DEMING, JR REVIEWED BY	DATE
į			·

/LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF J INSPECTION DATE 08-12-93

			<u> </u>	
1.	MATERIAL	ACCEPT	REJECT	Ń/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			`\
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)	-		<u> </u>
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING		·	
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-12-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL ACTION TAKEN	
5.	LOCATION: COORDINATES	
6.	REMARKS NO BACKFILL	·
	INSPECTOR DAN DEMING, JR REVIEWED BY	DATE
)	,	·

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF 3 INSPECTION DATE 08-13-93

	•			<u></u>	
	1.	MATERIAL	ACCEPT	REJECT	Ń/A
		- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			·
		- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.	$\sqrt{}$		
		- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
	2.	PLACEMENT	/	·	
)		- FILL IS PLACED IN HORIZONTAL LAYERS			
		- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)		· .	
	•	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.		·	
		- ALTERNATE METHOD OF PLACEMENT.			
	3.	VERIFICATION TESTING	·	•	
		- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.		`	
		- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	1/		

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-13-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL ACTION TAKEN WATER TRUCK
5.	LOCATION:
	COORDINATES OF 332 OF 14 OF 144
	OFIZ OEIZS OEIZE
6.	REMARKS <u>VIBRATORY</u> ROLLER COMPACTED
	10 PASJES
	. •
	INSPECTOR DEMING, JR. DATE 08-13-93
	REVIEWED BY DATE
	•

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF 3 INSPECTION DATE 08-16-93

•				
1.	MATERIAL	ACCEPT	REJECT	Ń/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			<u> </u>
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS	·		
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.			
				,

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-16-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4. DUST CONTROL ACTION TAKEN	NONE	
5. LOCATION: COORDINATES		
6. REMARKS		
·		
INSPECTOR Dan	Dening, JR	DATE 08-16-93
REVIEWED BY		DATE

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21
SHEET 1 OF 3
INSPECTION DATE 08-17-93

1. MATERIAL	ACCEPT	REJECT	N/A
- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA		-	
 FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES. 			
- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			$\overline{}$
2. PLACEMENT			/
- FILL IS PLACED IN HORIZONTAL LAYERS			
 INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM) 			
- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
- ALTERNATE METHOD OF PLACEMENT.	- 111		
3. VERIFICATION TESTING			
- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	-		

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-17-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4.	DUST CONTROL ACTION TAKEN PAIN	
5.	LOCATION: COORDINATES	•
6.	REMARKS BRUSH CLEARING & CHIPPING REHIND VACCEY STEEL	
	INSPECTOR DEMINGINE DATE 08-17-93 REVIEWED BY DATE	•

/LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET 2 OF 3 INSPECTION DATE 08-18-83

1.	MATERIAL	ACCEPT	REJECT	ν. Ν/Α
- ,	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS			 /
	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)		·	
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.			
	- ALTERNATE METHOD OF PLACEMENT.			
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.	· ·		
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	<u>10</u>		

FORM A-21
SHEET 3 OF 3
INSPECTION DATE 08-18-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4. DUST CONTROL ACTION TAKEN WATER TRUCK	
5. LOCATION: COORDINATES	
6. REMARKS BEHIND VALLEY STEEL, ALONG WA.G.	-
INSPECTOR DATE DATE DE DATE DATE DATE DATE	_

LACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION

FORM A-21 SHEET Z OF 3 INSPECTION DATE 08-19-93

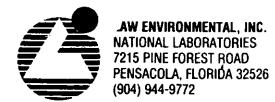
	MATTERIAL	ACCEPT	DETECT	NÎ/A
- 1.	MATERIAL	ACCEPT	REJECT	N/A
	- COMMON FILL SOIL OBTAINED FROM THE APPROVED BORROW AREA			
	- FREE FROM SOD, BRUSH, ROOTS OR OTHER PERISHABLE MATERIALS, ROCKS LARGER THAN 3 INCHES.			
	- EXCAVATION IS COMPLETE AND ACCEPTED BY THE CONSTRUCTION MANAGER BASED ON THE SURFACE SOIL SAMPLES ANALYTICAL RESULTS			
2.	PLACEMENT			
	- FILL IS PLACED IN HORIZONTAL LAYERS	<u> </u>		<u> </u>
•	- INSPECT LAYER OF FILL FOR PROPER MOISTURE CONTENT (± 3% OF OPTIMUM)			
	- SURVEYOR VERIFIED SLOPES, THICKNESS AND ELEVATIONS.	/	· ·	
	- ALTERNATE METHOD OF PLACEMENT.			W.
3.	VERIFICATION TESTING			
	- 1 DENSITY AND MOISTURE CONTENT TEST FOR EACH 100 C.Y. OR EACH AREA COMPLETED IN ONE DAY WHICHEVER IS LESS.			
	- NUMBER OF PASSES FOR ALTERNATE METHOD OF PLACEMENT.	10		
				,

FORM A-21 SHEET 3 OF 3 INSPECTION DATE 08-19-93

PLACEMENT OF COMMON FILL REFINERY SURFACE SOIL REMEDIATION (CONT'D)

4. DUST CONTROL ACTION TAKEN WATER TRUCK	·
5. LOCATION: COORDINATES ALONG WAG. BEHIND VALLEY STEEL	
6. REMARKS	<u>. </u>
	·
INSPECTOR	date <u>08-19-93</u>

APPENDIX E SAMPLE CHAIN-OF-CUSTODY FORMS





SAMPLING

INFORMATION

NPDES NUMBER

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'SOURCE CODES

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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



(SIGNATURE)

LAW ENVIRONMENTAL, INC.NATIONAL LABORATORIES
7215 PINE FOREST ROAD
PENSACOLA, FLORIDA 32526
(904) 944-9772

CHAIN OF CODY RECORD

SAMPLING



NAME OF FACILITY: ARCO SINCE REFERENT INFORMATION 2448 Calle or alyn Are STREET ADDRESS: (904) 944-9772 **NPDES NUMBER** WELLSMILE, MILLING **PROJECT NAME** ARCO wellowille N. P. Maght Associate Lich SAMPLERS (SIGNATURE). 12. P. Lit Media . And Commission of the Commiss SAMPLING DATE Sp. rd. Hiller 202 G. HIM Trump' 1. P. LING 1 07/07/92. A OR PL WIFE GRAB COMP. 'SOURCE SAMPLE STATION DESCRIPTION TIME LENL LAB NO. CODE SR-DA-IU 445 P 455 PX SR-DA-1 SR-DA-13 5:150X 50 512-DA-14 5:30 50 3R-DA - 12 5.401X REMNOUISHED BY: RECEIVED BY: RELINQUISHED BY: RECEIVED BY LABORATORY: DATE / TIME DATE / TIME DATE / TIME

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REMARKS													

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(SIGNATURE)

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SOIL / SEDIMENT - SO
SLUDGE - SL

(SIGNATURE)



CHAIN OF CODY RECORD

PENSACOLA, FLORIDA 32526 (904) 944-9772							ATIOI NUN	N ABER		NAME OF FACILITY: _ STREET ADDRESS: _					DING CONCLUSION AND AND WELLSVILLE MONTH 14815												
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0.50	Ý.		50	SR-DA-16		1														i							
0055	Y.		၄၀	SR- DA-8				·												1							
6900	Y		So	SK- DA-17		i														1					<u> </u>		
0915	X		Sa	5R. DA-16		1														,							
0930	X.		Sυ	SR-DA-19		1																			<u> </u>	<u></u>	
0145	X		Sz,	SR- DA-20		1														j							
1005	K		కం	SR-DA-7		1														1							
1030	X		So	SR-DA-6																							
1050	1		, ,	SR- DA - Z/		1														<u> </u>							
RELINQUISHED	BY:	ATURI	E)		GNATURE)			_	DATE /	TME	REI	INQUIS	SHED BY	r: GNATU	IRE)			RECI	EIVED	8Y L/		NATUE				DATE / 1	TIME

DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.									
REMARKS										
	•									

'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



REMARKS

LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CEL. ODY RECORD



NPDES DISCHARGE - ND

HAZARDOUS WASTE - HW

DRINKING WATER - DW

SURFACE WATER - SW NON-AQUEOUS - NA

	7	rc	NSACO 04) 944	LA, FLORIDA 32526 -9772		INFORM NPDES	ATIO		a	STF	ME OF	FACII	.ITY: ESS:	MULLESVILLE NOT 1470								<u> </u>	in Ave				
PROJECT I			30 Hb	wille	JOB NO.		,	-	٠.		$\overline{/}$	7			/	/	//	/,	//		1			1	//	7	
SAMPLERS	(SIG	inat _i	HRE)	2011 C	, /	TOTAL NO. OF		Alle	R HOL CONNECT	//	//	//		//	//		DE PEIG		//		//	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		//,	//	/	
SAMPLING	SAMPLING DATE 4 10 11 17							OHI.	OF HE	del un			MBER IN	0}/g	37/3	N. P.S.C.	Bull Hall	in		(#)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	\\/	//	///			
TIME	GRAB	COMP	SOURCE	SAMPLE STATIO	ON DESCRIPTION		/	Onis.	OF AN	A SO	C. CH	,0. V	ST. CHANGE				State Of	150°	(4) (4) (4)		//	//	/	LE	NL LAB N	Ю.	
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RECOVERY WELL - RW

SOIL / SEDIMENT - SO

SLUDGE - SL

RCRA MONITORING WELL - MW



AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CO. ODY RECORD

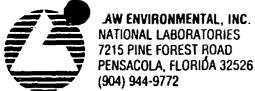
SAMPLING	NAME OF FACILITY:	Arco	Sinckir	Refinery	
INFORMATION	STREET ADDRESS:	2448	Sou th	Brooklyn Ave	
NPDES NUMBER					

				<u>.</u>						,				, ,	, ,					_	_	, —	, , , , .	, ,
PROJECT N		Α	<u>rco</u>	Wellsville GQ3201				ی	/	/,	//	//			//	//	//	//	/		//	10		
SAMPLERS	(SIG	NATI	JRE) ひるそん	Wellsville GQ3201	TOTAL NO. OF		ONIAME	TARY	//	//	//			//		C ME CON	//	//	/,		AH		///	
SAMPLING	DATE		68		ONTA!	<	ONIA	OF YES	./ &/.s			88°/	03/20) Other	NEGOV				//		7/	//		
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1430			\$	SR-0A-23	1													1						
1445	X			SR-DA-24														1					·	·
1500	X			SR-0A-25	1							<u> </u>			_ _		_		_					***
1525	X		50	5R-DA-3	1										_									
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Signature) (SIGNATURE))				<u> </u>		(SIGNATURE)						[SIGNATURE]					<u> </u>				
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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.
REMARKS	

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SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CO ODY RECORD

SAMPLING

	تر		NSACO 04) 944	LA, FLORIÓA 32526 -9772	INFORM NPDES					RE OF I															
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distribution:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.
REMARKS	
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SOIL / SEDIMENT - SO
SLUDGE - SL

CEIMIC CORPORATION

"Analytical Chemistry for Environmental Management"

DATE: 10/22/92 FAX# 7	16-593- 7882
IO: GCO COTY (COMPANY NAME)	
ATTN: Fred Hasiele	
FROM: CATHY MARSH	
NUMBER OF PAGES (INCLUDING COVERSHEET) RE:	OCT 2 2 1992
COMMENTS/INSTRUCTION: A Howhell is our copy of the UPS picture	n Cecoca .
4 coders were supped on 10/12/92	

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L LADO, ICALLS	* US (Oversize) applied these than 25 lbs and more "Unless a greater value is declared in writing on receipt is \$100, which is a resmonthle value in thereto shall apply to the international carriago- mentium value for an are service deckade is \$25.	this receipt, the shippi nder the circumstance of any shipment hore	or bereby declares and to surrounding the trans under insofar as the so	parties Parties d	n, The rules Cystroeds the	a relating watry. Th	i to liedotisty Le entry of	estati estati a GACI	ge or article not ished by the VK D, amount is no	asav Conventi. I a decimalion	pickage cou in and any of value in	vered by this amendments addition. The) •

Laboratory ID

Refrigerator No. Date disposed of

920417	ops, voa	
9204/8	6 Vod	9/9/92
920419	4.000	9/17/92
9.7.042P	'' 4	mt.
428422	4 3	7991442
720423	9,000	9/17/92
920424	9,004	9/9/92
920425	UDQ	9/9/12
920426	Silva	10/14/92
424024	4.000	mits
854026	7,000	9/17/92
926429	5,9 400	10/14/92
926430	4	10/6/92
920431	voa	
254056	1,2,5	9/8/92 9/9/92
920433	みいのの	
920454	5,9	9/24/92
720435	7,400	9/29/92
920436	3	mti
926437	7. 8. 400	10/16/92
920438	6, UCA	9/17/92
926439	6.00 10 Am 3. Vo	9/22/92
920440	d Vaa	
(440EP	OPB YOU	1.
420442	Value	<u> </u>
720443	6	mt

CEINIC Corporation 100 Deah Enguss DR., Narragansett, RI 02882

		·					
Paba	Bottle No.	Ref.	Date/Time Rembyed	Inita.	Date/Time	1	COMMENT
20343	12-715	5	7/6/92	5 m	_	sun	LMT
336	17,17,18	5	7/8/92 11:20		7/14/92.07		
343	10,11,12,125,121,10	_	7/9 9:00	L#3	7/2/92 0856		
336	4, 12, 17, 18	ec 5	7/4 10:00		7/7 5:00	Sin	
236	12,1716	5	7/13 10:00	81)4	7/13 2:10		
33.6	4 600	5	7/13 1020	K.	17/13 1044		
536	1-17 Mital.		7/17 8:15	MS	7/17 1:45		
		5	8/24	Sup.	8/24	124	
426 4 2 4	2-5, 10,	1	8/25 /10:44	- AMD	8 75 - 303	FP	
7.426	1-11-metals		8/26 9 MM	BP	8/26 11 fo		
•	فسيستحب منصوفت كالمستقد	5	7	MAS	1 1	MIS	
436	1-14CN-		7 · - 7 · · - · - · - · - · · · · · · ·	7 ¹ / ₇ ¹ / ₇	8/26 22.00	77-0	
426	2,3,4.5,10.11 1-4, 7-2		8/27/8140	J.J.	8/27 10100	1 - 17	
424.			4/-	Sha		200	MT
	AQ	5	\$'/27		2/1/12		70(1
'0 '-	1-4.7-9		8/28 12:30	<u> </u>	8/28/17:07	77	
<u> </u>	14-17	5-	8/31 7:00	<i>II</i>	8/31 14.00	- <i>ī ī</i>	
> 3	2.1/	<u> </u>	8/31 87:051	TI	8/31 17:30		
415	49	_5	8/21		F/31 770	N.//	
440-	Pa. 10,10	5_	# # # # # # # # # # # # # # # # # # #	RB	<i>B1</i> .	///	
429	5.6,100,12,16	<u>.</u> S.	9/2/2 9:40	Som	9/3 9:15	V gas	
472	1-9	5	915	84B	9/5	84D	
449	25,79	5	915	SMO	9/5	Son	
472	5-10	2	9/8 240	RP	9/9 130	WP	
477	5-10	1-	3/0 7:00	Jī	4/9 8:30	ر ز	
486	4 18 25 231	.5	9/1 7120	P.B			,
434	1-7	5-	411 10:00	17	9/11 12:30	<i>j j</i>	
426	1-14	. [9/13 1340	BP	7/13 1725	BP	·
429	1-47-9	1	2/19 10200	11			
434-	1-7	3	1/15-2270	pp	4/15240	BP	
4778	9-10	5	716 1600	BL	9/6 1700	BL	
129	2,5-10,12191		9/16 1750		9/17 070	BP	
9	1822-24.25		9/6 1730	69 0		BP	
472	5-16	5-1	V16. 1740		117 030	BP	
470.	1,10	5	AD 1540	BL	(1)00 1545	Ro4	
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A86.	4,18130	5 17		No.		-	
+ 145 746 m							

CEIMIC Sample Control Record

							
Qabs	Bettle No.	Ref.	Date/Time Removed	Inita.	Returned	١	. СОММЕНТ
435	1,2	7	1/6/92 835	Br	9/6 1640	DP.	•
137	336,15,19,21	17	9/6/12 815	BP	1640	137	
415	1296713/15-17	17	9/1/92 1600	BP	9/8 1912	BP	
dut.	A/21-2320-2870		98/92 1600	158	1918 191	2 BP	
1111		7	19/1/42 9:15	927	4/1	PS	
415	1.3.7.7.1.1	ザ フ	7/9/92 14:30	לל	19/9 18/	BP	
133	all Ha	7	9/10/12 115	LAL	9/11 7:4	, ,,,,,	
457	1-48	7	4/14/a 7:50	.17	9/14 11:00	1 -	
130	14-17	7.	9/14/92 156	TWB	7/M 2:4	TNB	
415	16-17	7	9/14/92 15:00	J7.	4/14 17:30	77	
433	2.4.5	7	9/14/92 16:30	JJ	9/14 17.30	; 7 i	
+37	14:17	7	9/4 1756	BP	17/4 2/50	Br	
ul!	1	7	9/15 900	LAL	925 120	14	
437	145 8711 215	フ	4/16 9:00	ا تراثر	19/16 160	BT	
0.2	03	-7	918 130	1/.1			
4	27,31	フ	9/19 1250	BP.	9/19 1730	BP	
711	1-4, 7,10,13,16	フ	9/19 1250	BI	9/19 1730	Br	
42-11	25,76,24,50,52	7	9/14 125	BP	9/11 1730	. 60	
4-11 -	15-37	7	9/19 1258	BP	9/19 1730	BP	
237	2,3,6,15,19,21	7	1/19. 1250	TO TO	19/11 1730		
137	8,9,4,5,11-19	7.7	9/19 1250 1	BP	9/19 1730	BP	
504	44/11				7		
504	2/1/6/4	9	9/24 6:20	40.	9/22 12:30	40/	
150	1-40	7	9/22 1286	Bruh.	1/22 1 377	Twb	
504	05,2	7	9722 2:30	ريملا	8/23 5 an	U.C.	
435	3	7	9/33 5100:	80K	9/25 1200	1-A1-	
니니	Ma 1615	7	9/29 9:30	90K	7/29 12:45	YUN	
1415	74+ k, / c,	7	9/29 9:30	jon	7/29 12:45	Son	
415	21-35 me las	7		901	10/1 2:45	Som	
76.X4	2.7.11-1/6-20		10/3 950	SP	10/3 /320	BP	
OF	1-37	5	6/3 15-20	BP	10/4 1/30	BC	
15	1-35 Ney	7 /	0/3 1533	BP	10/4 1130	bP	
77.42 CF 1.5 (1.5	1-2	7	665 PM	QU33	10/3 27 38	Muss	
77.71	F.1812231		1/2 /0200	17	10/7 13:00		
FCY,	1-31	11 1	11/20	TUB	19 190	MKS	
411	1-10,10,10	2/	6/8 11:10	-14-	10/19/21/15	A	

Laboratory ID	Refrigerator Mo.	Date disposed of
920444	OPB	9/24/92
920445	: ma B. Voa	
920446	DAZ WOR	9/24/92
420447	POR VOR	·
920448	on Jua	
920449	7	9/29/92
920450	7	9/29/92
920451	110a. 8	
920452	J CRE UO	9/24/92
920453	LOR OR CH	<u></u> -
720459	Voa, 8,009, 2010,00	11
9.20455	Sivea	mf19/29/92
120456	1012140	1.4
920457	UPIZIVON	
920458	8012 USA	
920459	'2'	9/24/92
920460		mti
920461	6,004	
920462	-pe optivea	
920463	the state of the s	10/6/92
920464	0012,000	
920465	1.4	9/29/92
45044	00101000	
920467	Opsilia	9/29/12
920468	4 Section	nti
720469	nol, upa	10/16/12
	UPII	

CEINIC Corporation 100 Dean Khauss DR., Marragansett, RI 02882

		· · ·				 -		- 	 -		
rapa Tapa	No.	Ref.	3	/Time	Inita			e/Time		. . .	COMMENT
165	1-61810	7	8/8	192112	LY		3/2/	42 4:1	0 61		·
920100	1-3	1,	3/17/				14	4/50			
148	1 29	1	3/50	1 ./ .	T	\dashv					
148	all	1	3/54	A30	11-						
130	1,3-6		3/20	- 1000	1cus-	خ ا	3/15		Ci.s-		
30.3	17-)	10.	4/24	<i>8</i> 3d	NP1		4/24	/0 04	. W	7	
20.3	4	1,1	4/21	1138	Lan		4/27	الما	مائد ا	2	
207	4 gell la	7-17	Vko	2:30	Lu		30	4:5	7		
L- 7	1-14/net-16)		6/4	5830	祀		15	祖3.			
207	1-15 inst	/	515	60 20	44	5	17	4:4	5 14		
$\frac{707}{}$	all mits	7	31	044	Lin	51		510	سانيات		
547	1-23		5/21	9:15	ura:	. 5/	28	3-45			
Σλ, 5	1-6		6/1.3	10.00	めい	ē					
300	1,3-6,8			130/1	MK	6/1	6/12	145 pm	IMC		
3	1,2		eleka l	030	MIS	8/9	ita_	1730	MXS	<u> </u>	·
390	S HIMS.		क्षेत्रक १	2000	107	P	5/2	2400	<u> </u>		
390,			4713/AZ	11 09 1	TWIS	<u>. 77.</u>	3192	11:20	TUB	_	· · · · · · · · · · · · · · · · · · ·
90	1,2		8/15/93	1960		6 5//	192	1800	MYS		(-)
125 -	1-8	J	8/84	4171	八2万届	B	4/	5100	1,504	(1)	•
7.5	1-8 Met		8/24/9	21164	BP	8	<i>9</i> 4 .	5,400			
415°	1 Met	\	825h	2. 1:15	BP	87	26	370	90		
42.5	3.4.8 TCN	ı	1/20/42	1242	Ae.	81	26	1453	Az.		
425	1.2.5:1.7	1	8/27/52	16:44	JJ						
407	(01		8/36	1040	Lade	4	<u>u</u>	200	LAL		
432	1-710		1/31	,	I don't	1				- -	
390	(9)		191	1/1/5	AL	\$/3	4_	2.36	-At	4-	
432	H-17 AGT		1/1,		S/1-	14			E M	-	
463	1-19		9/4		MA	4/	<u> </u>		HUND		
473	2-10		9/11	1615	Q.	9/11			90	-	
491	, , ,		9/15	8100	X	9/5		4415	Sirk	—	
1/ 3	1-7	1	9-16	42	D (7	7/1		1300	BL	+	
4						9/3	0	1800	RB		i
491 482					IJ						·
	01	1	8/02 10/5	0100	BL	10/3		00	50	1-	
CAE	1-12		1/7/12	700	18	ष्	1.	MOS	8M	<u> </u>	
J	İ	-	1 /		•					 	

Laboratory ID

Refrigerator No. Data disposed of

920496	3, VOA	
720497	3 voa	
730478		10/9/92
720499.	31104	,
920500.	3, vod.	
73050/	4, VO	
720502	100-17	013
920503	UCC. 4	
930504	voc.7	
930505	uca Silai	3
920506	0P5,0013, VOa	
920507	005,008,00B,V00	
802056	1 1	10/9/12
980509	00/3, VOG	
9205/0	0213) VOA	
920511	op 13, vica	
7805/2	OPY, veq.	
920513	" of y, vor	
980514	3,400	
920515	4,000	
9205/6	008,069, voa	DPA.
726517	002, VOA	1
9205/8	6	9/29/92
720517	opaluoa	
720530	3	nt.9/29/92
720521	oplivos	

CEINIC Corporation 100 Dead Knauss DR., Narragensett, RI 02882

		[
I D	Bottle No.	Ref.		e/Time māved —	Inita.		te/Time turned		. COMMENT
F35	1,2-	7	7/6/4	2 835	Br	9/6	1640	OP	
37	236,15,19,24	1.7	9/6/9	2 835	BP	9/6	164	BY	
715	129671311747	7	9/1/9	2 1600	BP	9/8		18P.	
115	19,21-2326-2870	5 7	48A	- (600	BP	9/5		2 BP	
14:1		7	9/1/4	7:15	925	9/1		P5	
71.5	1-2-46-71.11	7	7/9/2-	14:30	77_	1919	18%	BP	
33	all Ha	7	9/10 h	2 115	LAL	9/11	7:4	2 11	
457	1-46	フ	9/14/	. 7:30		9/14	11:00		
30	14-17	7	9/14/9		TWB	4//2		TNA	
415	16-17	7	3/14/9	2 17:00	37	9/12	13:30	1	
433	2,4.5	7	9/14/9		JJ	2/14	12:3	77	
-37	14.17	7	9/4	17.50	BP	17/2		BP	
41	1	7	9/15	960	LAU	925	110		
63.7	456511.1213		9/16	9.4.	75	9/16	160	Br	
31	03	<u>-5</u>	9/18	400	11:1	1	-		
1	27,31	7	9/19	1250	BP.	19/19	1730	169	
<u>-1/</u>	1-4, 7,10,13,16	7	9/19	1250	BI	19/19	173		<u> </u>
2-1/	25,76,29,50	7:-	9/19	1230	BP	9/11	173	BP	
411 -	17-37	2	9/17 1	250	BP	9/19	1730		
	273,6,15,19,21	7	7/19	250	150	9/11	1730		
37	8,9,4,5,11-19	7.7	9//9	1250	BP	9/19	173"	BP	
04	44/16	-							
504	2,46,8	7	9/21	6:20	ye.	9/22	12:30	400	
50	1-40	7	9/22	129%	TUB.	7/22	199	Mus	
504	05/7	7	9721	2:31	-ye	4/23			·
435	3	7	9/33	5:00		9/26	1200	LAN	
-111	/44 fels		9/21	9:30	905	7/29	17:42	Son	
<u>-115</u>	1 - 19 he in l	7-1	9/29	7:30	Jan .	9/24	72145		
<u>415</u>	21-35 APTAK		(0/1	9:30	807	10/1	2:45	Sim	
200	7.1.11-1.11-50		10/3	950	SP	0/3	1)20	BC	<u> </u>
7/34 06 13	1-37			15 30	BP	10/1		30	
17	1-35 May		0/3	15-23	BA	10/4	1178	bP	
15	1-6	11	045		ACB	10/3	2138	Mus !	
444	F.18122331	7 4	4/2		<u> </u>	1 4/7	13:00	111	
TY.	1-31	11/	# 1 se	200		19	190	MKZ	
411 14	#10,13,16	2 1	6/8	11.15	-BH	10/19 1	21/5	P	<u> </u>

Laboratory ID	Refrigerator No.	Date disposed of
920496	3, U04	
720497	- S-voa	
730478		10/9/42
720499	SAVOR	
920500	3, Utal	
92050/	Will Y, UOA	
720502	UDA TO	13
920503	uce,4	
780504	usa.7	
980505	100 3163	,
920506	0P5,0013,40a	
730503	005,008,00B,VOA	
920508	. 7	10/9/12
980509	0013 VOG	
9808/0	OPIZ VOA	
9205//	0013,Ved	
7305/8	opy, wa	
9205/3	100 y, UCA	
412024	3,404	
730515	4,000	
9205/6	008,009, voa	247
720517	001, VOA	0/20/07-
9205/8		9/29/92
7205/7	op2 voa	12/-4/42
720520	5	19/29/92
720521	OP1.1404	

CEIMIC Corporation 100 Dean Engues DR., Marragansett, RI 02882

Laboratory ID

Refrigerator No. Data disposed of

420532	0P410P3; VOA	
2525Z	OPI3-Freewor	
920534	OPIZ FACOUR	
920525	3,004	9/29/92
920526	12	9/29/92
920527	3, voa	
920528	4	10/9/92
920529	14	
920530	uma. 073.3.	
920531	74: 7	10/9/92
920532	VOO.	
720533	B, 404, 1010	
720534	Sellivia	
920535	6	10/9/92
920336	2.00 Muse 101	A STATE OF THE STA
920537	VAA	- 132 All 1
920538	OPTIME OPEN	00,004,12
930539	ad II vea	AND THE RESERVE OF THE PARTY OF
926540	DESTIVAL	
930541	MANICON	
930545	2 Tois von	
920543	TUS, VONIS	
920544	JOR STEEL	
920545		
420546		
920547	2 10:000	

CEINIC Corporation 100 Dean Enauss DR., Narragansett, RI 02882

			7						
Labe ID	Battle No.	Ref.	•	/Time	Inita.		/Time	Inita	. COMMENT
777	1	14	diac	1040	Uff	6128	453	IAL	
12.2	1	14	8/26	1041	LM	8 28	435	1.181.	
4130	173	4	8/28	1040	L.A.	8/28	H36	TAI	
427	6201	1	8/2		d C11		J	- loc 1 - b-c	
377	11_	47	9/1/12	12:10	AAN /	9/1/12	6:05	XX.	
$\mathcal{N}_{i,j}$	07	4	9/1/01	33%	OC_	1/1	34/10	(XC.	
65 65 65	misc ma	 	9/3	1816			O PIA		
65	5+6	4	7/4	1124	SAL	 			
105	ale	4	9/4	1207	LAI	17K	135	1 M	
25	213	4.	4/5	1590	-70	4/5-	16.45	NP .	
127		4	7	14.70	Jr.	14/5	1810	BP	
113		4	7/10	7.1.	Suns			SUL	MT
165	1->4	H	9/13/11	1000	6L	9/13/98	1030	BL	
127	01	1	9/15	900	LAL-	1-7:-	1,004		
	1.89.1011	10	Ally	7:1	Just 1	4/17/97	200		
	12,13	-42	9/17	7	- 14 64	<u> </u>			
1 4	2,4,514,2	4/	9/12	9:30	11	9/17/42	12/3	TUR	
	# 3, V, C	4		9:30	181	9/1/1/63		K.	
173	1,2,3,4,12	4/	7/13	الا	Yer I	9/17	和	WB	
Por	3810	1.56.	9/17:1				132 1	X X	
7.0	50,78.4.	113 4	SIIR I		W	9/225	93	WF.	
	11,2,6	14		20 0	A4		1/5 3	۵'n	<u> </u>
77	14	4	1/20 9	30 8	BP	4/20 19	40	BP	
78	12340	4	9/21	130			1210	14	
5 3	1.60		1/21	6131	C THY			40	•
16417	nisc Met	4 9	182	1215	LAK	- - - - - - - - - - - - - 		yc	
						<u> </u>			
177)	1-6.19	L)	9/23	12/1/1	WA.				
	663	4	9/24	861		9/25 10	0 1	W,	
14	10	4		200	8402	1/25 120		8030	. !
55	1,2	7	77	4100 -		पुष्ट ।। प्र		W	
552	1,2	#		0120	Ar				
151	1-4	4 /				48 735	5 6	20	:
-28	- 28			:30	•/	वि कारा			
11	1-4	7/ 1			33 X	5 20:		R	
	1 1. 7					1., 10.	. 10.00		MA 7 EMATY

							
I D	Bottle No.	Ref.	Date/Time Removed		. Date/Tim Returne		. COMMENT
501	AMPLES	17-34	10/06 1200	Sup	10/06 140	o Suno	
501	14,17-23	14	1017 1100	Ille			July John
ó∂ €	13,14,15,23,21	s Ý	107 17M	MYS	10/8 130	MS	
55.3	1,2,3	14	16/8 11:00	100	148 420		
909	1 1	14	108 12:15	163	0/8 4:30	18	
6.31	1-4	14	10/8 17.5	TINA	6/B 123	TWO	
501	7.8	Y	10/2 1:00	DAN	7		engly vais
557	1,2,3	u	לובן בו/טו	XO'i	10/13 2:30	Som	-put vices
551	1-4	R	10/12 1830		10/14 1700	180	
166	01	1	1413 11:00		- 10/14 900		
572	1-1	LJ				SOn	
570	1-8	4	10/13 11:35	90/1	10/13 2:30		
		· · · · · · · · · · · · · · · · · · ·	10/13 1300	EMP	10/12 1500	SMD	
569	01	4		- स्थान	 	CAO	MT
570 88	04×2			Sub		SAD-	LI
93	<u> </u>		1.7.	1			<u> </u>
5/53	07		19/2 300		1010 0017	BP	
	OSV	4	10/12 300	1 Ch	10/13 1817		
561	1-8	4,	10/13 1710	IPP	10/1× 8:30		
<u>570 · </u>	1-8	4/	10/13 1715	El	10/13 2000	CC	05\$07 049
<u>570</u>	13-25	:4	10/14 1230	97	11/15 965	77	
<u>571</u>	01802	4	10/14 1235	500	1415 855	7	
573	01-10	4	N/14 1230	she	1915 855		
570	32/33	4	1115 845	44	10/15 855	je	
	11,12	4	10/16 8:30	964			
557	1,3,3	4	10/16 18:00	*	1:45	Man	
233	10	4	1H17 8/1		10/14 2:10	Som	
D) 557 773 らつ	34.00%	ધ	Teller State	1.4		_	
57.3	11.12.13 142 15	4	10/17 /100	RL	10/17/42 1136	RC	1411, 13 cmoter
<u>573</u> 570	37	4	10/1/92 1500	81.		BL	empty
570	37		10/18 0900	BL		632	empty.
5'70	34,36	4	10/19 1310	mag	18/19 2:10	4 4 4	45.20
501	9,16		10/17 12:10	Spr	-		PE vials
		<u>' </u>					
							
					<u> </u>		
		-					
,	· · · · · · · · · · · · · · · · · · ·	, ,			,	1	

									
ID	Bottle No.	Ref. No.		/Time	Inita.		/Time urned	Inita	. COMMENT
117		4/	8/200	1040		\$128	45%	11/2	
122	1 /	١٠/	8/26	1046	M	- 428	43%	L.M.	
430	123	14	8/28,	1040	LAL	8/28	436	LAL	
427	6201	4	8/21	1 12:	BA 61.1			1,,	
39?	11	14,	9/1/12	12:10	84× ·	9/1/72	6:05)OA	
397	107	4	9/1/91		ge	1/4	345	136	
110	misc mot		9/3	1816	belge		· ·		
165	5+6	4	9/4		Sign	<u> </u>	 त्रह		
15	all	4	9/4	1200		19/5	135	广心	+
	23	4	4/5	1540	8P)	19/5	1695	NP.	
42)	<u> </u>	4		14170	Jī	15	18,10	150	
413	 _	1 4	9/10		SUN	1		suo	МТ
465	1-)4	4	9/13/42		8L	9/13/94	1030	BL	
四7_	Q/	14	9/15	900	14-	1271575	758	 	
1	3,89,1011	6	014	Ci.	_hd	4/17/97	2 200		
<u> </u>	12/13		1111	<u>''</u>				· 	
_/	2.4.514,7	 		9:30	LI	9/11/9/			
417	3,4,6	4		9:30	B	19//1/42	17.70		<u> : </u>
1174	1121314112	4	7//3		Yp .	PVD	in	TWB	
Kan-	BACH	1800	9/17/	3:44	4 1 1 2	lains t	-80		· · · · · · · · · · · · · · · · · · ·
		013 (1	2/18 4		W.	11057		WAS.	
515			9/8 2	728			5!/5	3 04	<u> </u>
477	19	4	1/20 9		BP			BP	
	423 NH	4	2/21	1/30		709	150	10	
503	1.60		4/21	6 3	- C- 1/40	29/22	12:30	yc	4
	misc Met	N C	9/22	1215	LAS	<u> </u>			
14/7	1-6.19	L)	01/22	1942	Min	 		<u></u>	
477)	1 1 1	6	9/23	1247		912 10	10	MF.	
55	443	/ }-	-4 /		ti di	LIN IN		************	
514	10	7	9/25	1200	MQ	9/25/20		55M	
- 2	1,2		9/31	4140 -	1	435 11:5		·	
	12	4		0720	of C	198 73:	-		
551	1-4							9 <u>C</u>	
528	1-28	-4				105 201 105 201	12 1	The state of the s	
511	1-4	77 11		7:19			00		# Z EMPTY
J 4 11_	174		101000	400	-	0100 1-	29-1-3		

·		<u></u>			,		
Labs ID	Bottle No.	Ref.	Date/Time Removed	1	Date/Time Returned		COMMENT
501	AMPLES	11-34	10/06 1200	Sund	10/06 1400	SHA	
57/	14,17-22		10/2 1100	1Ch-			Ju Tollor
∌6	_		10/2 1710	MYS	10/8 130	11/2-	
20 3.3	131412 33 31	1 1/	1618 11:40	11	198 4:20	13.	
159	1,2,3	12	108 12:15		10/8 Y'30	17/	
5.31	124	14	100 10 17 6	COM	DR 123:	1111	
22/	1-1-	 	WID ICH		10/0/67	TWO	
<u>501</u>	7.8	4	10/7 1:00	- San -	1.7	-	engly vais
257	13.3	14_	10/12 12:15	3001	10/13 2:30	- Jak	
-5/	1-4-	A	10/12 1830		10/14 1700	BC	
766	01	14_	1413 11:00	100-	10/14 960	Kly-	
572	1-4	4	10/13 11:35	90/h	10/15 2:30	1392	
570	1- B	4	10/13 1300		10/12 1500	SIND	
569	01	4	"	540	-	- NO.	MT
570	07×2	14	- la	Sign		240	` u "}
5						• "	
757	07	1.7	14/2 300	LAZ		,	
753	060	4	10/12 300	14	10/13 1817	BP	
7.7	1-8	1-	10kg 1710	100	10/1× 8=30		
<u> </u>	1-8	3//	1.7/2	26		20	ACAO 7 aurilio
570	13-25	· 7	10/13 /715 10/14 1230		11/15 865		05\$07 0444
					1415 855	7	
511	01402	. 4	10/14 12 3 10 36			31	
573	01-10	4	N/14 1230	"Sec	1915 855		
570	32/33	4	11/15 845	*\L	10/15 855	je	
557 573 573 573	11,12	Ц	10/16 8:30	905	•	<u> </u>	
557	1,2.3	(\)	10/16 18:00	XA.	10/10 1:15	Man.	
533	10	4	1017 816	WF	10/14 2:10	Sóm	
60	3 to note	1	CAN A CO	1		,	
573	11.12.13 May 15	4	10/12 /000	KL	10/17/92 1136	REC	1411, 13 proty
570	37	4	P/1/92 1500	84.		BL	empty
570	37	4	10/18 0900	BL		132	emptij.
57r	34,5 ₆		10/17 13108		11/19 2'10		STEP STEP
SU	9,15		10/17 12:10	844			PE vials
			1			 	<u> </u>
		 }					
							
						 }	
	•	7	1	l l	Į.	•	

Laboratory ID

Refrigerator No. Date disposed of

920572	1094,093; VOQ	· · · · · · · · · · · · · · · · · · ·
920523	OPIS-Freeder	
480834	opiz freezer	
920525	3, voc.	9/29/92.
920526	2	9/29/12
920527	a,voa	
920528	U .	10/9/92
920529	4	
920530	um. 073.3	
970531	· ·	10/9/92
920532	VOQ.	
720533	B, UOR, 07/0	The first of the section of the sect
720534	GAILVIA	
930535		10/9/92
720336	Z.OPMIUGA API	
920537	VOA	
920538	OPTIME! TOPICIVE	a 1014/12
930539	ad II, voa	
926540	D.P.ST.VAA	The second of th
930541	MOTIVIA	
930545	2, 1018, VOL	
920543	THIS YOU ?	•
920544	VOG 673	e 1
930545	LA CODO B	
9205H		
R920547	3 10,000	

CEINIC Corporation 100 Dean Enauss DR., Narragansett, RI 02882

Tabs ID	Bottle NO.	Date/Time Removed	Inita.	Date/Time Returned	Inita.	Comments
153	B-1 G		ن جنان	4/21 0127	NEW	
133	5-711(-1)	4 1517 900		<u> </u>		MT
188	13×3, 14	4/17		3/2	EV.	MT
188 1F8	12.3.5.10	4/20 2:30 4/2) 3:00	L.P.	4/20 3:10 4/21 -4:30	K.V.	
188	8,9,10,11,15,14 1,2,3,5,69,91		441	AL.		
180	1-136101 MELL	427 1248	A č.	4/19 5:00	\$(
188	1-13(met.)	430 8:50	4 4	H30 U 60	59.	
15.55	1-3.5:4.8-11.13.04	4/30 2:40	KIG	4/A 5:00 H3: 4 60 Ji 4:0	RRC	
142	alloway	5/4 1100	LL	es His	<u> </u>	•
123	All balan	5/11 0720	42			
188	Υ	इ/19 निया	KK	· • • • • • • • • • • • • • • • • • • •		
1:53		ड्रिक वाड		5/22 9:00	λc {	
188	1,3,6,9,10,14	5/21 420	MAE	5/21 S:50	УVh	·
184	1-256270484	TAX 11:30) Aver	/aa 12:31	YD4	
श्रिम .		6 1 187	CONT	Hin 10:30	A-Z-	
191	all (just)		LL	G10 13/2		
711	44 (1001)	L(1:1 1000		6/11 1430	Fre.	· · · · · · · · · · · · · · · · · · ·
(3)	1-00	S/17/9 19:30		6/17 (13)	MR	
深山,	1-20	6/14/12 11:00	W. Comment	1	127	
591	1-26	6/17/92-2146	TURE	GIR form	11/2	
343	20,02,03,06	12 42 300	4 P		9	
707	1.5022644	14.42 830	Xiii	761 /430	2885	
	01.112673.6	1/7/92 150	RYC.	7/7/12 7:35	RYC.	
3	OL IS, I A CEASE	718/92 - 1115	2.A3 [7/447 . 4:00	LAS.	
13	1-4 60	7017 990	11/24 :	201/12 9:46	5	
343	5-7 CN	MAT 9.00	1.45		42	
243 343	114,10-22 660		4.14	TMAA SILO	705	
343	بعيضينا	7/13/92 10100	×1141	7/14/4 2:30	MOri	
31/5=	7, 7, 3	7/4/12 9:40	70-	7 892 D130	Chr	
75(2	LIGHTLB.	1/6/92 9:00	WS.	7 11/12 12:10	K/E	
424	1-9 505	8/24/92 9:36		57104/64 0.44	10	
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424	1-8.12.11.13.11	8/28/05 8:00	17	-10-2 CO	31-	
130	all metal	1/2K/16 10=		8/08 320	3/	
423	OZ NAS	1/16 15		7/2		
424	3 69.17/5 Ted	8120 1114	AZ	8/24 1453	Az	
421	21-24	1/14 . 9:40	44		LUM.	MT
429	19	8/27	704	8/21 19500	TT	
424	11.24.24.24.24.24.24.24.24.24.24.24.24.24.	9/34 9,00	904	A11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
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	Aid	114 100	M Yes	9/15 7:45	70~	
U 7 4	AMPRADE	4/10 10 244	7/3/5	ALC 18230	77	
C1-38.	8-38	9/13 00.00	SP .	9/15 14/00	BP	
429	217	9/12 1615	BL	9/16 1700	ic.	
427	134.11.13-16	7/K 1710	S P	9117 030	BP	
129	14:21,25-27	9/16 1730	B.P.	0/17 030	Bro	
72	1-77	9/17	1.A.L.	"4/17	544),	
2	1-8 11-5 grad	9/18 230	XX	9/18 5:15	SON	
7	1 - X	9/21 2:15	WF.	ans Gil	YVYZ	

٠.	Labs ID	Bottle NO.	Date/Time Removed	Inita.	Date/Time Returned	Inita.	Comments
	168	7,7.1415,16	1417 10.45	VV*1	רקטטיף דיון	14/82	
	123	All	6/23	SA	(m) 1100	- U	5, 1 MT Palence 1-5 1-
7	323	*ω	4/23	11	6/29 113	Ri.	
	3a3	6,7	6/29 3.145	905	6/24 5100	Son	
	32.3	4.90	G/24	_ Fr	Prof. Landston	- // 	
3	23	1-79-13 686		AL	1/2 07/5	v4 <	
3	33].	7.12.16	651 lian	XX	718 7:50		
	7.8	6'	6/28 9.00	AV.	2/30 4.50	51.11	
17	בלו	L AF	b/30 11:15	887	7/8 2-55	Cover.	
	2)	15.17 1143	7/1 2:30	Son Son	7/1 \$100 7/11 \$100	700	
1 +	28 325		7/1 2-30	KIL	7/1/91 4:15	KPC.	
┝╼	317	71/5	7/7 1230	vii.	7411-11-	-CIS	
 	364	11	7/7 3:00	Min	7/7/2 2:45	IV/s	
	323	b-5,7-12.0,7	7/9 1:40	ile.	नास्त्रम् ।५१	N/A	
	3-73	3./1	7/1 . 1:00	STANK	7/9/A2 - 10 1131	1 04 A	
	408	29.31	7/17	- AM3	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	CMZ	ME
	408	16.617.24	1/19 9:30	17	8/19 17210	77	
	408	342 2 U343	10:CO	80	825/ 4:05	W.	
	77	1-11	1/1	E	1/1	CANA	
14	41	3.8 13	9/1 8:15	Rid	<u> </u>	 	
75	108	9-99 WON	9/1 845	30/4			1
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		1-14	0/2 11239	Jr	9/4 11:35	7 -	•
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	141	Solei	9/5	2	415	244	
	45	1-14	9/6 12:M		4/6 45 16	LUY	
	7	12-41 31-37	9/0 14:00	JT	9/9 1540	-4-	
4	146	12456 ISIK	1/9 1618	MP.	3/8. 23 45	BP	ļ
14	33	10.18	9/9 7 10	2	4124	41.18	
14	<u>54</u>		9/11/130	3 10 6 Substate	4/12 9/1	TWA	
	14	1-44	9/12 05	SP.	9/12 (930	BP .	
	46	17-21:11-57	9/3 1340	A Comment	9/13 /200	SP	
	40	1,3-6,15,76	9/14/19	30	114 8150	10	
	- 21	13:45:4715-16	1/16 9 200		A/16 15 00	BP	
	108	13	11.111 43	1	9/16 1980	BL.	
	144	10-43	9-17 9:40	h-	FIND IOI	103	
	ive	6-14	9-18 5:50	37	6 114 17:10	J1	
	4	200 100	901.	[/2	4 21 510.	AM	
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	45-	-16	9/22 1645	11663	453 030	RP	
	45	15,16	9/23 8170		433 //:00	No.	
	101	29	9/24 1:30		754 41W	1700	
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	1/5	1-14		31	14/36 101	₹\$ ^p	
	38	9-15,11-20	9/26: 1430	RB	1/27 /670	MXS	
	00	Metal	9/29 13+2-	nes.	9/28 16 160	170	
	42C.	12-19	1 4/29 1312			17	
#	6 S S	15/61/20	10/1 146:40	<i>3</i> 7	16/2 7:00	"	

CEIMIC Corporation 100 Dean Knauss Drive, Narragensett, RI 02882

Laboratory ID

Refrigerator No. Date disposed of

920444	000	9/24/92
920445	op 8 va	·····
920446	00 5 VO	9/24/92
420447	opf van	
920448	me Jua	
920449	7	9/29/92
920450	7	9/29/92
920458	uoa. 8	
9:0452	OR8.V	00 9/24/92
720453	LOR OFFICE	>3
72045\$	VOA, 8,009, solo	op 1
9.30455	3,000	m/19/29/92
930456	0012140	<u> </u>
920457	0615 ' Ada	
92045B	موراكر باحم	
920459	2	9/24/92
920460	, 2	mt.
920461	Ouca	
920462	opp op7, use	
930463		10/6/92
920464	0012,000	
920465	1. 4.	9/29/92
720466	00,00,000	
920467	0021000	9/29/92
920468	4	mts
726469	004,000	10/16/12

CHINIC Corporation 100 Dean Khauss DR., Marragansett, RI 02882



AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF

ODY RECORD

15,0

SAMPLING INFORMATION

NPDES NUMBER

NAME OF FACILITY: __

Arco U

Wellsulle Sim

STREET ADDRESS: 2448 South Brighty Aug

PROJECT	NAME	Arco	Wellsville GO3201						/	\mathcal{I}		7	7	//						/		7	///
SAMPLERS	(SIGN	ATURE)		O. OF KERS		OH I AIRE	4 14PC	//	/		/,	//	//	//	, pr		/,	/			\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		
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	(SIGNAT	URE)	7/29 1800 - Weller	Œ)				<u> </u>	\perp			(SIGN	ATURE						(SIC	NATU	RE)		

DIST	RIBUTION	

ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.
PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

REMARKS

CLP Protocol.		
Asseric pland	(ICA.	
		4 1

***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF R. ODY RECORD

18.

SAMPLING	NAME OF FACILITY:	Arco	Wellyville	te Since	Tary 1	2-finers
INFORMATION NPDES NUMBER	STREET ADDRESS:	2448	South	Brookly	Ave	
NPDES NUMBER				<i>,</i> .		

PROJECT NAME A(0 W///SVILLE G03201 SAMPLERS (SIGNATURE)	TOTAL NO. OF CONTAINERS	ONTAIN	BINGE									Total Land						Dr	/(3/		
SAMPLING DATE () 7/29/92	OTAL	OHIL	No. Ki		W/	ille .		38 37	83/e	61/s	W. Keel			<i>/</i>	//	//	/	D'	//	//	/
TIME S SOURCE SAMPLE STATION DESCRIPTION		OHIG			g g	ALL S	Ori.	100 / 10 / 10 / 10 / 10 / 10 / 10 / 10		6, (Mg	4/3/	State 1	2 77. W.	A HO			Y /	//	//	//u	ENL LAB NO.
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1035 N GO NF-13	1														-						
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1250 X So NF-17	1														1						
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DIS	TR	BU	TIC	N:
	-,			

ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.

PINK COPY RETAINED BY SAMPLERS, YELLOW COPY RETAINED BY LABORATORY Section 20

REMARKS

AISENIC & Loud	BY ICP	- And Annual and Annua
CLP Partucal		

SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

Original chain of Custody goes to Laboratory

Proj.	# 129	SIA	roject	name IR REF	INGEN					7		7		7	7	7	7	7	/	777
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F.	MAS	TELE	-/c	BAILEY	J. COLA	MARTINO	se of	Number containers	/	/	7 /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
		Comp.	Grab	Sample	identification		Type of container	In S	1/2	3/3/2	/		/	/	/	/	/	/	/	Remarks
9-25- 92	11:00		X	SR - ES	CONF-	5	802 CHAS	1	/											
13	11:10		4.	5R- 65	-CONF-	4	te	1	<u></u>											
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Original chain of Custody goes to Laboratory

Proj.	# C17 (1	51	roject i	name 41R RE	FINERY		¯, ·	-	<u> </u>	7	\$/	7	7	7	7	7	7	7		77	
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Rolli	nquish	ed by (Signatu	ise)	Date/Time	Received by (S	ignatur	·o)		Dat	le/T	ime									

Original chain of Custody goes to Laboratory

Proj.	# \$129	Pr S l k	oject r د د A	name	FINERY					7	2/	7	7	7	7	7	7	7			
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Reik	delupe	ed by (S	Signatu	ure)	Date/Time	Received by (S	ilgnatur	·o)		Dat	e/Tin	ne									

Original chain of Custody goes to Laboratory

Proj.	#	Pı	oject i	name						7	2/	7	/	7	7	7	7	7		777		_	٦
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Original chain of Custody goes to Laboratory

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Original chain of Custody goes to Laboratory

Proj.	#	P	roject r	ame	_					7	7	7		7	7	7	7	7	_		
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<u>F.</u>	11/	SIEL	<u>E/</u>	s. Fice	LL/M.M	unora	ta be	Number containers			' /	′ /	/	′ /				' /	′ /	/ /	
		Comp.	Grab	Sample !	dentification		Type of container	S 20	J. J.	7				/			/			Remarks	
9-26 92	1450		X	SR-co	C - CON	F-26	402	1	-												
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	1505		11	SR-CC	- CONF	- 29	11:	- 11													
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L ₁	1513	<u> </u>	u	SR-cc	- CONF	=- 31	4	l ₂	-												
11	151 <u>5</u>	1	1,	SR-cc	- CONF	-32	u	Le	-		,										
• 1	1545	<u> </u>	^	SR-CC	- CONF	- 33	li	ŧ.										<u> </u>			
11	1550		/\	SR-CC.	- CONF	- 34	11	٠,	سد ا												
1.4	1555	<u> </u>	1.	CR -cc	- CONF	<u>- 35</u>	1.	1	_				L								
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	-	ed by (s	_	اه) میلکو	Date/Time 8-27-92 PM	Received by (Si	ignatur •••	<u> </u>	4640	Dat	lo/T	lme	Re	mark	is:						
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Original chain of Custody goes to Laboratory

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Date	Timo	Comp.	Grab	Sample	Identification		F 65	Number of containers	A.		/		/		/	/	/	/	/	Remarks	
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Original chain of Custody goes to Laboratory

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	1000		٠١	SE-OE	-conf-	ų	,	٠,	-												•			
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u	1058		4	SR-PH	- CONF.	5	14	()																
ч	103			SR-PH	-cour-	6	4	41																
16	1/35		۷.	5R- 02	- CONF-	44	41	در	_															
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Original chain of Custody goes to Laboratory

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1-27 82	1515			SR-cc	-CONF-	47	402	1	1										PETENEUM ODOE
•	1330		45	SR-cc.	-CONF-	48	H	4 L	1										CLAYEY
4	1540		7	Se-cc-	CONF -	49	۱۲	11	7										CINDERS
11	1352		¢	SR-cc-	CONF-	50	1.4	ti,											CLAYEY / WITH STONE
it	1407		14	SR-CC	-conf-	51		41	7										LOTS OF STONE W/CLAY
11	1420		* '	SR-CL.	CONF-	52_	u	61	1			Ţ							FILL W/ STONE
11	1520		U.	SR-CC	- CONF-	₩ 65°	ti	et.	~										GRAVEL FILL
11	1530		41	SR.CC.	_ CONF -	53	44	64	1										FILL W/STONE
V 1	1548		"	56-66	CONF -	54	41	te	-										FILL WE POWE BOTTOM
	1551		"	SR-CC	- Couf -	5 5	/((1	-										CLAYEY W/ PETEDLEUM
<u> </u>	1610		1,	SR-CC-	COUF -	56	1.	11	<u> -</u>										CINDERS W/ PATALLEUM COO
11	الحكم		1.	SR-CC-	CONF -	57		11	1-			<u> </u>							CLAYEY W/ STONES
щ	1630	<u>. </u>	£¢.	SR-LL-	COUF-	<u>કહ</u>	1.	u	سا ا										CINDER FILL LYSMALL
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Original chain of Custody goes to Laboratory

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Date	Time	Comp.	Grab	Sample I	dentification	•	Type of container	Number of containers		"	/	/			/			/	/	Remarks
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71	1712		1.	SR-CC-	CONF -	61	11	1.0	ا ب											
11	1721		11	T	LONF - (14	4"	-											
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CHAIN OF CUSTODY Original chain of Custody goes to Laboratory

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	# >1 29	Si	NCLA	ir Ref	FINERY					18	//	′ ,	/ /							
Samp	ders (- - -	rers		/u a	/ /				/	/	/	/	//	•
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Original chain of Custody goes to Laboratory

Proj.	#	Pı Si	roject r	ame Ale PE	FIRLEPY					7	7	7	7	7	7	7	7	7	7	77	
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Date	Time	Comp.	Grab	Sample I	deification	luccey	Typ	Nur of con	بالأيو			/		/,	//	/		/	/,	Remarks	1
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મ	1120		41	SR-CC.	CONF -	78	14	11													
(1	1178		(,	SR - CC -	CONF -	79	G102		-												
fı	1135	ļ	11	SP-CL.	- CONF -	<u>80</u>	# 02 (c) 485					_	_								
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Original chain of Custody goes to Laboratory

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ļ		Comp.	Grab	Sample	identifi cation		Cont	Nur of Con	1	N. S. S. S. S. S. S. S. S. S. S. S. S. S.	/		/	/	/	/		/	/	Rem	arks		t	·
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Original chain of Custody goes to Laboratory

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Headquarters
4075 Monroeville Blvd. • Corporat
Monroeville, Pennsylvania 15146
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Chain-of Custody Flecord

GEO-CON'INC. GEOTECHNICAL CONTRACTING

4075 Mon

4075 Maniaeville Blvd. • Caparate One Building II • Suli Manaeville, Pannylvania 15146

fet (412) 656-7700

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FAX (412) 37

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LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CULTODY RECORD

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DISTR	IBUTION:

ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

REMARKS

'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CULTODY RECORD

NAME OF FACILITY: ARCO WELLSVILLE SINCEIT SI
NPDES NUMBER

NAME OF FACILITY: ARCO WELLSVILLE SINCEIT SI
STREET ADDRESS: Z448 South Brocklyn Are

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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CLUTODY RECORD

NAME OF FACILITY: ARCO WILLIAM SINCIALLY SITE

INFORMATION

NPDES NUMBER

NAME OF FACILITY: ARCO WILLIAM SINCIALLY SITE

STREET ADDRESS: ZYYB S. Brooklyn Ave

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	PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.
REMARKS	

***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

CHAIN OF CUSIODY RECORD

SAMPLING NAME OF FACILITY: (ARCO) Wellsville INFORMATION STREET ADDRESS: 2448 South Brooklyn Ave NPDES NUMBER

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REMARKS

*SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

NPDES DISCHARGE - ND DRINKING WATER - DW HAZARDOUS WASTE - HW **SURFACE WATER - SW** NON-AQUEOUS - NA



CHAIN OF CUSTODY RECORD

						
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REMARKS		
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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CU	SIODY	RECORD
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SAMPLING
INFORMATION
NPDES NUMBER

NAME OF FACILITY: AREO, WENSVILLE, NEW JOE
STREET ADDRESS: 2448 S. BROOKLYN AVE

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REMARKS

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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CUS ODY RECORD

SAMPLING INFORMATION

NPDES NUMBER

NAME OF FACILITY:

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STREET ADDRESS:

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REMARKS

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

CHAIN OF CUSTODY RECORD

SAMPLING INFORMATION

NAME OF FACILITY: SINCLATE REFINERY (ARCO) WELLS

STREET ADDRESS: 2448 S. BROOKLYN AVE **NPDES NUMBER** PROJECT NAME JOB NO. SINCLAR REFINERY 603201.14 12. P. Medit & Secret Lear SAMPLERS (SIGNATURE) N. U. Least . Well SAMPLING DATE 202 C. WIM igo del rigido 29/00/92 [611. | (41.) A OL PL WITH 11. HELDIN Mariot. SPAB COMP *SOURCE SAMPLE STATION DESCRIPTION LENL LAB NO. CODE CC-47-4 09:00 X cc-47-Z 08:40 X 08:50 X CC-48-Z 11:05 X PH -4 -Z PH-17-25 11:45 PH-17-45 12:55 PH-11-22 10110 X A1-12-Z 10:35 X RECEIVED BY: RELINQUISHED BY: . DATE / TIME DATE / TIME RELINQUISHED BY: RECEIVED BY LABORATORY: DATE / TIME (SIGNATURE) (SIGNATURE) (SIGNATURE)

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REMARKS		_
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*SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CUSTODY RECORD

SAMPLING
INFORMATION
NPDES NUMBER

NAME OF FACILITY: Area Sinclair
STREET ADDRESS: 2448 South Brooklyin Ave.

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REMARKS	
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*SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



(SIGNATURE)

LAW ENVIRONMENTAL, INC. **NATIONAL LABORATORIES** 7215 PINE FOREST ROAD

CHAIN OF C .ODY RECORD

SAMPLING NAME OF FACILITY: Arcs Sinclair PENSACOLA, FLORIDA 32526 INFORMATION STREET ADDRESS: 2448 South Brockly Ave. (904) 944-9772 NPDES NUMBER PROJECT NAME JOB NO. Arco Sinclair Relinery QC-3201 SAMPLERS (SIGNATURE) W. U. Hadde . Welth SAMPLING DATE Lot C. Str. igum lugur 10/30/92 J. P. HARO. 1 of P. Wild Litter THE WAY GRAB COMP. SOURCE TIME SAMPLE STATION DESCRIPTION LENL LAB NO. CODE DA-46-ZE So 0925 0915 11 0850 11 RELINCUISHED BY: RECEIVED BY: DATE / TIME DATE / TIME RELINQUISHED BY: RECEIVED BY LABORATORY: DATE / TIME

DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.	i '
REMARKS		
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***SOURCE CODES**

(SIGNATURE)

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO **SLUDGE - SL**

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CHAIN OF CODY RECORD

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REMARKS

'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

810



LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CUSTODY RECORD

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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.	
REMARKS		_
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*SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

CHAIN OF CO. ODY RECORD

SAMPLING

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PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

REMARKS

***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

NPDES DISCHARGE - ND DRINKING WATER - DW HAZARDOUS WASTE - HW SURFACE WATER - SW NON-AQUEOUS - NA

244.



AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CO. ODY RECORD



NAME OF FACILITY: (Arcc - walle wills) Sinclair Refinery STREET ADDRESS: 2448 South Free Hyring day SAMPLING PENSACOLA, FLORIDA 32526 INFORMATION (904) 944-9772 **NPDES NUMBER** SAMPLERS (SIGNATURE) JULIAN Banks TOTAL NO. OF CONTAINERS 11. 11 lite de l'heten 12. 8. Halder Associate 1. 142 **SAMPLING DATE** igani luliga The state of 20. C. WIM The True or ilemin A OZ P. WIM Buller GRAB COMP *SOURCE SAMPLE STATION DESCRIPTION TIME LENI, LAB NO. CODE 1515 $\mathcal{S}_{\!\scriptscriptstyle{\mathcal{O}}}$ DATE DAGZG 1445 11 DAGYG 1530 14 DA526 1500 11 RELINQUISHED BY: RECEIVED BY: RELINQUISHED BY: RECEIVED BY LABORATORY: DATE / TIME DATE / TIME DATE / TIME Drawles (SIGNATURE) (SIGNATURE) (SIGNATURE)

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***SOURCE CODES**

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL





CHAIN OF CUSTODY RECORD

NAME OF FACILITY: Sinclair Refinery
INFORMATION
NPDES NUMBER

NAME OF FACILITY: Sinclair Refinery
STREET ADDRESS: 2448 Seeth Brooklyn Ane.

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DISTRIBUTION:	PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.
REMARKS	
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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

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LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CUSTODY RECORD

SAMPLING
INFORMATION
NPDES NUMBER

NAME OF FACILITY: Sinclein Relinery
STREET ADDRESS: 2448 South Brooklyn Ave.

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REMARKS	

*SOURCE CODES

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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL





CHAIN OF CUS ODY RECORD

INFORMATION
NPDES NUMBER

NAME OF FACILITY: SINCLAIR FEFTHERY (ARCD)
STREET ADDRESS: 3448 S. BROOKLY(1) AVE.

WELLSWILE, NY 14898

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REMARKS											
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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL





CHAIN OF CUSTODY RECORD

NAME OF FACILITY: SIX LAR REFINERY (ARCS)

INFORMATION

NPDES NUMBER

NAME OF FACILITY: SIX LAR REFINERY (ARCS)

STREET ADDRESS: SIX LAR REFINERY (ARCS)

WELLSVILLE, NY 14895

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REMARKS

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CUSTODY RECORD

SAMPLING	NAME OF FACILITY:	Si	ncla	Ric	Refi	nery	
INFORMATION NPDES NUMBER	STREET ADDRESS:	2448	S.	Broo	oklyn	Ave.	

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REMARKS	

'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CUS ODY RECORD

SAMPLING
INFORMATION
NPDES NUMBER

NAME OF FACILITY: SINCLE IT RELIGIOUS
STREET ADDRESS: 2448 SOUTH BIOCHEY: Ave

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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

CHAIN OF CUSTODY RECORD

SAMPLING	NAME OF FACILITY: Sinclair Rutinary	_
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NPDES NUMBER	STREET ADDRESS. 2710 S. TOTOCK 1911	

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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.	*SOUR
REMARKS		RECOVERY WELL - RW RCRA MONITORING WELL - MW
		SOIL / SEDIMENT - SO SLUDGE - SL
		≐

SOURCE CODES

CHAIN OF CUSTODY RECORD

SAMPLING
NAME OF FACILITY: Sinclair Rusinery
INFORMATION
NPDES NUMBER

NAME OF FACILITY: Sinclair Rusinery
2448 S. Brooklyi. Are

PROJECT N	PLERS (SIGNATURE) fruithan Branches PLING DATE 72/ Dec/ 12					TOTAL NO. OF CONTAINERS	%	, MEG	CAR.						//	/ k					\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
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REMARKS		
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***SOURCE CODES**

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL NPDES DISCHARGE - ND
DRINKING WATER - DW
HAZARDOUS WASTE - HW
SURFACE WATER - SW
NON-AQUEOUS - NA

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AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CUL. ODY RECORD

		(5)		E FOREST ROAD LA, FLORIDA 32526 -9772	SAMPLII INFORM NPDE	ATIO	-	₹		STREET ADDRESS: 2448 S. BROOKLY 13 ANE WELLEVILLE, NOT 14895)ς						
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REMARKS		_
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'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CUE. ODY RECORD

SAMPLING

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DIS	IH	H	ON:

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REMARKS

***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CO. ODY RECORD

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DISTRIBUTION:	OMPANY SAMPLE SHIPMENT TO LABORATO YELLOW COPY RETAINED BY LABORATO	
REMARKS		
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'SOURCE CODES



LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CUE. ODY RECORD

SAMPLING



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REMARKS

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

NAME OF FACILITY: SINCI AR SUFFICIETY





CHAIN OF STODY RECORD

INFORMATION
NPDES NUMBER

NAME OF FACILITY: SINCLAIR REFINERLY
STREET ADDRESS: 2448 S BROOKLYN AVE
NET 12411 F. NY 14801

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REMARKS 1. RECORT TESTS DO THESE SAMPLES IN

SEPARATE SOG VOLUME.

2. DID NOT HAVE ORIGINAL COC PROPO LEFT
HENCE PHOTOCOPY

*SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



LAW NATIO 7215 PENS (904)

LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CO. ODY RECORD

INFORMATION
NPOES NUMBER

NAME OF FACILITY: SINCLAIR REFINESLY
STREET ADDRESS: 2448 S. BROKLIN AJE
WELLSVILLE 144 145605

PROJECT N	IAME	٤	Rus	FINERY	JOB NO.						/		7/	/	/		/	7	7	//	//	//	//		//	//
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SAMPLING 5 FC	DATE	<u> </u>				TOTAL NO. OF CONTAINERS	હ	Orig.	Or Ki	86g . (1	M /s	MIRA CO		Met .	03/6	57. FS	Autoria S	Part 1	, m		/ /	/:/>	2/ /	//	///	
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REMARKS			*, *
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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



(SIGNATURE)

.AW ENVIRONMENTAL, INC. NATIONAL LABORATORIES **7215 PINE FOREST ROAD** PENSACOLA, FLORIDA 32526

CHAIN OF CODY RECORD

SAMPLING



NAME OF FACILITY: SINCLAIR REGINERY INFORMATION STREET ADDRESS 24 48 S. Expx 1-1 A 1408 (904) 944-9772 NPDES NUMBER WELLSVILLE, NY 14895. PROJECT NAME JOB NO. SILCLAR REFILERY =43201.R14 12. Maghy sector teel SAMPLERS (SIGNATURE) LIV. LILINGUE, WEETIN Cristin Hed SAMPLING DATE Seg Sale Film Tracked. T. A. HARE'S 11/6:8 93 A OF PLANT Page Mark J.L. HELD GRAB COMP 'SOLIRCE SAMPLE STATION DESCRIPTION TIME LENL LAB NO. CODE PHO4 B Sa 10:50 Su PH 24 C 10:40 30 PH 35 B 10:55 PH 25 C So 10:45 So PH 26 B 11:05 PH 27 B 11:10 Se DH 28 B 11:20 PH 29B 11:30 Sa PH 30 B 11:35 RELINCUISHED BY: RECEIVED BY: DATE / TIME RECEIVED BY LABORATORY: DATE / TIME RELINQUISHED BY: DATE / TIME 11/628 93 439

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REMARKS			
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'SOURCE CODES

(SIGNATURE)

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

(SIGNATURE)

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LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CO. ODY RECORD

SAMPLING .	NAME OF FACILITY: Simulain Red in the
INFORMATION	STREET ADDRESS: 2448 S. Beechlys. A.
NPDES NUMBER	Wellsville, MY 14495

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REMARKS			**,
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***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

NPDES DISCHARGE - ND DRINKING WATER - DW HAZARDOUS WASTE - HW SURFACE WATER - SW NON-AQUEOUS - NA

w.(**)



CHAIN OF CUSTODY RECORD

SAMPLING .	NAME OF FACILITY:	Sindair Rotinery
NFORMATION	STREET ADDRESS:	2448 S. Brootlyn Ave.
NPDES NUMBER	OTTENTION TO STATE OF THE STATE	11 ble 16 11 14895

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PROJECT N	MA	5	pindo	i'r Relinery GQ 3201. R14				<u> </u>				//	//			/							/	
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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.
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REMARKS

*SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL





CHAIN OF CU. ODY RECORD

SAMPLING		< /	4 (
INFORMATION	NAME OF FACILITY:	<u> </u>	Detilary	
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*SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL





SAMPLING INFORMATION

NPDES NUMBER

NAME OF FACILITY: Sinclair

STREET ADDRESS: 2448. S. Brook

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SAMPLING I	DATE	=	6/1	my/93	TOTAL NO. OF	6	ONTAIL	ACT NO. W.	eeg 'un	WIN (S.	MEET .	03/20	Machine Charles	of till		//		/		//	///	
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PROJECT NAME Sinclair

GRAB COMP

'SOURCE CODE

50

So

SAMPLERS (SIGNATURE)

SAMPLING DATE

1630

RELINQUISHED BY:

LAW ENVIRONMENTAL, INC. **NATIONAL LABORATORIES** 7215 PINE FOI PENSACOLA, (904) 944-977

CHAIN OF CUL. ODY RECORD

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(SIGNATURE)

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(SIGNATURE)



CHAIN OF CUSIODY RECORD

SAMPLING	NAME OF FACILITY:	Synckiir	hetimery	
INFORMATION	STREET ADDRESS:	2446 5.	Buchly	1.
NPDES NUMBER		160/1 VII.	VV 16/19	

PROJECT N	AMĮ	E	1.	Refinery (9301-R14			·				7	7	7	//	/	7	$\overline{}$	7				Ž ,	7	7/	7	777
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TIME	GRAB	COMP.	*SOURCE CODE	SAMPLE STATION DESCRIPTION			M HIL		od S	3/	ALLA SE	Oni.	A LA		61./V	4. Kr.	30 C	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	War.			/	/	//	/\	ENL LAB NO.
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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CUSTODY RECORD

SAMPLING	NAME OF FACILITY:	Sincler	Retinny
INFORMATION NPDES NUMBER	STREET ADDRESS:	2448 5	Buch by the
NFDES NUMBER		Welker	L 14/14/95

PROJECT N	IAME		daic	Redig (G 370 R/4							7	//	7/	7			$\overline{/}$		7	/			Ť	7	$\overline{//}$	77
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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



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LÁW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CUL. ODY RECORD

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LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES **7215 PINE FOREST ROAD** PENSACOLA, FLORIDA 325 (904) 944-9772

PROJECT NAME SINCLIF Ketiner

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SAMPLERS (SIGNATURE)

SAMPLING DATE

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CHAIN OF CUSTODY RECORD

ROAD I ÚA 32526	SAMPLING INFORMATION NPDES NUM	eto:	EET ADDRESS:	Sindair K 2448 S. L	Stocklyn Ave , NY 14895	Ale Ave						
Lay/93 SAMPLE STATION DESCRIPTION	TOTAL NO. OF CONTAINERS	LINE LINE		1		LENL LAB NO						
5-15W	1					AA36973						
5-14X	1					AA36924						
5-134					1	AA36975						
5-14Z 1-6WG	1			,	1							
1-6WG	- 1					AA.36976 AA.36977						
DATE / TIME RECENTED BY:		DATE / TIME	RELINQUISHED BY:		RECENED BY LABORATORY:	DATE / TIME						

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REMARKS	

Indend Brues #597584782

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE SL

CHAIN OF CUS. ODY RECORD

SAMPLING INFORMATION NPDES NUMBER	NAME OF FACILITY: Sinclair Redinary STREET ADDRESS: 2448 S. Brothly, A. & 1 Cellsville, MY 14895

PROJECT NAME Sinckin Refinery GO BOCI- RY										/	/	/		7		7	//	7	7				/	$\overline{//}$	///
SAMPLERS (SIGNATURE) Another Branch's					10. OF NERS		INEP		//	//	//		//	//	//		S. HORO	//	//		/		<i>]</i>	//	
SAMPLING DATE 26/11/01.4/93				TOTAL NO. OF CONTAINERS	િ	CONTANES TO	OF K	; , 186 ² / 11		WIN (C)	July 1		\ }\@`	OK AS	4000 4000		, M		, / , x				//	//	
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1017	X		S	PH-72D	1																				
1025	χ		Sp	PH-73	1														1						
1035	X		50	PH - 74	1														1						
1043			So	PH-75	1														1						
1050	χ		50	PH-76	1														1						
1103	X		So	PH-77	1														1						
1113	X		So	PH-78	1														1						
1123	X		50	PA-79	1														1						
1130	X		50	PH -80	1														1						
RELINQUISHED BY: Date / Time RECEIVED BY: Construction Co						DATE	/ TOME	F	RELINQUISHED BY:					F	RECEIVED BY LABORATORY:							DATE / TIME			
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PROJECT NAME

SAMPLING DATE

TIME

1140

1150

SAMPLERS (SIGNATURE)

COMP GRAB

SOURCE

CODE

Sa

LAW ENVIRONMENTAL, INC. **NATIONAL LABORATORIES 7215 PINE FOREST ROAD** PENSACOLA, FLORIDA 32526 (904) 944-9772

Sinckiir Ketinery

CHAIN OF CUS. ODY RECORD

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	ATURE)	92 1415	(\$	IGNATURE)		1
DISTRIBUTION:					IT TO LABORATORY. BY LABORATORY.	
REMARKS						

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PH-8CA

SOURCE CODES

(SIGNATURE)

RECEIVED BY LABORATORY:

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

NPDES DISCHARGE - ND DRINKING WATER - DW HAZARDOUS WASTE - HW SURFACE WATER - SW NON-AQUEOUS - NA

DATE / TIME



CHAIN OF CUS. ODY RECORD

SAMPLING	NAME OF FACILITY: Sincking Radinary
INFORMATION	STREET ADDRESS: 2448 5. MISCA HALL ALVE.
NPDES NUMBER	Welkielle, NY 14845

PROJECT N	AME	5,	iclar	r Kerinery (-G3301 - K14						$\overline{/}$	$\overline{//}$	//			/	\overline{Z}	7	$\overline{//}$	7	7	//	//	///	///
SAMPLERS	(SIG	NAT	URE)	parties Sierales	NERS		MARKER	/Abr	//	//	//	//	//	//		THE BESTS		//	//	//	K		//,	
SAMPLING	DATI	E	<i></i>	r Redinary (-G33c1-K14) fratther Sierries 4/ June/93	TOTAL NO. OF CONTAINERS	ď	MIAN ON O	AKC)	SE IN	WIM		MEET.	03)/6	51/s	H. P.SCO	POLICE AND STATE OF THE POLICE	M.		CH /				///	
TIME	GRAB		*SOURCE CODE	SAMPLE STATION DESCRIPTION		/	Only	26/80 24/80		G. G.	SO RE	PAREGA IA		6///s		87/kg	S. Mar	44/44/	<u>w/</u>		//	/	LEN	IL LAB NO.
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1105	X		So		1																			
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DATE / TIME RECEIVED BY:			1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ATE /	TIME	REL	INQUIS	HED BY	• <u>-</u> ';	1			RECE	EVED 8Y	LABO	RATO	RY:	·	0.	ATE / TIME		
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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CUSTODY RECORD

SAMPLING .

INFORMATION

NPDES NUMBER

NAME OF FACILITY Sinchis Refinery
STREET ADDRESS: 2448 Brankly in Ave.

	<u> </u>		- WENSON	114,14,14812
SINCLOIR REFINEY G-123201 R SAMPLERS (SIGNATURE) Prenton Brandos	21	/		
SAMPLERS (SIGNATURE) Pretthem Brandes	NE PS	Children Link		
SAMPLING DATE July 16 93	TOTAL NO OF	Chil. Colic of		
TIME SE SOUNCE SAMPLE STATION DESCRIPTION		(30 / 5/2 / 1/2 /	410 52 / 42 / 42 / 42 / 42 / 42 / 42 / 42 /	LENE LAB NO
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0940 N SO PH-500				
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0955 x So PH-520-				
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1010 1 50 PH-55P				
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REMARKS

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*SOURCE CODES

NPDES DISCHARGE - ND

LL - MW DRINKING WATER - DW

HAZARDOUS WASTE - HW

SURFACE WATER - SW

NON-AQUEOUS - NA



LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CUSTODY RECORD

SAMPLING .

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SAMPLING

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REMARKS

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SOIL / SEDIMENT - SO
SLUDGE - SL



CHAIN OF CUSTODY RECORD

SAMPLING

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LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

CHAIN OF CUSTODY RECORD

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'SOURCE CODES

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LÁW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CULIDDY RECORD

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'SOURCE CODES

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RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
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CHAIN OF CULLIDDY RECORD

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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.
REMARKS	

***SOURCE CODES**

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES

CHAIN OF CULLIDDY RECORD

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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY, TO SEE THE PROPERTY OF
REMARKS	N 11.7A

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

NPDES DISCHARGE - ND DRINKING WATER - DW HAZARDOUS WASTE - HW SURFACE WATER - SW NON-AQUEOUS - NA

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CHAIN OF COD DOY RECORD

SAMPLING

7285

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PROJECT N	IAME	: د ت	MR	REFLERY	JOB NO. 603201.1	214					$\overline{//}$	//	//		$\overline{/}$	$\overline{/}$	$\overline{//}$	//	7/		//	//		$ \mathcal{T} $	7/	Z
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DISTRIBUTION:	ORIGINAL AND YELLOW COPIES ACCOMPANY SA PINK COPY RETAINED BY SAMPLERS. YELLOW C	•
REMARKS		
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*SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL



REMARKS

CHAIN OF CULLIDDY RECORD

7298

NPDES DISCHARGE - ND DRINKING WATER - DW

HAZARDOUS WASTE - HW SURFACE WATER - SW

NON-AQUEOUS - NA

PENSACOLA, FLORIDA 32526	SAMPLING	NAME OF FACILITY:	Sinckir	Ketilery	
(904) 944-9772	INFORMATION NPDES NUMBER	STREET ADDRESS:	2448 S.	Brastlyn Ave le, NY 14895	
			we lisuil	le, NY 14895	, , , , ,
Sinclair Refinery GQ3201. R	LIY .				
AMPLERS (SIGNATURE) Another Branches	NERS NEW Y	./////	No. No. No. No. No. No. No. No. No. No.		///
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120 K SO PH-575	1 .				
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415 X So PH-55 J				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
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453 x So PH-55I				1	
426 x So PH-59J					
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RECOVERY WELL - RW

SOIL / SEDIMENT - SO

SLUDGE - SL

RCRA MONITORING WELL - MW



DISTRIBUTION:

LAW ENVIRONMENTAL, INC. NATIONAL LABORATORIES 7215 PINE FOREST ROAD

7294

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	PINK COPY RETAINED BY SAMPLERS.	YELLOW COPY RETAINED BY L	ABORATORY.
REMARKS			
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ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.

***SOURCE CODES**

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CORD JDY RECORD

7286

SAMPLING INFORMATION NPDES NUMBER

NAME OF FACILITY: SINCLATE REFINERY STREET ADDRESS: 2400 S. BROXI YN A

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PROJECT N	IAME	A	RR	EFINERY 643701 R14						/	//	/	/	/		/		/			/	/	/	/	//	
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SAMPLING	DATE		Ju	navier Dans	ANA	ء ا	OHIAIN				//	/	/	/	/	/55	ing A	OL.		/	/		> 20		//	
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1546	X		1	PH-59F	1															1						
1551	X		So	PH-60F	١															(
1555	X		S	PH-61F	1		Ŀ													١						
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DISTRIBUTION:	PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.	
	FIRE COFT RETAINED BY SAMPLERS. TELLOW COFT RETAINED BY LABORATORY.	
REMARKS		

'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO **SLUDGE - SL**



CHAIN OF CULLIDDY RECORD

7287

	' PE	215 PINE ENSACO 04) 944	E FOREST ROAD La, Florida 32526 -9772	INFO		IG ATIOI S NUA	-		N/ ST	ME (F F/	ACILIT DRESS	y: \$1 5: 7 €	1K 147	QIV S	Rel	ile	14	Ar	eu	щ	L	valt.	xile My
SAMPLERS (SIG	ANAY TAME	/*	EFINERY 843 attum Brancha	201. P14	TOTAL NO. OF CONTAINERS	S	Drift CA	THE			/		//	//	//	orde Acid								
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1125 X		So	PH-590)																			
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ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY.

PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

REMARKS

***SOURCE CODES**

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CUSIODY RECORD

7290

]	PE		E FOREST ROAD DLA, FLORIDA 32526 I-9772	SAMPLII INFORM NPDES	ATIO		3	NA ST	ME (OF FAC	CILITY	2	W.1 145	Atj 7 S	3 P.	COL	Jel Iyi	201	16	W	<u>al</u>	vile,	W 489	- -
	(SIG	IA INAT		REFINERY 603201.R	TOTAL NO. OF CONTAINERS	-	ONTAINE	ATAPE								Stile Acid	<u> </u>				Dec.	35) /
SAMPLING I	GRAB	31	SOURCE	SAMPLE STATION DESCRIPTION	TOTAL	,	OHIR.	ON N	of 20	31 (3) 81 (4)	M (SO)	AMEE!	HIC.	87 M2	31.10°	Legile Line	2. Mrs. 250 K	87/4 127/	OT A	05/		//		NL LAB N	ю
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JSINIBUTION:	PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINE	
REMARKS		<u>,</u>
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'SOURCE CODES

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



SAMPLERS (SIGNATURE)

(SIGNATURE)

*SOURCE

SAMPLING DATE

TIME

LAW ENVIRONMENTAL, INC. **NATIONAL LABORATORIES** 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 (904) 944-9772

CHAIN OF CUSIODY RECORD

7289

SAMPLING NAME OF FACILITY: SINCHER PETINDRY
STREET ADDRESS: 2448 S. BROCKLYN ALE WALS INE N **INFORMATION** NPDES NUMBER TOTAL NO. OF CONTAINERS Z. Lithen ingh 1. P. Harh Recorde A 20.C.WM igo fel harder J.L. P. IMO 3 The Itter Bal C. With A OZ PL WIM 71. TEFLON Harder / LENL LAB NO.

GRAB COMP CODE PH-57L PH-56L 1323 1320 PH-55L PH-55M 355 PH-58K PH-59K 1325 PH-59L /33o PH-58L /405 PH-57K PH-S7KD /407 PH-56K RECEIVED BY: DATE / TIME RECEIVED BY LABORATORY: DATE / TIME RELINQUISHED BY: DATE / TIME

DISTRIBUTION:	PINK COPY RETAINED BY SAMPLERS.	 	
REMARKS		 	· · · · · · · · · · · · · · · · · · ·
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(SIGNATURE)

SAMPLE STATION DESCRIPTION

***SOURCE CODES**

(SIGNATURE)

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL

(SIGNATURE)



CHAIN OF CUL. JDY RECORD

SAMPLING	NAME OF FACILITY: Sinching Refinery
INFORMATION	STREET ADDRESS: 2448 S. Rection Ave
NPDES NUMBER	wellswife. NY 14895

PROJECT N	AME	5	incla	ir Refiner	JOB NO.	01 · R14						7	7/	//	//	$\overline{/}$	7	//		$\overline{/}$	$\overline{/}$		/			
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SAMPLING (DATE	E		ا ۸-۷	93		TOTAL NO. OF CONTAINERS	હ	MIL	C AG	er in	WIN		Meet 1) 9}{6	3 QK	Ascorbe A	Way /	nd /			0	//	//	///	
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REMARKS									
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***SOURCE CODES**

RECOVERY WELL - RW RCRA MONITORING WELL - MW SOIL / SEDIMENT - SO SLUDGE - SL



CHAIN OF CULLIDDY RECORD

SAMPLING

7300

PENSACOLA, FLORIDA 32526 (904) 944-9772			INFORMATION							2448 6 0 11															
			NPDES	NPDES NUMBER		ì	STREET ADDRESS:		SS: .	2448 S. Brocklyn, Ave Welsville, Ny 14895															
PROJECT NAME SINCAIR Relinery (-03701.R1) SAMPLERS (SIGNATURE) Aveille Branches				51 y		٠	ATABE						$\overline{/}$	7	7	/	7			$\overline{/}$	7	<i>//</i>	//		
SAMPLING	DATI	<u> </u>	(Aug 93	TOTAL NO. OF	3	JH AM	CARCIANT STATE	SE JIM	Why Co		RECT IN) }}§	23 (Mg)	N. N. W.	State 1	JAN.	/,	/M	/			//		
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REMARKS		_
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'SOURCE CODES

RECOVERY WELL - RW
RCRA MONITORING WELL - MW
SOIL / SEDIMENT - SO
SLUDGE - SL

APPENDIX F

CORRESPONDENCE

- Laboratory Test Method
- Validation Reports

LABORATORY TEST METHOD



NATIONAL LABORATORIES DIVISION 7215 PINE FOREST ROAD PENSACOLA, FLORIDA 32526 904-944-9772 FAX 904-944-9463

July 29,1992

Geosyntec c/o ARCO P.O. Box 409 Wellsville, NY 14894

Dear Mr. North:

I am enclosing three pages from the 7/88 Inorganic Statement of Work under the Contract Laboratory Program which clearly indicates the ability to use the ICP for analyses of arsenic and lead in soil samples. Note that on Page C-1, the footnotes allow the use of any instrument for analytical work when the sample concentration exceeds five times the instrument detection (IDL) even if that instrument IDL does not equal the CRQL. The IDLs for arsenic and lead are 53 ug/L and 23 ug/L, respectively, for ICP analysis at this laboratory.

For your specific project at the ARCO Wellsville site, we were told that the action level for arsenic was 25 ppm (25,000 ug/L) and 1,000 ppm (1,000,000 ug/L) for lead which are very much higher concentrations for your project than the water based CRQL's. In addition, you indicated that the EPA approved the use of the ICP for these analyses.

If you have any further questions or comments, please feel free to contact me at any time.

Respectfully submitted,

LAW ENVIRONMENTAL, INC.

NATIONAL LABS

Grace E. Ekman QA/QC Officer

GEE/cdh

Enclosures



		Contract Required Detection Limit (1,2)
Anal	lyte	(ug/L)
Alur	minum	200
Anti	imony	60
Arse	enic	10
Bar	ium	200
Ber	yllium	5
Cadr	nium	5
Cal	cium	5000
Chre	omium	10
Coba	alt	50
Cop	per	25
Iro	n	100
Lead	d	3
Mag	nesium	5000
	ganese	15
	cury	0.2
Nic	kel	40
Pota	assium	5000
	enium	5
Sil	ver	10
Sod		5000
Tha	llium .	10
Van	adium	50
Zine		. 20
Cyar	nide	10

(1) Subject to the restrictions specified in the first page of Part G, Section IV of Exhibit D (Alternate Methods - Catastrophic Failure) analytical method specified in SOW Exhibit D may be utilized as lot the documented instrument or method detection limits meet the Contr. Required Detection Limit (CRDL) requirements. Higher detection limits may only be used in the following circumstance:

If the sample concentration exceeds five times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Detection Limit. This is illustrated in the example below:

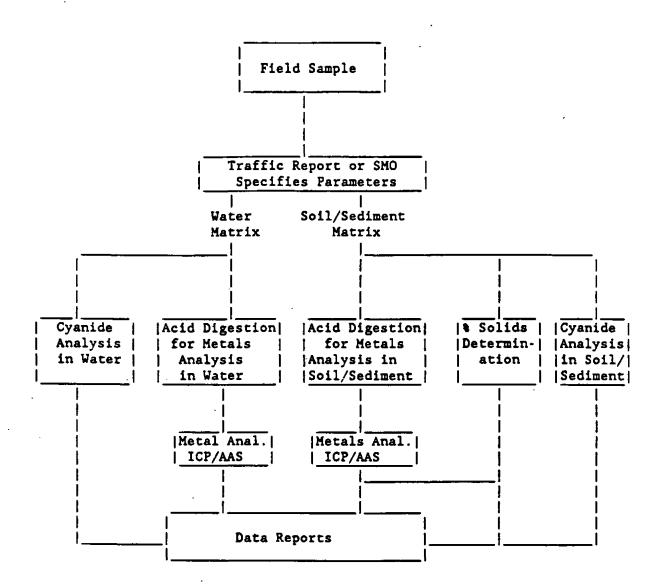
For lead:

Method in use = ICP Instrument Detection Limit (IDL) = 40 Sample concentration = 220 Contract Required Detection Limit (CRDL) = 3 The value of 220 may be reported even though instrument detection limit is greater than CRDL. The instrument or method detection limit must be documented as described in Exhibit E.

(2) The CRDL are the instrument detection limits obtained in pure water that must be met using the procedure in Exhibit E. The detection limits for samples may be considerably higher depending on the sample matrix.

C-2

Figure 1
INORGANICS METHODS FLOW CHART

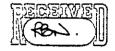


VALIDATION REPORTS



Tri-County Business Campus 88 Robinson Street Pottstown, PA 19464 215•327•4850 215•327•4852 FAX

20 November 1992



Mr. Roger North Geosyntec Consultants C/O Arco P.O. Box 409 Wellsville, NY 14895

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco, Wellsville site.

The report was produced using the EPA CLP Data Validation protocol for the 7/88 Statement of Work.

Law Environmental submitted eleven (11) data reports each with an SDG Designation Number. The reviewer used this number to identify any problem areas found during validation.

The validation includes the following reports identified by SDG Number and the associated Laboratory Identification Number.

SDG Number	Laboratory ID
SRCCCONF 1	AA25647
SRCCCONF 19	AA25667
SRCCCONF 38	AA25687
SRCCCONF 57	AA25707
SRCCCONF 74	AA25727
SRDACONF 2F	AA25737
SRDACONF 8G	AA25757
SRDACONF 11G	AA25777
SROECONF 2	AA25797
SROECONF 25	AA25817
SRDACONF 6E	AA25837

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.



Roger North 20 November 1992 Page Two

CLP Validation

SDG Number	Lab ID	<u>Useable</u>	<u>Unusable</u>	Comment
SRCCCONF 1	AA25647MS	x		Lead spike exceeded EPA criteria. All lead samples associated with this SDG Number are qualified "J".
All SDG Numbers Included in this report	See Above Listing	X		Data end user is notified that the duplicate analysis were performed as matrix spike duplicates for all samples associated with this report.
All SDG Numbers Included in this report.	See Above Listing	x		Interelement correction factors were not performed for arsenic (See Statement pg. 4 of the Validation Report.)

B. Chris Weathington

Vice President, Analytical Division

Helen MacMinn QA Officer

DATA VALIDATION REPORT Inorganics **EPA CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco, Wellsville

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 19 November 1992

This data package was validated according to:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

All metals samples were received by Law Environmental on 14 October 1992. Reports reviewed will be identified by SDG Number and include the following:

SDG Number	Laboratory ID	Case Number	No. of Samples
SRCCCONF 1	AA25647	GQ3201	20
SRCCCONF 19	AA25667	_ GQ3201	20
SRCCCONF 38	AA25687	GQ3201	20
SRCCCONF 57	AA25707	P10129	20
SRCCCONF 74	AA25727	P10129	10
SRDACONF 2F	AA25737	P10129	20
SRDACONF 8G	AA25757	P10129	20
SRDACONF 11G	AA25777	P10129	20
SROECONF 2	AA25797	P10129	20
SROECONF 25	AA25817	GQ3201	20
SRDACONF 6E	AA25837	P10129	12

Total Number of Samples Reviewed:

202

Deviations from the stipulated protocol will include specific REQUIREMENTS, reviewer EVALUATION of deviation and ACTION taken as reported in the EPA quidelines for inorganic validation.





Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instruments properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead.
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations were verified for % CCV recovery.

CRDL Standard

The contract required detection limit meets all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.





ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB meet QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Criteria: Spike recovery (%R) must be within the limits of 75-125%.

Evaluation: The spike sample analysis for lead reported for SDG #SRCCCONF1 (Lab ID:

AA 25647MS) had a % Recovery of 51.9%.

Action: If the spike recovery is > 125% or < 75% and the sample results are > IDL,

the Lead data for these samples are qualified as estimated (J).

All other spike sample analysis meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic and lead meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Post-Digestion Spike Analysis

A post-digestion spike analysis for Lead was performed for sample report identified as SDG #SRCCCONF 1 (Lab ID #AA 25647MS), as required by EPA protocol when the spike results do not meet criteria.

Post-Digestion Spike Analysis meet requirements in the following areas:

• The post-digestion spike was performed on the applicable analyte whose spike results did not meet QC requirements.





- The post-digestion spike was performed at the proper concentrations.
- The % recovery for lead analysis meets EPA criteria.
- All calculations were verified for % recovery.

Duplicate Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for all samples associated with this report.

The Matrix Spike Duplicate analysis meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analysis were performed on field samples.
- All analysis meet QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilution meets all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All analytes greater than fifty times the IDL met the OC limit of 10% difference.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were reported for the quarter in which all samples were analyzed.
- The IDL's were below the CRDL for both arsenic and lead.
- The ICP interelement correction factors were not analyzed for arsenic analysis.

 ACTION: Arsenic should not be analyzed by ICP according to the CLP Program.

 CLP does not account for or require a laboratory to perform interelement checks for Arsenic and as a result this laboratory does not have Arsenic interelement checks. However, this laboratory was aware that the presence of Aluminum and Iron in a sample will cause false positive or inaccurate Arsenic concentrations if Aluminum or Iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of





Iron and Aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interference, Law fortified a check sample (ICSAB) with Arsenic, Aluminum and Iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that interferences did not exist for Arsenic in these samples. A review of the concentrations of Aluminum and Arsenic in the samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.

- The ICP interelement correction factors for lead were analyzed and reported on Form XI (Part 1) for each report.
- The linear range analysis was reported for both arsenic and lead on Form XII for each report.





RMC ENVIRONMENTAL SERVICES, Inc.



Tri-County Business Campus 88 Ropinson Street Pottstown, PA 19464

215-327-4850 215-327-4852 FAX

15 December 1992

Mr. Roger North Geosyntec Consultants C/O Arco P.O. Box 409 Wellsville, NY 14895

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for calmples analyzed by Law Environmental Laboratory for the Arco, Wellsville site.

The report was produced using the EPA CLP Data Validation protocol for the 7/88 Statement of Work.

Law Environmental submitted eleven (11) data reports each with an SDG Designation Number. The reviewer used this number to identify any problem areas found during validation.

The validation includes the following reports identified by SDG Designation Number: DA6YG,DA7ZG,ES1ZN,CC56Z,DA3GZ,PH1GY,ES1YA,CC47Y,DA72G,CC55Z,CC28Z

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP Validation

SDG Number	<u>Useable</u>	<u>Unusable</u>	Comment
All SDG Numbers Included in this report. (See above listing)	х		Data end user is notified that the duplicate analysis were performed as matrix spike duplicates for all samples associated with this report.
All SDG Numbers Included in this report. (See above listing)	x		Interelement correction factors were not performed for arsenic (See Statement pg. 4 of the Validation Report).
All SDG Numbers Included in this report. (See above listing)	X		ICP Linear Range Analysis reported on EPA Form XII's are all dated 7-19-91. Samples were received during October of 1992. Protocol requires this analysis to be performed on a quarterly basis for all analytes.
CC56Z	х		Spike recovery for Lead analysis outside control limits (80-125). No action taken since sample concentration exceeds spike concentration by a factor of (4) four.

Roger North - 15 December 1992 Page Two

SDG Number	<u>Useable</u>	<u>Unusable</u>	Comment
PH16Y	N/A	N/A	Lead results were not validated. Lead results were not requested by client for samples analyzed as part of this data package.
DA6YG	N/A	N/A	Lead results were not validated. Lead results were not requested by client for samples analyzed as part of this data package.

B. Chris Weathington Vice President, Analytical Division

Helen Mac Minn QA Officer

DATA VALIDATION REPORT

Inorganics EPA CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco, Wellsville

REVIEWER:

Helen Mac Minn

DATE OF REVIEW:

15 December 1992

This data package was validated according to:

* EPA Laboratory Data Validation <u>Functional Guidelines for Evaluating Inorganics</u>
Analysis, July, 1988.

METALS REVIEW

All metals samples were received by Law Environmental Laboratory on 11-5,6,12-92. Reports reviewed will be identified by SDG Number and include the following:

SDG Number	Case Number	No. of Samples Included for Review
DA6YG	GQ3201	3
DA7ZG	· GQ3201	- 1 .
ESIZN .	GQ3201	13
CC56Z	GQ3201	11
DA3GZ	GQ3201	10
PH16Y	GQ3201	16
ES1YA	GQ3201	19
CC47Y	GQ3201	3
DA72G	GQ3201	14
CC55Z	GQ3201	1
CC28Z	GQ3201	1

Total Number of Samples Reviewed:

91

Deviations from the stipulated protocol will include specific REQUIREMENTS, reviewer EVALUATION of deviation and ACTION taken as reported in the EPA guidelines for inorganic validation.

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instruments properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead.
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations were verified for % CCV recovery.

CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP Interference Check Sample meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB meet QC limits of 80-120 %.
- All calculations verified for % recovery.

Spike Sample Analysis

Criteria:

Spike recovery (%R) must be within the limits of 75-125%.

Evaluation:

The spike sample analysis for lead reported for SDG#CC56Z (Lab

ID: AA26297S) had a % Recovery of 45.5%.

Action:

No action is taken to qualify this data since the sample concentration exceeds the spike concentration by a factor of more than (4) four.

All other spike sample analysis meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic and lead meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for all samples associated with this report.

The Matrix Spike Duplicate analysis meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analysis were performed on field samples.
- All analysis meet QC limits established for soil samples of \pm 35%.
- All calculations were verfied for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120 %.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilution meets all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All analytes greated than fifty times the IDL met the QC limit of 10% difference.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were reported for the quarter in which all samples were analyzed.
- The IDL's were below the CRDL for both arsenic and lead.
- The ICP interelement correction factors were not analyzed for arsenic analysis. ACTION: Arsenic should not be analyzed by ICP according to the CLP Program. CLP does not account for or require a laboratory to perform interelement checks for Arsenic and as a result this laboratory does not have Arsenic interelement checks. However, this laboratory was aware that the presence of Aluminum and Iron in a sample will cause false positive or inaccurate Arsenic concentrations if Aluminum or Iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of Iron and Aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interference, LAW fortified a check sample (ICSAB) with Arsenic, Aluminum and Iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that interferences did not exist for Arsenic in these samples. A review of the concentrations of Aluminum and Arsenic in the samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.
- The ICP interelement correction factors for lead were analyzed and reported on Form XI (Part 1) for each report.
- The linear range analysis was reported for both arsenic and lead on Form XII for each report. Data end user should be aware that Linear Ranges were analyzed 7-19-91. Samples were received and analyzed during October of 1992. Protocol requires the Linear Ranges to be performed on a quarterly basis for all analytes.



Tri-County Business Campus 88 Robinson Street Pottstown, PA 19464 215•327•4850 215•327•4852 FAX

29 January 1993



Mr. Roger North Geosyntec Consultants C/O Arco P.O. Box 409 Wellsville, NY 14895

Dear Mr. North:

Enclosed is the Inorganic Data Validation report for samples analyzed by Law Environmental Laboratory.

The report was produced using the EPA CLP Data Validation protocol for the 7/88 Statement of Work.

Law Environmental submitted two (2) data reports each with an SDG Designation Number. The reviewer used this number to identify any problem areas found during validation.

The validation includes the following reports identified by SDG Designation Numbers: SDG#11XB and SDG#0E1XE. The following table lists the reviewer's findings and whether the data is useable or required a qualifier:

CLP VALIDATION

SDG Number	<u>Useable</u>	<u>Unusable</u>	Comment
SDG #11XB	X		Data end user is notified that the duplicate analysis were performed as matrix spike duplicates for all samples associated with this report.
SDG #11XB	x		Interelement correction factors were not performed for arsenic (see Statement Page 3 of the Validation Report).
SDG #11XB	X		ICP Linear Range analysis reported on EPA Form XII is dated 7-19-91. Samples were analyzed during December of 1992. Protocol requires this analysis to be performed on a quarterly basis for all analytes.
SDG #11XB	X		IDL analysis reported on EPA Form X is dated 3-29-92. Samples were analyzed during December of 1992. Protocol requires this analysis to be performed on a quarterly basis for all analytes.



Roger North 29 January 1992 Page Two

SDG Number	<u>Useable</u>	<u>Unusable</u>	Comment
SDG #OE1XE	X		Data end user is notified that the duplicate analysis were performed as matrix spike duplicates for all samples associated with this report.
SDG #OE1XE	x		Interelement correction factors were not performed for arsenic (see Statement Page 3 of the Validation report).

Sincerely,

Twila E. Dixon

Laboratory Manager

Helen MacMinn QA Officer

DATA VALIDATION LEPORT Inorganics EPA CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW:

21 January 1992

This data package was validated according to:

• EPA Laboratory Data Validation <u>Functional Guidelines for Evaluating Inorganics Analysis</u>, July, 1988.

METALS REVIEW

All metals samples were received by Law Environmental Laboratory on 10-30-92, 11-6,12-92 and 12-23-92. Reports reviewed will be identified by SDG Number and include the following:

SDG Number	Case Number	No. of Samples Included for Review
SDG#11XB SDG#OE1XE	6Q3201 6Q3201	4 20
	Total Number of S	amples Received: 24

Deviations from the stipulated protocol will include specific REQUIREMENTS, reviewer EVALUATION of deviation and ACTION taken as reported in the EPA guidelines for inorganic validation.

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instruments properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

• The CCV was performed at the 10% frequency for arsenic and lead.





- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations were verified for % CCV recovery.

CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP Interference Check Sample meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB meet QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic and lead meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for all samples associated with this report.





The matrix spike duplicate analysis meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analysis were performed on field samples.
- All analysis meet QC limits established for soil samples of ± 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilution meets all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All analytes greater than fifty times the IDL met the QC limit of 10% difference.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were not reported for the quarter in which all samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- The ICP interelement correction factors were not analyzed for arsenic analysis.

Action: Arsenic should not be analyzed by ICP according to the CLP Program. CLP does not account for or require a laboratory to perform interelement checks for arsenic and as a result this laboratory does not have arsenic interelement checks. However, this laboratory was aware that the presence of aluminum and iron in a sample will cause false positive or inaccurate arsenic concentrations if aluminum or iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of iron and aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interference, Law fortified a check sample (ICSAB) with arsenic, aluminum and iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that interferences did not exist for arsenic in these samples. A review of the concentrations of aluminum and arsenic in these samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.

• The linear range analysis was reported for arsenic on Form XII for each report. Data end user should be aware that Linear Ranges were analyzed on 7-19-91 for SDG #11XB. Samples were analyzed during December 1992. According to Protocol Linear Ranges are to be performed during the quarter in which the associated samples are analyzed.







Tri-County Business Campus 88 Robinson Street Pottstown, PA 19464 215•327•4850 215•327•4852 FAX



19 February 1993

Mr. Roger North Geosyntec Consultants C/O Arco P.O. Box 409 Wellsville, NY 14895

Dear Mr. North:

Enclosed is the Inorganic Data Validation report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocol for the 7/88 Statement of Work.

Law Environmental submitted four (4) data reports each with an SDG Designation Number. The reviewer used this number to identify any problem areas found during validation.

Two data reports were found to have the same SDG number (SDG#CC44Z). After inspection by the validator SDG#CC44Z (Submittal #2) contained three additional samples. These three samples were analyzed by the laboratory on a different date than SDG#CC44Z (Submittal #1) and included a separate set of quality control and raw data information.

Due to the additional data the reviewer had to validate this package as a separate submission. Invoicing will be based on each sample validated regardless of duplication.

The validation includes the following reports identified by SDG Designation Numbers: SDG#PHPRB1, SDG#PH25 and SDG#CC44Z (Submittal #1) and SDG#CC44Z (Submittal #2). The following table lists the reviewer's findings and whether the data is useable or required a qualifier:

CLP VALIDATION

SDG Number .	<u>Useable</u>	<u>Oualified</u>	Comment
SDG #PHPRB1		X	Spike analysis results were not submitted with this data package. Validator is aware that associated sample is a field blank and as such cannot be used for spike analysis. However, batch quality control data should be submitted to ensure to the data end use that proper QA/QC procedures were performed at the time of analysis.



Mr. Roger North 19 February 1993 Page 2

SDG #PHPRB1		X	Duplicate analysis results were not submitted with this data package. Validator is aware that associated sample is a field blank and as such cannot be used for duplicate analysis. However, batch quality control data should be submitted to ensure to the data end user that proper QA/QC procedures were performed at the time of analysis.
SDG #PHPRB1	X		Interelement correction factors were not performed for arsenic (see Statement Page 4 of the Validation Report).
SDG #PHPRB1		X	ICP serial dilution results were not submitted with this data package. Since associated sample is a field blank batch quality control data should be submitted to ensure to the data end user that proper QA/QC procedures were performed at the time of analysis.
SDG #PHPRB1	x		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during January of 1993. Protocol requires this analysis to be performed on a quarterly basis for all analytes.
SDG #PH25	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
SDG #PH25	X		Interelement correction factors were not performed for arsenic (see Statement Page 4 of the Validation report).
SDG #PH25	X		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during January 1993. Protocol requires this analysis to be performed on a quarterly basis for all analytes.





Mr. Roger North 19 February 1993 Page 3

SDG #CC44Z

X

Spike recovery for lead analysis is >125%. Since sample result is >1DL all associated sample results are qualified "J".

SDG #CC44Z

X

Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples

associated with this report.

SDG #CC44Z

X

IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during January 1993. Protocol requires this analysis to be performed on a

quarterly basis for all analytes.

SDG #CC44Z

X

Interelement correction factors were not performed for arsenic (see Statement

Page 4 of the Validation report).

Sincerely,

Twila E. Dixon Laboratory Manager

Helen MacMinn QA Officer





DATA VALIDATION REPORT

Inorganics EPA CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW:

19 February 1993

This data package was validated according to:

• EPA Laboratory Data Validation <u>Functional Guidelines for Evaluating Inorganics</u>
<u>Analysis</u>, July, 1988.

METALS REVIEW

All metals samples were received by Law Environmental Laboratory on 20 January 1993. Reports reviewed will be identified by SDG Number and include the following:

SDG Number	Case Number	No. of Samples Included for Review
SDG#PHPRB1	GQ3201	1
SDG#PH25	GQ3201	10
SDG#CC44Z (Submission#1)	GQ3201	11
SDG#CC44Z (Submission#2)	GQ3201	16
	Total Number of Samples	Received: 38

Deviations from the stipulated protocol will include specific REQUIREMENTS, reviewer EVALUATION of deviation and ACTION taken as reported in the EPA guidelines for inorganic validation.

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instruments properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.





Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead.
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations were verified for % CCV recovery.

CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP Interference Check Sample meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB meet QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

SDG#PHPRB1

Requirements:

At least one spiked sample analysis must be performed on each group of samples

of a similar matrix type.

Evaluation:

Spike analysis results were not submitted with this SDG report. Validator is aware that the associated sample is a field blank and as such cannot be used for duplicate analysis. However, batch quality control data is requested to ensure the





data end user that proper QA/QC procedures were implemented at the time of

analysis.

Action: Laboratory is required to submit this data. If the laboratory fails to provide this

information the validator has the option to either qualify or reject this data.

SDG#CC44Z

Requirements: Spike recoveries must be within the limits of 75-125%.

Evaluation: Spike recovery for lead analysis is > 125%.

Action: If the spike recovery is > 125% and the sample results are > IDL the data for

these samples are qualified as estimated "J".

SDG#PH25

The spike sample analysis meets requirements in the following areas:

• The sample spike analysis was performed at the correct frequency.

• The sample spike analysis was performed on a field sample.

• The sample spike analysis was performed at the proper concentrations.

• The % recovery for arsenic and lead meet the EPA criteria of 75-125%.

• All calculations were verified for % recovery.

Duplicate Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with these reports.

SDG#PHPRB1

Requirements: One duplicate sample analysis must be analyzed from each group of samples of

a similar matrix type.

Evaluation: Duplicate analysis results were not submitted with this data package. Validator

is aware that the associated sample is a field blank and as such cannot be used for duplicate analysis. However, batch quality control data is requested to ensure to the data end user that proper QA/QC procedures were performed at the time

of analysis.

Action: Laboratory is required to submit this data. If the laboratory fails to provide this

information the validator has the option to either qualify or reject this data.

SDG#PH25 and SDG#CC44Z

The matrix spike duplicate analysis meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analysis were performed on field samples.





- All analysis meet QC limits established for soil samples of ± 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the OC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

SDG#PHPRB1

Requirements:

One serial dilution analysis must be analyzed from each group of samples of a

similar matrix type.

Evaluation:

Serial dilution results were not submitted with this SDG report. Validator is aware that the associated sample is a field blank and as such cannot be used for the serial dilution. However, batch quality control data is requested to ensure to the data end user that proper QA/QC procedures were implemented at the time

of analysis.

Action:

Laboratory is required to submit this data. If the laboratory fails to provide this information the validator has the option to either qualify or reject this data.

SDG#PH25 and SDG#CC44Z

The ICP serial dilution meets all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All analytes greater than fifty times the IDL met the QC limit of 10% difference.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic and lead.
- The ICP interelement correction factors were not analyzed for arsenic analysis.

Action: Arsenic should not be analyzed by ICP according to the CLP Program. CLP does not account for or require a laboratory to perform interelement checks for arsenic and as a result this laboratory does not have arsenic interelement checks. However, this laboratory was aware that the presence of aluminum and iron in a sample will cause false positive 2or inaccurate arsenic concentrations if aluminum or iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of iron and aluminum concentrations in samples as part of an analytical run. To verify that there would not be





a problem with interference, Law fortified a check sample (ICSAB) with arsenic, aluminum and iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that interferences did not exist for arsenic in these samples. A review of the concentrations of aluminum and arsenic in these samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.







26 March 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the ARCO Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted four(4) data reports each with an SDG Designation Number. The reviewer used this number to identify any problem areas found during validation.

The validation includes the following reports identified by SDG Designation Number: SDG#PH24B, SDG#PH28A, SDG#PH28AA and SDG#PH51. The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

SDG Number	<u>Useable</u>	<u>Unuseable</u>	<u>Qualified</u>
PH24B	x		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
PH24B	х		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during February of 1993. Protocol requires the IDL's to be analyzed on a quarterly basis for all analytes.
PH24B	X		ICP Interelement Correction Factors (Form XI-Part I) were not performed for arsenic. See statement Page Three of the validation report for further explanation.

SDG Number	<u>Useable</u>	<u>Unuseable</u>	Qualified
PH28A	x		All lead results reported on Form I's and associated quality control data are not applicable to this report. Client requested only arsenic analysis for samples received with this SDG sample package.
PH28A	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
PH28A	X		Spike sample results (Form V) provided in this data package are batch QA results from SDG #PH28AA. Both sets of samples were analyzed on 2-9-93.
PH28A	x	·	Spike duplicate sample results (Form VI) provided in this data package are batch QA results from SDG#PH28AA. Both sets of samples were analyzed on 2-9-93.
PH28A	X	·	Serial dilution sample results (Form IX) provided in this data package are batch QA results from SDG#PH28AA. Both sets of samples were analyzed on 2-9-93.
PH28A	X		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during February of 1993. Protocol requires the IDL's to be analyzed on a quarterly basis for all analytes.
PH28A	X		ICP interelement correction factors (Form XI-Part I) were not performed for arsenic. See statement Page Three of the validation report for further explanation.
PH28AA	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
PH28AA	х		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during February of 1993. Protocol requires the IDL's to be analyzed on a quarterly basis for all analytes.



SDG Number	<u>Useable</u>	<u>Unuseable</u>	<u>Qualified</u>
РН28АА	x		ICP interelement correction factors (Form XI-Part 1) were not performed for arsenic. See statement Page Three of the validation report for a further explanation.
PH51	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this reported.
PH51	X		IDL analysis reported on EPA Form X is dated 9-2-92. Samples were analyzed during March of 1993. Protocol requires the IDL's to be analyzed on a quarterly basis for all analytes.
PH51	Х		ICP Interelement Correction Factors (Form XI Part I) were not performed for arsenic. See statement Page Three of the validation report for further explanation.

B. Chris Weathington
Vice President

Helen Mac Minn QA Officer

DATA VALIDATION REPORT

Inorganics EPA CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 25 March 1993

This data package was validated according to:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental Laboratory on 2-6,12-1993 and 3-5-93. Reports reviewed will be identified by SDG Number and include the following:

SDG Number	Case Number	No. of Samples Included for Review
SDG #PH24B SDG #PH28A SDG #PH28AA SDG #PH51	GQ3201 GQ3201 GQ3201 GQ3201	11 5 13 12
SDG #FRSI	UQ32V1	12

Total Number of Samples Received:

Deviations from the stipulated protocol will include specific REQUIREMENTS, reviewer EVALUATION of deviation and ACTION taken as reported in the EPA guidelines for inorganic validation.

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.



Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at a 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations were verified for % CCV recovery.

CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP Interference Check Sample meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB meet QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The data end user is notified that the spike sample results (Form V) for SDG #PH28A provided in the data package are batch QA results from SDG #PH28AA. Both sets of samples were analyzed on 2-9-93.

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic and lead (where applicable) meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.



Duplicate Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with these reports. In addition, spike duplicate sample results (Form VI) provided in data package are batch QA results from SDG #PH28AA. Both sets of samples were analyzed on 2-9-93.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses meet QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Data end user is notified that the serial dilution results (Form IX) for SDG #PH28A provided in the data package are batch QA results from SDG #PH28AA. Both sets of samples were analyzed on 2-9-93.

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilutions were performed at the correct frequency.
- All analytes greater than fifty times the IDL met the QC limit of 10% difference.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic and lead.
- The ICP interelement correction factors were not analyzed for arsenic analysis. ACTION: Arsenic should not be analyzed by ICP according the CLP Program. CLP does not account for or require a laboratory to perform interelement checks for arsenic and as a result this laboratory does not have arsenic interelement checks. However, this laboratory was aware that the presence of aluminum and iron in a sample will cause false positives or inaccurate arsenic concentrations if aluminum or iron is present at "high" Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of iron and aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interfernce, Law fortified a check sample (ICSAB) with arsenic, aluminum and iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that interferences did not exist for arsenic in these samples. A review of the concentrations of aluminum and arsenic in these samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.





11 June 1993

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with an SDG Designation Number ES15W. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP Validation Summary

Enseco Project	<u>Useable</u>	Qualified	Comments
ES15W	X		Data End user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
ES15W	X		ICP Interelement Correction Factors (Form XI-Part I) were not performed for arsenic. See statement page 3 of the validation report for a further explanation.

Helen MacMinn OA Officer

gjs

Enclosure

Sincerely



DATA VALIDATION REPORT

Inorganics NJDEP CLP Requirements

CLIENT:

Geosyntec Consultants Law Environmental

LABORATORY: SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW:

11 June 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental Laboratory on 5-27-93. Report reviewed is identified by SDG Number: ES15W and Case Number: GQ3201. The number of samples included for Review was sixteen (16).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the OC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.



CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICB Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.



Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses meet QC limits established for soil samples of $\pm 35\%$.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

- IDL's were reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- The ICP interelement correction factors were not analyzed for arsenic analysis.

 ACTION: Arsenic should not be analyzed by ICP according to the CLP Program. CLP does not account for or require a laboratory to perform interelement checks. However, this laboratory was aware that the presence of aluminum and iron in a sample will cause false positives or inaccurate arsenic concentrations if aluminum or iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of iron and aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interference, Law fortified a check sample (ICSAB) with arsenic, aluminum and iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 98% of the true concentration. Law uses the ICSAB sample as proof that inferences did not exist for arsenic in these samples. A review of the concentrations of aluminum and arsenic in these samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are not qualified.





29 June 1993

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with an SDG Designation Number PH77B. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP Validation Summary

Enseco Project	<u>Useable</u>	<u>Qualified</u>	Comments
РН77В	X		Data End user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
РН77В	Х		ICP Interelement Correction Factors (Form XI-Part I) were not performed for arsenic. See statement page 3 of the validation report for a further explanation.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure



DATA VALIDATION REPORT

Inorganics CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW:

29 June 1993

This data package was validated according to the following:

• EPA Laboratory Data Validation <u>Functional Guidelines for Evaluating Inorganics</u>
<u>Analysis, July, 1988.</u>

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental Laboratory on 6-05-93. Report reviewed is identified by SDG Number: PH77B and Case Number: EQ3201. The number of samples included for Review was eight (8).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the OC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.



CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirement for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICB Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.



Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses meet QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instruments Parameters

not qualified.

- IDL's were reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- The ICP interelement correction factors were not analyzed for arsenic analysis.

 ACTION: Arsenic should not be analyzed by ICP according to the CLP Program. CLP does not account for or require a laboratory to perform interelement checks. However, this laboratory was aware that the presence of aluminum and iron in a sample will cause false positives or inaccurate arsenic concentrations if aluminum or iron is present at "high" concentrations. Because Law Environmental had a high resolution simultaneous instrument, the laboratory was able to verify the presence of iron and aluminum concentrations in samples as part of an analytical run. To verify that there would not be a problem with interference. Law fortified a check sample (ICSAB) with arsenic, aluminum and iron. As a result of the high resolution of Law's ARL ICP instrument the concentration found was 95% of the true concentration. Law uses the ICSAB sample as proof that inferences did not exist for arsenic in these samples. A review of the concentrations of aluminum and arsenic in these samples show that the effect of their presence in the sample would be negligible or non-existent. Therefore, the results are





8 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number ES15W2. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>OUALIFIED</u>	COMMENTS
ES15W2	x		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
ES15W2	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 5/27/93 but not analyzed until 7/16/93. Protocol requires this analysis to be performed on a quarterly basis.
ES15W2	X		ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 5/27/93 but not analyzed until 7/16/93. Protocol
	\ \ \		requires this analysis to be performed on a quarterly basis.



QA Officer

DATA VALIDATION REPORT

Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 5/27/93. The report reviewed is identified by SDG Number ES15W2 and Case Number GQ3201. The number of samples included for review was six(6).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the OC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





8 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40387. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
40387	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/19/93.
40387	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/19/93.
40387	X	150	ICP IDL analysis reported on EPA Form X is dated 4/26/93. Sample was received 8/3/93 and analyzed 8/19/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

NUMBER USEABLE

OUALIFIED

COMMENTS

40387

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Sample was received 8/3/93 and analyzed on 8/19/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn

QA Officer

gjs

Enclosure

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40387 and Case Number GQ3201. The number of samples included for review was one(1).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results was not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results was not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results was not provided in this data package.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40407. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
40407	х		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/6,13/93.
40407	x		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/6,13/93.
40407	X	-	ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

<u>NUMBER</u>

<u>USEABLE</u> <u>QUALIFIED</u>

COMMENTS

40407

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40407 and Case Number GQ3201. The number of samples included for review was four(4).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40447. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>QUALIFIED</u>	<u>COMMENTS</u>
40447	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
40447	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/24/93. Protocol requires this analysis to be performed on a quarterly basis.
40447	x		ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/24/93. Protocol requires this analysis to be performed on a quarterly basis.
/ \	_	•	

QA Officer

Inorganics **CLP** Requirements

CLIENT: LABORATORY: Geosyntec Consultants Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40447 and Case Number GQ3201. The number of samples included for review was three(3).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of $\pm 35\%$.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40467. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

<u>LAW SDG</u> <u>NUMBER</u>	<u>USEABLE</u>	OUALIFIED	<u>COMMENTS</u>
40467	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/6,13,19,24/93.
40467	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/6,13,19,24/93.
40467	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/6,13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED COMMENTS

40467

 \mathbf{X}

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40467 and Case Number GO3201. The number of samples included for review was seven(7).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

For V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40487. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	<u>COMMENTS</u>
40487	х		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/13, 19, 24/93.
40487	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/13,19,24/93.
40487	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED COMMENTS

40487

 \mathbf{X}

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Helen MacMinn QA Officer

gjs Enclosure

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY: SITE:

Law Environmental Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40487 and Case Number GQ3201. The number of samples included for review was nine(9).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39584. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>OUALIFIED</u>	COMMENTS
39584	Х		Data end user is notified that the duplicate analysis, analyzed 7/21,29/93 and 8/6/93, were performed as a matrix spike duplicate for all samples associated with this report.
39584	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 7/21,29/93 and 8/6/93. Protocol requires this analysis to be performed on a quarterly basis.
39584	x	\	ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21/,29/93 and 8/6/93. Protocol requires this analysis to be performed on a quarterly basis.
Helen MacM	in Kan	Min	



OA Officer

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/17/93. The report reviewed is identified by SDG Number ES15W2 and Case Number GO3201. The number of samples included for review were seventeen(17).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the OC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of ± 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39600. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

<u>LAW SDG</u> <u>NUMBER</u>	<u>USEABLE</u>	QUALIFIED	COMMENTS
39600	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for samples analyzed on 8/6,13/93.
39600	x		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 7/21,29/93.
39600	х		ICP serial dilution results were not proided in this data package for samples analyzed on 7/21,29/93.
39600	X		ICP IDL analysis reported in EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 7/21,29/93 and 8/6,13/93. Protocol requires this anlaysis to be performed on a quarterly basis.

Mr. Roger North 10 December 1993 Page Two

39600

QA Officer

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21,29/93 and 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

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Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/17/93. The report reviewed is identified by SDG Number 39600 and Case Number GQ3201. The number of samples included for review were eighteen(18).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the OC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package for samples analyzed on 7/21,29/93.

The spike sample analyses analyzed on 8/6,13/93 meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package for samples analyzed on 7/21,29/93.

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples analyzed on 8/6,13/93.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

Form IX for ICP serial dilution results were not provided in this data package for samples analyzed on 7/21,29/93.

The ICP serial dilutions analyzed on 8/6,13/93 meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39617. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
39617	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 7/21/93 and 8/6,13/93.
39617	x		ICP Serial Dilution results were not provided in this data package for samples analyzed on 7/21/93 and 8/6,13/93.
39617	х		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis.



Roger North 10 December 1993 Page Two

LAW SDG

NUMBER USEABLE

OUALIFIED

COMMENTS

39617

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21/93 and 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Helen MacMinn

QA Officer

gjs

Enclosure

Inorganics CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 39617 and Case Number GQ3201. The number of samples included for review was seven(7).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet OC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39688. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
39688	X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
39688	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/20/93 and analyzed 7/22/93. Protocol requires this analysis to be performed on a quarterly basis.
39688 Sincerely, Helen MacMi	x Mac VA	in	ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/20/93 and analyzed on 7/22/93. Protocol requires this analysis to be performed on a quarterly basis.



Inorganics **CLP** Requirements

CLIENT: LABORATORY: Geosyntec Consultants

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/20/93. The report reviewed is identified by SDG Number 39688 and Case Number GO3201. The number of samples included for review were four(4).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40467. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	QUALIFIED	COMMENTS
40467	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/6,13,19,24/93.
40467	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/6,13,19,24/93.
40467	· · X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/6,13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED COMMENTS

40467

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP** Requirements

CLIENT: LABORATORY: Geosyntec Consultants Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40467 and Case Number GQ3201. The number of samples included for review was seven(7).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

For V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





8 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40487. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	OUALIFIED	COMMENTS
40487	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/13, 19, 24/93.
40487	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/13,19,24/93.
40487	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 8 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED COMMENTS

40487

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/13,19,24/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Helen MacMinn QA Officer

QA Officer

gjs Enclosure

> RMC Analytics

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants Law Environmental

LABORATORY: SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 8 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40487 and Case Number GQ3201. The number of samples included for review was nine(9).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the OC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39584. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	QUALIFIED	<u>COMMENTS</u>
39584	x		Data end user is notified that the duplicate analysis, analyzed 7/21,29/93 and 8/6/93, were performed as a matrix spike duplicate for all samples associated with this report.
39584	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 7/21,29/93 and 8/6/93. Protocol requires this analysis to be performed on a quarterly basis.
39584	x	1	ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21/,29/93 and 8/6/93. Protocol requires this analysis to be performed on a quarterly basis.
Singerely, Helen MacM	in ha	Mini	



QA Officer

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/17/93. The report reviewed is identified by SDG Number ES15W2 and Case Number GQ3201. The number of samples included for review were seventeen(17).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39600. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	<u>COMMENTS</u>
39600	x		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for samples analyzed on 8/6,13/93.
39600	х		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 7/21,29/93.
39600	x		ICP serial dilution results were not proided in this data package for samples analyzed on 7/21,29/93.
39600	X		ICP IDL analysis reported in EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 7/21,29/93 and 8/6,13/93. Protocol requires this anlaysis to be performed on a quarterly basis.

Mr. Roger North 10 December 1993 Page Two

39600

 \mathbf{X}

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21,29/93 and 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Helen MacMinn a. Munn QA Officer

Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/17/93. The report reviewed is identified by SDG Number 39600 and Case Number GQ3201. The number of samples included for review were eighteen(18).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package for samples analyzed on 7/21,29/93.

The spike sample analyses analyzed on 8/6,13/93 meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package for samples analyzed on 7/21,29/93.

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples analyzed on 8/6,13/93.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

Form IX for ICP serial dilution results were not provided in this data package for samples analyzed on 7/21,29/93.

The ICP serial dilutions analyzed on 8/6,13/93 meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39617. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
39617	X		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 7/21/93 and 8/6,13/93.
39617	x		ICP Serial Dilution results were not provided in this data package for samples analyzed on 7/21/93 and 8/6,13/93.
39617	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/17/93 and analyzed 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 10 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED

COMMENTS

39617

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/17/93 and analyzed on 7/21/93 and 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 39617 and Case Number GQ3201. The number of samples included for review was seven(7).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 39688. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
39688	x		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for all samples associated with this report.
39688	X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 7/20/93 and analyzed 7/22/93. Protocol requires this analysis to be performed on a quarterly basis.
39688 Sincerely,	x Mac VA	in	ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 7/20/93 and analyzed on 7/22/93. Protocol requires this analysis to be performed on a quarterly basis.



Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/20/93. The report reviewed is identified by SDG Number 39688 and Case Number GQ3201. The number of samples included for review were four(4).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40427. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	<u>OUALIFIED</u>	COMMENTS
40427	х		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/6,13/93.
40427	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/6,13/93.
40427	x		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 10 December 1993 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED

COMMENTS

40427

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

2/1/1

Sincerely

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP Requirements**

CLIENT: LABORATORY: Geosyntec Consultants

SITE:

Law Environmental

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40427 and Case Number GO3201. The number of samples included for review were two(2).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the OC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





10 December 1993

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40507. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>QUALIFIED</u>	COMMENTS
40507	х		Matrix Spike/Sample Duplicate analysis results were not provided in this data package for samples analyzed on 8/6,13/93.
40507	X		ICP Serial Dilution results were not provided in this data package for samples analyzed on 8/6,13/93.
40507	, X		ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13,19/93. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 10 December 1993 Page Two

LAW SDG

NUMBER USEABLE

QUALIFIED

COMMENTS

40507

X

ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed on 8/6,13,19/93. Protocol requires this analysis to be performed on a quarterly basis for all analytes.

Sincerely,

Helen MacMinn QA Officer

gjs

Enclosure

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 10 December 1993

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40507 and Case Number GQ3201. The number of samples included for review were thirteen(13).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- Analytes and interferents for Solution A were reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Form V for spike sample results were not provided in this data package.

Duplicate Sample Analysis

Form VI for sample duplicate results were not provided in this data package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

Form IX for ICP Serial Dilution results were not provided in this data package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





5 January 1994

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number 40487B. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

<u>USEABLE</u>	QUALIFIED	COMMENTS
X		Data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for this report.
X	,	ICP IDL analysis reported on EPA Form X is dated 4/26/93. Samples were received 8/3/93 and analyzed 9/7/93. Protocol requires this analysis to be performed on a quarterly basis.
X		ICP linear range analysis reported on EPA Form XII is dated 4/26/93. Samples were received 8/3/93 and analyzed 9/7/93. Protocol requires this analysis to be performed on a quarterly basis.
	x	X

Helen MacMinn OA Officer



7. Mac Minn

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER: DATE OF REVIEW: 29 December 1993

Helen MacMinn

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 8/3/93. The report reviewed is identified by SDG Number 40487B and Case Number GQ3201. The number of samples included for review were three(3).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibrations meet all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.

ICP Preparation Blank

The ICP Preparation Blank meets all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.

ICP Interference Check Sample

The ICP interference check sample AB meets all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations were verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analysis was performed as a matrix spike duplicate for this report.

The matrix spike duplicate analysis meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilution meets all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- The IDL's were below the CRDL for arsenic.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





9 February 1994

Mr. Roger North Geosyntec Consultants 5775 Peach Tree Dunwoody Road Suite 200F Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number ES15Y. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	<u>OUALIFIED</u>	COMMENTS
ES15Y	x		Data end user is notified that the duplicate analysis, analyzed 5/12/93 was performed as a matrix spike duplicate for all samples associated with this report.
ES15Y	x		Discrepancy noted by validator on page 32 of this report. Duplicate result is recorded on Form VI as 481.6374 mg/Kg. A review of the raw data indicates this value should be 530.2 mg/Kg.
ES15Y	х	÷	Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1993. Protocol requires this analysis to be performed on an annual basis.
/ \	_		

Helen MacMinn QA Officer

Sincerely.

Inorganics **CLP** Requirements

CLIENT: LABORATORY: Geosyntec Consultants Law Environmental

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 5/8/93 for the analysis of arsenic. The report reviewed is identified by SDG Number ES15Y and Case Number GQ3201. The number of samples included for review were thirteen (13).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

The ICP Preparation Blank meets all requirements in the following areas:

- PB performed in the proper frequency.
- PB are ≤ CRDL.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

Discrepancy noted by validator on page 32 of this report. Duplicate result is recorded on Form VI as 481.6374 mg/Kg. A review of the raw data indicates this value should he 530.2 mg/Kg.

The data end user is also notified that the duplicate analyses were performed as matrix spike duplicates for all samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Ouarterly Verification of Instrument Parameters

- IDL's were reported for the quarter in which the samples were analyzed.
- Linear ranges were reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed 5/12/93. EPA protocol requires that the interelement correction factors be analyzed and reported on an annual basis.





9 February 1994

Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number PH48A. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>OUALIFIED</u>	<u>COMMENTS</u>
PH48A	X		Data end user is notified that the duplicate analysis, analyzed 5/10/93 was performed as a matrix spike duplicate for all samples associated with this reported.
PH48A	X		Deficiency noted on Form III (page 27) and confirmed by validator on raw data (page 46). Initial calibration blank recovery of 70.2 ug/l exceeds the instrument detection limit (IDL) of 42.0 ug/l.
PH48A Sincerely Helen MacM	x Man V	lina	Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1993. Protocol requires this analysis to be performed annually.

OA Officer

Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 5/5/93 for the analyses of arsenic. The report reviewed is identified by SDG Number PH48A and Case Number GQ3201. The number of samples included for review were twelve (12).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Deficiency noted on Form III (page 27) and confirmed by validator on raw data (page 46). Initial calibration blank recovery of 70.2 ug/l exceeds the instrument detection limit (IDL) of 42.0 ug/l.

Initial and continuing calibration blanks meet requirements as follows:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the continuing calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing blanks were analyzed at the proper wavelength.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB is \leq CRDL.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentration.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were reported for the quarter in which the samples were analyzed.
- Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1993. Protocol requires this analysis to be performed annually.
- Linear ranges were reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number PH61. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>QUALIFIED</u>	<u>COMMENTS</u>
PH61	X		Data end user is notified that the duplicate analysis, analyzed 4/23/93 was performed as a matrix spike duplicate for all samples associated with this report.
PH61	X		ICP IDL analysis reported on EPA Form X is dated 3/19/92. Samples were received 4/20/93 and analyzed 4/23/93. Protocol requires this analysis to be performed on a quarterly basis.
PH61	X	÷	Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1993. Protocol requires this analysis to be performed annually.

Mr. Roger North 9 February 1994 Page Two

LAW SDG

NUMBER USEABLE QUALIFIED COMMENTS

PH61

X

ICP linear range analysis reported on EPA Form XII is dated 12/31/92. Samples were received 4/20/93 and analyzed on 4/23/93. Protocol requires this analysis to be performed on a quarterly basis.

Sincerely,

Helen MacMinn QA Officer

Enclosure



Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 4/20/93 for the analysis of arsenic. The report reviewed is identified by SDG Number PH61 and Case Number GQ3201. The number of samples included for review were twelve (12).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- Absolute values for all analytes in the ICB and CCB are below the CRDL.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB is < CRDL.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.



Ouarterly Verification of Instrument Parameters

• IDL's were not reported for the quarter in which the samples were analyzed.

• Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1993. Protocol requires this analysis to be performed annually.

• Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number SRCC22. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>OUALIFIED</u>	<u>COMMENTS</u>
SRCC22	X		Discrepancy noted by validator on Form II (Part 2) page 24 of this data deliverable. Found value for final arsenic recovery recorded as 282.20 ug/l. Review of raw data indicates this value to be 292 ug/l resulting in a 97.3% recovery.
SRCC22	X		Data end user is notified that the duplicate analysis, analyzed 7/14/92, was performed as a matrix spike duplicate for all samples associated with this report.
SRCC22	X	:	ICP IDL analysis reported on EPA Form X is dated 3/29/92. Samples were received 7/9/92 and analyzed 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.
SRCC22	х		Interelement correction factors reported on Form X1 (Part I) are dated 8/28/91. Samples were received 7/9/92 and analyzed on 7/14/92. Protocol requires this analysis to be performed on an annual basis.

Roger North 9 February 1994 Page Two

LAW SDG NUMBER	<u>USEABLE</u>	<u>QUALIFIED</u>	COMMENTS
SRCC22	x		ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/9/92 and analyzed on 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.
SRCC22	X		Deficiency noted by the validator on page 28, Form V (Part I). Lead value of (126%) does not meet EPA criteria of 75-125%. Post-digestion spike was performed as required by EPA protocol.
SRC22	X		Deficiency noted by the validator on page 25, Form III. Preparation blank absolute values for arsenic and lead are at a level greater than the reported CRDL.

Helen MacMinn QA Officer

Sincerely

Enclosure



Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/9/92 for the analysis of arsenic and lead. The report reviewed is identified by SDG Number SRCC22 and Case Number GQ3201. The number of samples included for review were twelve (12).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the OC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

A discrepancy was noted by the validator on Form II (Part 2) page 24. Found value for final arsenic recovery is recorded as 282.20 ug/l. Review of raw data indicates this value to be 292 ug/l resulting in a 97.3% recovery.



The contract required detection limits meet all requirements in the following areas:

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.

Initial and Continuing Calibration Blanks

Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limits (IDL) for arsenic and lead.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III (page 25). Preparation blank absolute values are at a level greater than the reported CRDL.

The ICP Preparation Blank meets all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Deficiency noted by the validator on page 28, Form V (Part I). Lead value of (126.9%) does not meet EPA criteria of 75-125.

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.

Post-Digestion Spike Analysis

The post-digestion/post-distillation spike is required to be performed on analytes that do not meet the 75-125% spike criteria. The post-digestion spike sample meets all requirements in the following areas:

- Post-digestion spike was analyzed at the proper analyte concentration.
- Post-digestion spike was performed on a field sample.
- The post-digestion spike recovery was verified for % recovery and is within the criteria limits of 75-125.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.



The matrix spike duplicate analyses meet all requirements in the following area:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of $\pm 35\%$.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the OC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Interelement correction factors reported on Form XI are dated 8/28/91. Samples associated with this report were analyzed 7/14/92. Interelement correction factors are required to be analyzed and reported on an annual basis.
- Linear ranges were not reported for the quarter in which the samples were analyzed.



Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number SRCC26. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	<u>OUALIFIED</u>	COMMENTS
SRCC26	x		Spike sample analysis (Form V) not provided in this data package.
SRCC26	X		Duplicate sample analysis (Form VI) not provided in this data package.
SRCC26	X		ICP IDL analysis reported on EPA Form X is dated 3/29/92. Samples were received 7/10/92 and analyzed 7/15/92. Protocol requires this analysis to be performed on a quarterly basis.
SRCC26	X	:	ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/10/92 and analyzed on 7/15/92. Protocol requires this analysis to be performed on a quarterly basis.

Mr. Roger North 9 February 1994 Page Two

LAW SDG NUMBER	<u>USEABLE</u>	OUALIFIED	COMMENTS
SRCC26	x		Serial Dilution Analysis (Form IX) not provided in this data package.
SRCC26	X		Deficiency noted by the validator on page 16, Form III. Preparation blank absolute values for arsenic and lead are at a level greater than the reported CRDL.

Sincerety,

Helen MacMinn QA Officer

Enclosure



Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants Law Environmental

LABORATORY: SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/10/92 for the analysis of arsenic and lead. The report reviewed is identified by SDG Number SRCC26 and Case Number GQ3201. The number of samples included for review were two(2).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limits (IDL) for arsenic and lead.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III (page 16). Preparation blank absolute values are at a level greater than the reported CRDL for arsenic and lead.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

A spike sample analysis (Form V) was not provided in this data deliverable package.

Duplicate Sample Analysis

A duplicate sample analysis (Form VI) was not provided in this data package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

An ICP serial dilution analysis (Form IX) was not provided in this data deliverable package.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number SRDA9. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG			•
NUMBER	<u>USEABLE</u>	<u>OUALIFIED</u>	COMMENTS
SRDA9	х		Data end user is notified that the duplicate analysis, analyzed 7/14/92 was performed as a matrix spike duplicate for all samples associated with this report.
SRDA9	X		ICP IDL analysis reported on EPA Form X is dated 3/29/92. Samples were received 7/9/92 and analyzed 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.
SRDA9	X	÷	ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/9/92 and analyzed on 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.
SRDA9	x		Deficiency noted by the validator on page 30, Form III. Preparation blank absolute value for arsenic is at a level greater than the reported CRDL.

Mr. Roger North 9 February 1994 Page Two

LAW SDG

NUMBER USEABLE

QUALIFIED

COMMENTS

SRDA9

X

Interelement correction factors reported on EPA Form XI are dated 8/28/91. Samples were received and analyzed in 1992. Protocol requires this analysis to be performed annually.

Sincerely,

Helen MacMinn QA Officer

Enclosure

Inorganics **CLP** Requirements

CLIENT: LABORATORY:

Geosyntec Consultants Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/9/92 for the analysis of arsenic. The report reviewed is identified by SDG Number SRDA9 and Case Number GQ3201. The number of samples included for review were sixteen (16).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the OC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III (page 30). Preparation blank absolute value is at a level greater than the reported CRDL for arsenic.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of + 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples, meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed 7/14/92. Protocol requires that the interelement correction factors be analyzed and reported annually.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number SRDA10. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	<u>USEABLE</u>	<u>QUALIFIED</u>	<u>COMMENTS</u>
SRDA10	X		Spike sample analysis (Form V) not provided in this data package.
SRDA10	X		Duplicate sample analysis (Form VI) not provided in this data package.
SRDA10	X		Serial dilution analysis (Form IX) not provided in this data package.
SRDA10	X		ICP IDL analysis reported on EPA Form X is dated 3/29/92. Samples were received 7/9/92 and analyzed 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.
SRDA10	X .		Deficiency noted by this validator on page 20. Form III. Preparation blank absolute value for arsenic is at a level greater than the reported CRDL.

Roger North 9 February 1994 Page Two

LAW SDG NUMBER	<u>USEABLE</u>	OUALIFIED	COMMENTS
SRDA10	x		Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed on 7/14/92. EPA protocol requires that this analysis be analyzed and reported on an annual basis.
SRDA10	X		ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/9/92 and analyzed on 7/14/92. Protocol requires this analysis to be performed on a quarterly basis.

Helen MacMinn QA Officer

Enclosure



Inorganics CLP Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/9/92 for the analysis of arsenic. The report reviewed is identified by SDG Number SRDA10 and Case Number GQ3201. The number of samples included for review were five (5).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute value of the calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III, page 20. Preparation blank absolute value is at a level greater than the reported CRDL for arsenic.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

A spike sample analysis (Form V) was not provided in this data deliverable package.

Duplicate Sample Analysis

A duplicate sample analysis (Form VI) was not provided in this data deliverable package.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

An ICP serial dilution analysis (Form IX) was not provided in this data deliverable package.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed on 7/14/92. EPA protocol requires that the interelement correction factors be analyzed and reported on an annual basis.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number SRDA23. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

- CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	OUALIFIED	COMMENTS
SRDA23	X		Data end user is notified that the duplicate analysis, analyzed 7/15/93 was performed as a matrix spike duplicate for all samples associated with this report.
SRDA23	X		ICP IDL analysis reported on EPA Form X is dated 3/29/92. Samples were received 7/10/92 and analyzed 7/15/92. Protocol requires this analysis to be performed on a quarterly basis.
SRDA23	х	÷	ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/10/92 and analyzed on 7/15/92. Protocol requires this analysis to be performed on a quarterly basis.



Mr. Roger North 9 February 1994 Page Two

LAW SDG NUMBER

USEABLE C

OUALIFIED

COMMENTS

SRDA23

X

Deficiency noted by the validator on page 31, Form III. Preparation blank absolute value for arsenic is at a level greater than the reported CRDL.

Sincerely

Helen MacMinn

QA Officer

Enclosure



Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/10/92 for the analysis of arsenic. The report reviewed is identified by SDG Number SRDA23 and Case Number GQ3201. The number of samples included for review were sixteen (16).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable):
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III (page 31). Preparation blank absolute values are at a level greater than the reported CRDL.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of ± 35%.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control sample meets all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.



ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % recovery.

Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Linear ranges were not reported for the quarter in which the samples were analyzed.



Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number DA6XG. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	<u>OUALIFIED</u>	<u>COMMENTS</u>
DA6XG	Х		Data end user is notified that the duplicate analysis, analyzed 5/21/93 was performed as a matrix spike duplicate for all samples associated with this report.
DA6XG	х		Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed on 5/21/93. EPA protocol requires that this analysis be analyzed annually.

Sincerely,

Helen MacMinn QA Officer

Inorganics **CLP Requirements**

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 9 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 5/19/93 for the analysis of arsenic. The report reviewed is identified by SDG Number DA6XG and Case Number GQ3201. The number of samples included for review were twenty-one (21).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks met all requirements in the following areas:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed the instrument detection limit (IDL) for arsenic.
- Initial and continuing calibration blanks were analyzed at the proper wavelength.

ICP Preparation Blank

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- PB are < CRDL.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check sample met all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

The spike sample analysis meets requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

<u>Duplicate Sample Analysis</u>

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of $\pm 35\%$.
- All calculations were verified for % RPD.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.



Quarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed 5/21/93. EPA protocol requires that the interelement correction factors be analyzed and reported on an annual basis.



Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number NF21. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	QUALIFIED	COMMENTS
NF21	Х		Deficiency noted by the validator on pages 15 and 16, Form III. Preparation blank absolute values for arsenic and lead are at a level greater than the reported CRDL.
NF21	X		Spike sample analysis (Form V) not provided in this data package.
NF21	X		Duplicate sample analysis (Form VI) not provided in this data package.
NF21	X	·	Serial dilution analysis (Form IX) not provided in this data package.
NF21	x		ICP IDL analysis reported on EPA Form X is dated 3/29/92. The sample was received 7/30/92 and analyzed 8/3/92. Protocol requires this analysis to be performed on a quarterly basis.



Roger North. 14 February 1994 Page Two

LAW SDG NUMBER	USEABLE	<u>OUALIFIED</u>	COMMENTS
NF21	X		Interelement correction factors submitted with this report are dated 8/28/91. Samples were analyzed 8/3/91. EPA protocol requires that this analysis be analyzed and reported annually.
NF21	X	·	ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/30/92 and analyzed on 8/3/92. Protocol requires this analysis to be performed on a quarterly basis.

Sincerely,

Helen MacMinn QA Officer

Enclosure

Inorganics **CLP** Requirements

CLIENT:

Geosyntec Consultants

LABORATORY:

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 14 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/30/92 for the analysis of arsenic and lead. The report reviewed is identified by SDG Number NF21 and Case Number GQ3201. The number of samples included for review was one (1).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the OC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard .

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet requirements as follows:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed2 the instrument detection limit (IDL) for arsenic and lead.
- Initial and continuing calibration blanks were anlayzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on Form III, pages 15 and 16. Preparation blank absolute values are at a level greater than the reported CRDL's for arsenic and lead.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

A spike sample analysis (Form V) was not provided in this data deliverable package.

Duplicate Sample Analysis

A duplicate sample analysis (Form VI) was not provided in this data deliverable package.

Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

An ICP serial dilution analysis (Form IX) was not provided in this data deliverable package.

Quarterly Verification of Instrument Parameters

- IDL's were reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed on 8/3/92. EPA protocol requires that the interelement correction factors be analyzed and reported on an annual basis.
- Linear ranges were not reported for the quarter in which the samples were analyzed.





Mr. Roger North
Geosyntec Consultants
5775 Peach Tree Dunwoody Road
Suite 200F
Atlanta, Georgia 30342

Dear Mr. North:

Enclosed is the Inorganic Data Validation Report for samples analyzed by Law Environmental Laboratory for the Arco Sinclair Refinery Site.

The report was produced using the EPA CLP Data Validation protocols for 7/88 Statement of Work.

Law Environmental submitted this report with the SDG Designation Number NF1. The reviewer used this number to identify any problem areas found during validation.

The following table lists the reviewer's findings and whether the data is useable or required a qualifier.

CLP VALIDATION SUMMARY

LAW SDG NUMBER	USEABLE	QUALIFIED	COMMENTS
NF1	X		Deficiency noted by the validator on pages 39 and 40, Form III. Preparation blank absolute values for arsenic and lead are at a level greater than the reported CRDL.
NF1	X		Deficiency noted by the validator on page 44, Form V (Part 1). Lead spike recovery of (74.4%) does not meet EPA criteria of 75-125%. Post digestion spike was performed as required by EPA Protocol.
NFI	Х	·	Data end user is notified that the duplicate anlayses analyzed 8/3/92 were performed as matrix spike duplicates for all samples associated with this report.
NF1	X		ICP IDL analysis reported on EPA Form X is dated 3/29/92. The samples were received 7/30/92 and analyzed 8/3/92. Protocol requires this analysis to be performed on a quarterly basis.

Roger North 14 February 1994 Page Two

LAW SDG NUMBER	<u>USEABLE</u>	QUALIFIED	COMMENTS
NFI	х		Interelement correction factors reported on Form XI (Part 1) are dated 8/28/91. Samples were received 7/30/92 and analyzed on 8/3/92. Protocol requires this analysis to be performed annually.
NF1	х		ICP linear range analysis reported on EPA Form XII is dated 3/29/92. Samples were received 7/30/92 and analyzed on 8/3/92. Protocol requires this analysis to be performed on a quarterly basis.

Sincerely,

Helen MacMinn QA Officer

Enclosure



Inorganics CLP Requirements

CLIENT: LABORATORY: Geosyntec Consultants

Law Environmental

SITE:

Arco-Sinclair Refinery

REVIEWER:

Helen MacMinn

DATE OF REVIEW: 14 February 1994

This data package was validated according to the following:

EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, July, 1988.

METALS REVIEW

The metals samples reviewed for this report were received by Law Environmental on 7/30/92 for the analysis of arsenic and lead. The report reviewed is identified by SDG Number NF1 and Case Number GO3201. The number of samples included for review were twenty-four (24).

Sample Holding Times

All sample holding times meet EPA criteria.

Initial Calibration Verification

The initial calibration meets all requirements in the following areas:

- Instrument properly standardized for ICP analysis.
- The ICV was analyzed immediately after each system was calibrated.
- The ICV was analyzed for arsenic and lead as required.
- All ICV analytes meet the QC requirements for % recovery.
- Calculations were verified for ICV % recovery.

Continuing Calibration Verification

The continuing calibration meets all requirements in the following areas:

- The CCV was performed at the 10% frequency for arsenic and lead (where applicable).
- The CCV was performed at the beginning and end of each sample analysis.
- The CCV standards were analyzed for all analytes.
- All CCV analytes meet the QC requirements for % recovery.
- CCB analysis followed CCV analysis for all analytes.
- All calculations verified for % CCV recovery.

CRDL Standard

- The required ICP analytes meet QC requirements for % recovery.
- The CRDL analysis for ICP was performed at the correct frequency and concentration.
- All calculations were verified for % recovery for the CRDL standards.



Initial and continuing calibration blanks meet requirements as follows:

- Initial and continuing calibration blanks were analyzed in the proper sequence.
- The absolute values of the calibration blank results do not exceed2 the instrument detection limit (IDL) for arsenic and lead.
- Initial and continuing calibration blanks were anlayzed at the proper wavelength.

ICP Preparation Blank

Deficiency noted by this validator on pages 39 and 40. Form III. Preparation blank absolute values for arsenic and lead are at a level greater than the reported CRDL.

The ICP Preparation Blanks meet all requirements in the following areas:

- PB performed in the proper frequency.
- The proper number of PB were analyzed for this sample set.

ICP_Interference Check Sample

The ICP interference check samples meet all requirements in the following areas:

- ICP interference check samples performed at the correct frequency.
- Analytes and interferents for Solution AB are reported.
- All required analytes in Solution AB met QC limits of 80-120%.
- All calculations verified for % recovery.

Spike Sample Analysis

Deficiency noted by the validator on page 44, Form V (Part I). Lead value of (74.4%) does not meet EPA criteria of 75-125%.

The spike sample analyses meet requirements in the following areas:

- The sample spike analysis was performed at the correct frequency.
- The sample spike analysis was performed on a field sample.
- The sample spike analysis was performed at the proper concentrations.
- The % recovery for arsenic meet the EPA criteria of 75-125%.
- All calculations were verified for % recovery.

Post-Digestion Spike Analysis

The post-digestion/post-distillation spike is required to be performed on analytes that do not meet the 75-125% spike criteria. The post-digestion spike sample meets all requirements in the following areas:

- Post-digestion spike was analyzed at the proper analyte concentration.
- Post-digestion spike was performed on a field sample.
- The post-digestion spike recovery (93.1%) was verified for % recovery and is within the criteria limits of 75-125.

Duplicate Sample Analysis

The data end user is notified that the duplicate analyses were performed as matrix spike duplicates for all samples associated with this report.

The matrix spike duplicate analyses meet all requirements in the following areas:

- All duplicate analyses were performed at the correct frequency.
- Duplicate analyses were performed on field samples.
- All analyses met QC limits established for soil samples of \pm 35%.
- All calculations were verified for % RPD.



Laboratory Control Sample

The laboratory control samples meet all requirements in the following areas:

- LCS performed at the correct frequency.
- All analytes meet the QC limits of 80-120%.
- All calculations verified for % recovery.

ICP Serial Dilution

The ICP serial dilutions meet all requirements in the following areas:

- Serial dilution performed at the correct frequency.
- All calculations were verified for % difference.

Ouarterly Verification of Instrument Parameters

- IDL's were not reported for the quarter in which the samples were analyzed.
- Interelement correction factors submitted with this report are dated 8/28/91. Samples associated with this report were analyzed on 8/3/92. Interelement correction factors are required to be analyzed and reported annually.
- Linear ranges were not reported for the quarter in which the samples were analyzed.