NM1 - __50___

PART 36 PERMIT APPLICATION

November 6, 2013

HOLLAND&HART LLP

Adam G. Rankin
Associate
Phone (505) 954-7294
Fax (505) 983-6043
AGRankin@hollandhart.com

November 6, 2013

VIA HAND DELIVERY

Ms. Jami Bailey, Director
Oil Conservation Division
New Mexico Department of Energy,
Minerals and Natural Resources
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Crowe Blanco Properties, LLC, Operated By Industrial Ecosystems, Inc., Surface Waste Management Facility (19.15.36 NMAC) Revised Permit Application.

Dear Director Bailey:

Pursuant to 19.15.36.9 NMAC, please find Crowe Blanco Properties, LLC's ("Crowe Blanco") revised application for a Surface Waste Management Facility to be operated by Industrial Ecosystems, Inc.

Please do not hesitate to contact me should you have any questions.

Respectfully,

Adam G. Rankin

cc: Scott Dawson w/o enclosures
Brad Jones w/o enclosures
Gabriel Wade w/o enclosures

HOLLAND&HART LLP

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Adam G. Rankin

cc: Scott Dawson w/o enclosures
Brad Jones w/o enclosures
Gabriel Wade w/o enclosures

Industrial Ecosystems Inc.
Soil Reclamation Center

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

November 5, 2013

State of NM
Energy Minerals & Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
Attn: Jami Bailey, Division Director

Dear Director Bailey,

Pursuant to 19.15.36.9 NMAC, please find for your consideration and enclosed with this cover letter Crowe Blanco Properties, LLC's ("Crowe Blanco") revised application for a Surface Waste Management Facility to be operated by Industrial Ecosystems, Inc.

This revised application addresses the issues raised in the Oil Conservation Division's ("Division") February 7, 2013, Tentative Decision letter and represents the culmination of nearly four years of work between Crowe Blanco's personnel, its consultants, and the Oil Conservation Division.

This application was first filed with the Division on November 18, 2009, when it became apparent that Industrial Ecosystems' current operations at JFJ Landfarm would be limited due to an accumulation of remediated soils in the facility and that a new facility would need to be permitted to continue to provide landfarm services to San Juan Basin oil and gas operators. Since that time Crowe Blanco has had numerous constructive meetings and phone calls with Division staff to resolve issues identified by the Division and has invested more than $1 million in studies, assessments, groundwater monitoring (including drilling ten monitoring wells), and other reports prepared in support of the application's approval.

Crowe Blanco believes that, as a result of these meetings, phone calls, and dialog with the Division, the revisions made to the application make it administratively approvable.

Please do not hesitate to contact me should you have any questions.

Respectfully,

Terry Lattin
GM/President

Crowe Blanco Properties, LLC

Operated By:
Industrial Ecosystems, Inc.

Surface Waste Management Facility (19.15.36 NMAC)

Revised Permit Application

TABLE OF CONTENTS

PRINCIPAL OFFICERS/OWNERS/MANAGEMENT
(19.15.36.8.C.1 NMAC)

Crowe Blanco Properties, LLC
Operated by Industrial Ecosystems, Inc.

President/Treasurer:

John J. Kiely
401 S. LaSalle, Suite 606
Chicago, IL 60605

Vice President/Assistant Secretary:

Jeff Mohajir
1701 Walnut
Kansas City, MO 64108

Secretary:

John P. Crowe
1015 W. 54th Street
Kansas City, MO 64112

Owner 25% or more:

John P. Crowe

Individual(s) Primary Responsible for Management of Facility:

Industrial Ecosystems, Inc.
Terry Lattin
49 CR 3150
Aztec, NM 87410

Plat & Topographic Map(s)
(19.15.36.8.C.2 NMAC)

PLAT & TOPOGRAPHIC MAPS

- Sheet 1 of 15 Boundary Survey
- Sheet 2 of 15 On/Off Site Topography
- Sheet 12 of 15 Off-Site Topography

MAP OF HIGHWAYS & ROADS GIVING ACCES TO THE SITE

- Sheet 1 of 15 Boundary Survey
- Sheet 7 of 15 Operation Facility Site Plan
- Sheet 8 of 15 Plan and Profile Entrance Road
- Sheet 9 of 15 Plan and Profile Entrance Road

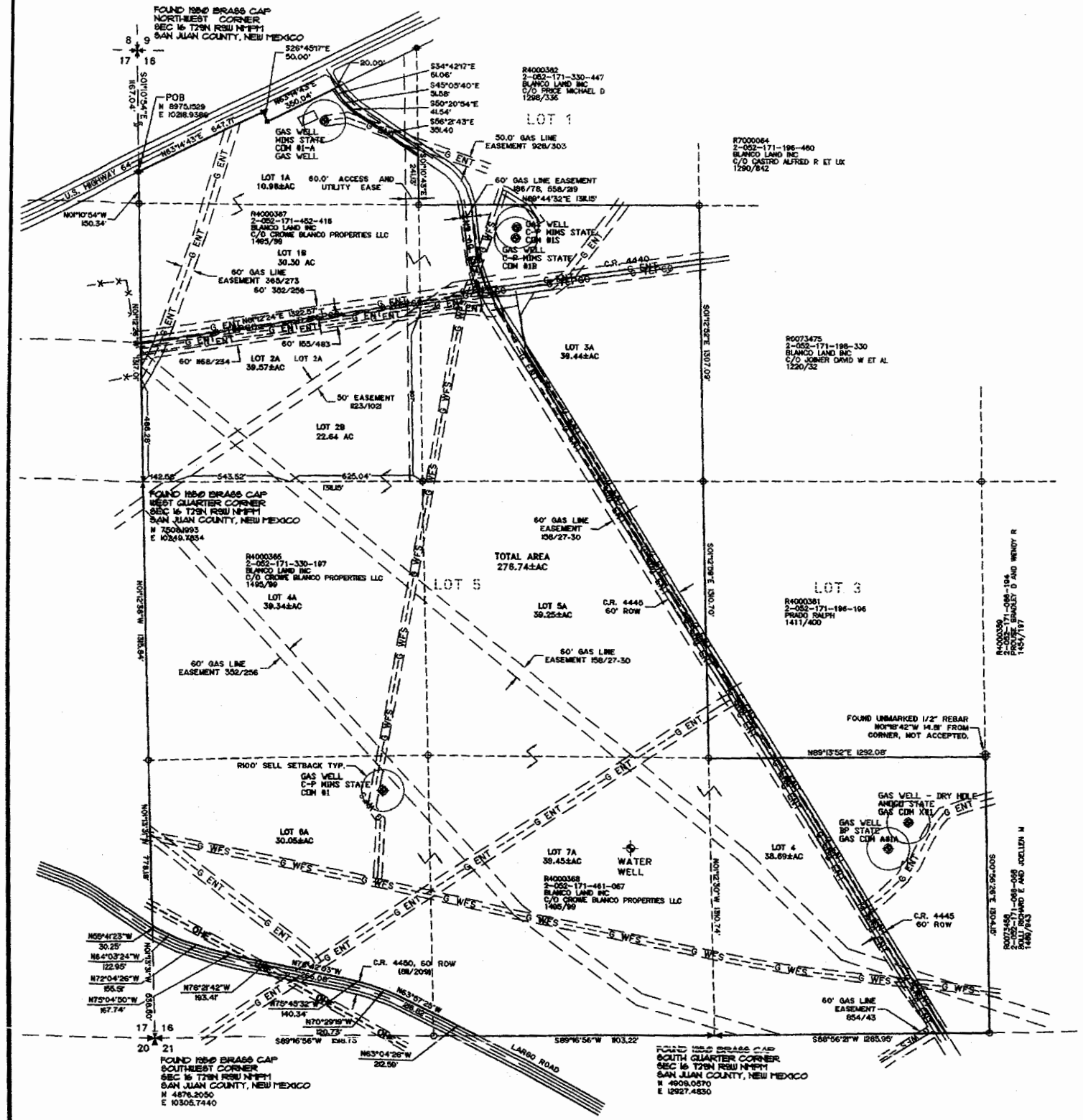
WATERCOURSES, FRESH WATER SOURCES (INCLUDING WELLS & SPRINGS)

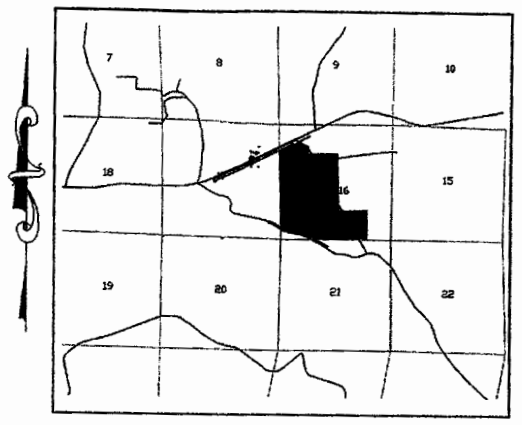
- Sheet 3 of 15 On-Site Waterways & Setbacks
- Sheet 10 of 15 Springs & Water Wells Within 1 Mile (See notes regarding springs)

INHABITED BUILDINGS WITHIN 1 MILE OF SITE'S PERIMETER

- Sheet 11 of 15 Buildings Within One Mile

BOUNDARY SURVEY PLAT
For Crowe Blanco Properties, LLC
Land Farm Permit
Lot 4 of the Blanco Land Subdivision No.1
as recorded in Book 1309, page 455
and part of Lot 1A, Lots 2A thru 5A and a portion of Lots 6A and 7A
of the Blanco Land Subdivision No.2
as recorded in Book 1322, page 796
and lying in the
W1/2 and the SW1/4 SE1/4 of Section 16, T29N R09W, N.M.P.M.
San Juan County, New Mexico
Operated by: Industrial Ecosystems, Inc.





VICINITY MAP
(nts)

LEGEND

- G WFS —— = WILLIAMS FIELD SERVICES GAS LINE
- G ENT —— = ENTERPRISE GAS LINE
- G TEPCO —— = TEPCO GAS LINE
- = SECTION CORNER AS NOTED
- = QUARTER CORNER AS NOTED
- = SET 1/2" REBAR W/CAP LS 6169
- = FOUND REBAR W/SURVEY CAP 8894
- = HWY DEPT BRASS CAP R/W MON

1" = 300'

300 150 0 300 600 900

SCALE: 1" = 300'

DESCRIPTION

A tract of land being Lot 4 of the Blanco Land Subdivision No. 1 as recorded in Book 1309, page 455 and Lots 1A through 7A of Blanco Land Subdivision No. 2 as recorded in Book 1322, page 796, also lying in the West Half (W1/2) and the Southwest Quarter of the Southwest Quarter (SW1/4 SW1/4) of Section 16, T29N, R9W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

COMMENCING at the Northwest Corner of the above said Section 16;

THENCE: S01°10'54"E and along the west line of said Section 16 for a distance of 167.04 feet to a point of intersection with the south right-of-way line of U.S. Highway 64 and the Northwest Corner of the above said Lot 1A and the Point of Beginning of said tract;

THENCE: NORTHEASTERLY and along the north line of the above said Lot 1A and the south line of U.S. Highway 64 the following courses and distances and N63°14'43"E for a distance of 647.71 feet;

THENCE: S26°45'17"E for a distance of 50.00 feet;

THENCE: N63°14'43"E for a distance of 350.04 feet to a point 20' southwest of the centerline of County Road 4445 as existing at the time of this survey;

THENCE: LEAVING said south line of U.S. Highway 64 and the north line of Lot 1A and along the 20' offset line and parallel with the centerline of County Road 4445 the following courses and distances and S34°42'12"E for a distance of 61.06 feet;

THENCE: S45°05'40"E for a distance of 34.58 feet;

THENCE: S50°20'54"E for a distance of 41.54 feet;

THENCE: S56°22'43"E for a distance of 351.40 feet to a point on the east line of said Lot 1A;

THENCE: LEAVING said 20' offset line and along the east line of said Lot 1A and S01°10'43"E for a distance of 24.13 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 1A and the Northwest Corner of the above said Lot 3A;

THENCE: N89°44'32"E and along the south line of said Lot 3A for a distance of 1318.15 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 3A;

THENCE: S01°12'52"E and along the east line of said Lot 3A for a distance of 1307.09 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of said Lot 3A and the Northeast Corner of the above said Lot 5A;

THENCE: S01°12'59"E and along the east line of said Lot 5A for a distance of 1310.70 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 5A and the Northwest Corner of said Lot 4;

THENCE: N89°13'52"E and along the north line of said Lot 4 for a distance of 1292.08 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 4;

THENCE: S00°56'26"E and along the east line of said Lot 4 for a distance of 1304.85 feet to a found rebar with survey cap marked LS 8894 and a point on the south line of the above said Section 16 and the Southeast Corner of said Lot 4;

THENCE: S89°56'37"W and along the south line of said Lot 4 and the south line of said Section 16 for a distance of 1285.95 feet to the South Quarter Corner of the above said Section 16, a 1950 BLM brass cap monument;

THENCE: CONTINUING along the south line of said Section 16 and the south line of Lot 7A and S89°16'56"W for a distance of 803.22 feet to a point being 30' north of the center of County Road 4450 as existing at the time of this survey;

THENCE: LEAVING said south line of said Section 16 and the south line of said Lot 7A and along the 30' offset line and parallel with the centerline of County Road 4450 the following courses and distances and N63°04'26"W for a distance of 262.59 feet;

THENCE: N63°57'28"W for a distance of 295.62 feet;
THENCE: N70°29'19"W for a distance of 120.73 feet;
THENCE: N75°45'32"W for a distance of 140.34 feet;
THENCE: N76°42'03"W for a distance of 266.08 feet;
THENCE: N76°27'42"W for a distance of 193.41 feet;
THENCE: N75°04'50"W for a distance of 167.74 feet;
THENCE: N72°04'26"W for a distance of 255.5 feet;
THENCE: N64°03'24"W for a distance of 122.95 feet;
THENCE: N55°47'23"W for a distance of 30.25 feet to a point on the west line of said Section 16 and the west line of Lot 6A;

THENCE: LEAVING said 30' offset line and along the west line of said Lot 6A and the west line of said Section 16 and N01°13'51"W for a distance of 777.16 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 6A and the Southwest Corner of said Lot 4A;

THENCE: CONTINUING along the west line of said Section 16 and the west line of Lot 4A and N01°12'36"W for a distance of 1315.84 feet to the West Quarter Corner of the above said Section 16 and the Northwest Corner of said Lot 4A and the Southwest Corner of said Lot 2A, a 1950 BLM brass cap monument;

THENCE: N01°12'25"W and along the west line of said Section 16 and the west line of said Lot 2A for a distance of 1317.01 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 2A and the Southwest Corner of said Lot 1A;

THENCE: CONTINUING along the west line of said Section 16 and the west line of said Lot 1A and N01°10'54"W for a distance of 150.34 feet and back to the south right-of-way line of U.S. Highway 64 and the point of beginning of said tract.

Said tract contains 276.74 acres, more or less, and is subject to any and all easements of record or in existence.

CERTIFICATION

I, George T. Walters, a New Mexico Professional Surveyor certify that I conducted and am responsible for this Boundary Survey Plat, that this Boundary Survey is true and correct to the best of my knowledge and belief, and that this Boundary Survey Plat meets the Minimum Standards for Surveying in New Mexico.

I further certify that this is a boundary of an existing tract and is not a land division or subdivision as defined in the New Mexico Subdivision Act.

GEORGE T. WALTERS NEW MEXICO 6169 REGISTERED PROFESSIONAL SURVEYOR

2-24-2012
George T. Walters
Professional Land Surveyor No. 6169
State of New Mexico
Date

REFERENCE LIST:
OWNERSHIP IS ACCORDING TO THE SAN JUAN COUNTY ASSESSORS OFFICE.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1305 PG 390.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1362 PG 735.
WARRANTY DEED IN FAVOR OF BLANCO LAND, INC. IN BK 1206 PG 401.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 105 PG 493.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 105 PG 27.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 352 PG 256.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 365 PG 273.
RIGHT OF WAY GRANT IN FAVOR OF SOUTHERN UNION GATHERING COMPANY IN BK 528 PG 303.
RIGHT OF WAY AND EASEMENT IN FAVOR OF MERIDIAN OIL GATHERING, INC. IN BK 823 PG 102.
RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 858 PG 254.
BLANCO LAND SUBDIVISION NO.1 RECORDED IN BK 1309 PG 455.
BLANCO LAND SUBDIVISION NO.2 RECORDED IN BK 1322 PG 796.

BASIS OF BEARING: THE BASIS OF BEARING FOR THIS SURVEY IS THE BLANCO LAND SUBDIVISIONS.

DATE	REVISION	BY

PRINTED: June 26, 2013
FILE: \CDW\LOTW 1010\2009\DTW\09467\09467NEW.dwg

CHENEY·WALTERS·ECHOLS
ENGINEERS ▲ SURVEYORS
809 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

BOUNDARY SURVEY
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:02/24/2012
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PROJ. 09467
SCALE:1"= 300'
FILE:09467
SHEET
1
OF
15

2.1

Manzanares

Gravel Pit

Canyon

Medina

511

5688
5700
5750
5677
5669
5700
5664
5661
5600
5553
5596
5700
5600
5830
5852
5856
5762
5786
5829

GW
GWs

500 250 0 500 1000 1500
SCALE: 1" = 500'

DATE	REVISION	BY

PRINTED: October 29, 2013
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CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

ON-SITE OFF-SITE TOPOGRAPHY
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
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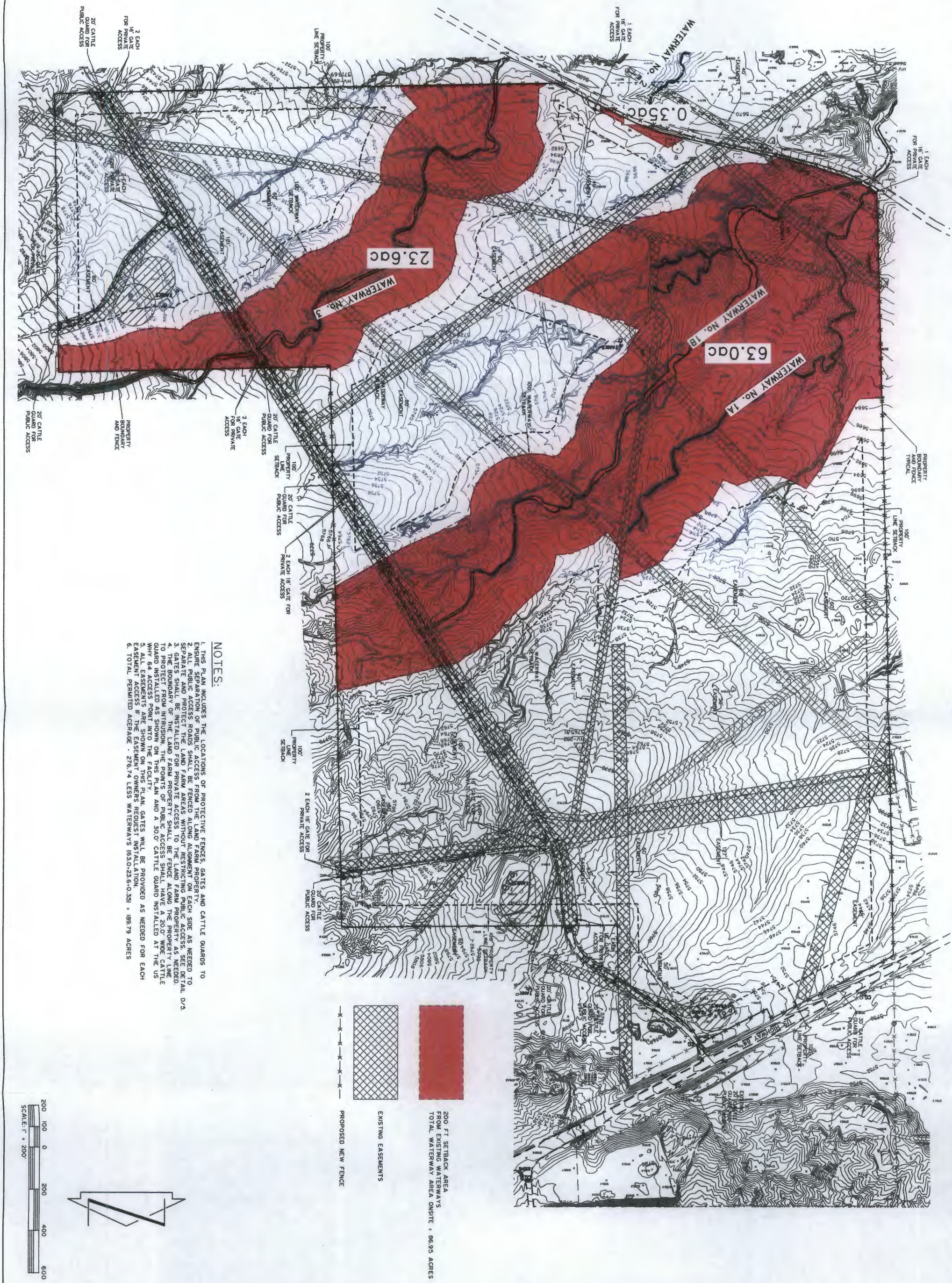
SHEET
2
OF
15



NOTES:

1. THIS PLAN INCLUDES THE LOCATIONS OF PROTECTIVE FENCES, GATES AND CATTLE GUARDS TO ENSURE SEPARATION OF PUBLIC ACCESS FROM THE LAND FARM PROPERTY.
2. ALL PUBLIC ACCESS ROADS SHALL BE FENCED ALONG ALIGNMENT ON EACH SIDE AS NEEDED TO SEPARATE AND PROTECT THE LAND FARM AREAS WITHOUT RESTRICTING PUBLIC ACCESS. SEE DETAIL D/3.
3. GATES SHALL BE INSTALLED FOR PRIVATE ACCESS TO THE LAND FARM PROPERTY AS NEEDED.
4. THE BOUNDARY OF THE LAND FARM PROPERTY SHALL BE FENCE ALONG THE PROPERTY LINE TO PROTECT FROM INTRUSION. THE POINTS OF PUBLIC ACCESS SHALL HAVE A 20.0' WIDE CATTLE GUARD INSTALLED AS SHOWN ON THIS PLAN AND A 30.0' CATTLE GUARD INSTALLED AT THE US HWY 64 ACCESS POINT INTO THE FACILITY.
5. ALL EASEMENTS ARE SHOWN ON THIS PLAN. GATES WILL BE PROVIDED AS NEEDED FOR EACH EASEMENT ACCESS IF THE EASEMENT OWNERS REQUEST INSTALLATION.
6. TOTAL PERMITED ACERAGE - 276.74 LESS WATERWAYS (63.0+23.6+0.35) = 189.79 ACRES

DATE:10/25/2013
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SHEET 3 OF 15

ON-SITE WATERWAYS AND SETBACKS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

REGISTERED PROFESSIONAL ENGINEER & LAND SURVEYOR 14831 RICHARD P. CHENEY NEW MEXICO 10/25/13

CHENEY-WALTERS-ECHOLS, INC.
ENGINEERS • SURVEYORS
909 W. APACHE • FARMINGTON, NEW MEXICO 87401 • (505)327-3303

DATE	REVISION	BY

PRINTED: October 29, 2013
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KEYED NOTES:

1. THE AREA SET ASIDE FOR WATER SHALL BE EXCLUDED FROM ANY CONSTRUCTION.
2. STORM WATER RETENTION POND DIKES TYPICAL. SEE SHEET 5 AND 6 FOR SPECIFICATIONS.
3. INSTALL 536.0'± 6"Φ CLASS 200 PVC WATER LINE. CONNECT TO EXISTING 6"Φ WATER LINE AT NORTHWEST CORNER OF PROPERTY.
4. INSTALL 6"x6"x6" TEE WITH 1 - 6" VALVE IN VALVE BOX.
5. EXTEND 186.0'± NEW 6"Φ TO FENCE LINE OF TANK BATTERY AREA FOR FUTURE USE.
6. INSTALL 536.0'± OF UNDERGROUND ELECTRICAL CONDUIT TO BE SIZED BY THE CITY OF FARMINGTON ELECTRICAL COMPANY.
7. INSTALL APPROVED UNDERGROUND ELECTRICAL JUNCTION BOX.
8. EXTEND 172.0'± NEW UNDERGROUND ELECTRICAL CONDUIT TO FENCE LINE OF TANK BATTERY AREA.
9. CONTRACTOR TO EXTEND BOTH WATER AND UNDERGROUND ELECTRICAL SERVICE TO PROPOSED BUILDING AREA AS DIRECTED BY THE OWNER.

NOTE:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY CROSSINGS AND COORDINATE WITH EACH UTILITY OPERATOR PRIOR TO INSTALLATION OF NEW UTILITIES.

100 50 0 100 200 300
1" = 100' SCALE IN FEET

DATE	REVISION	BY

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ENEY·WALTERS·ECHOLS
ENGINEERS ▲ SURVEYORS
· FARMINGTON, NEW MEXICO 87401 · (505)327-3303
909 W. Al

OPERATION FACILITY SITE PLAN
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
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SHEET
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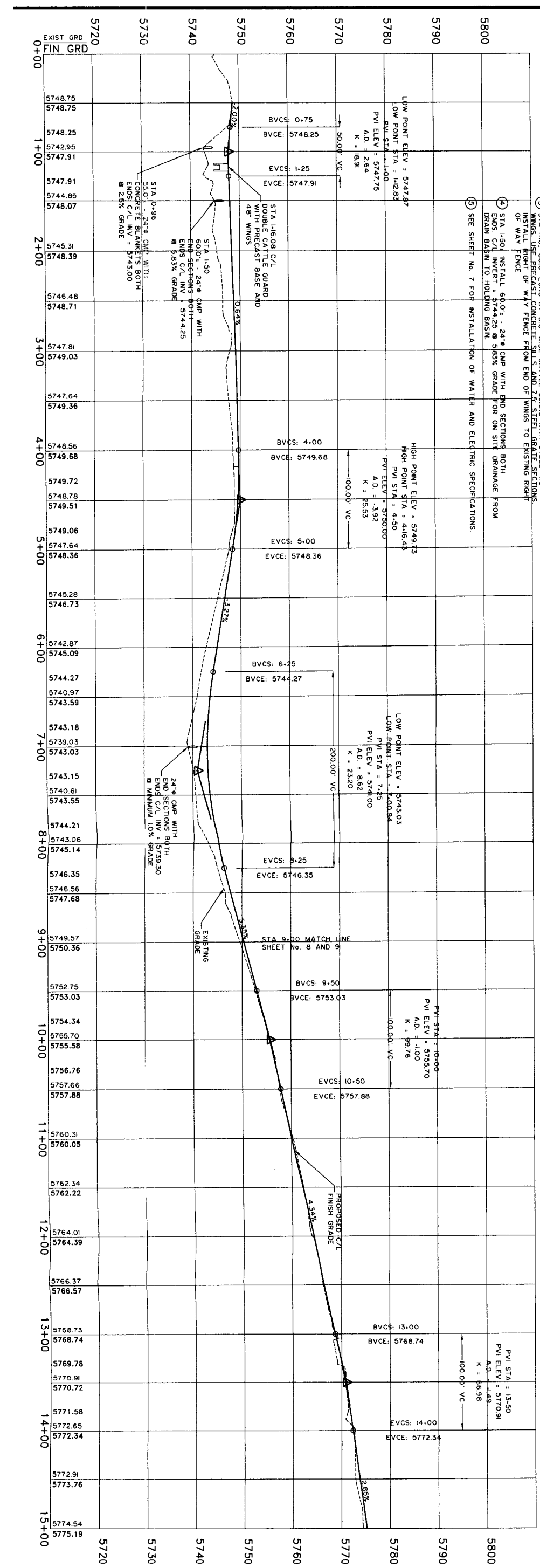
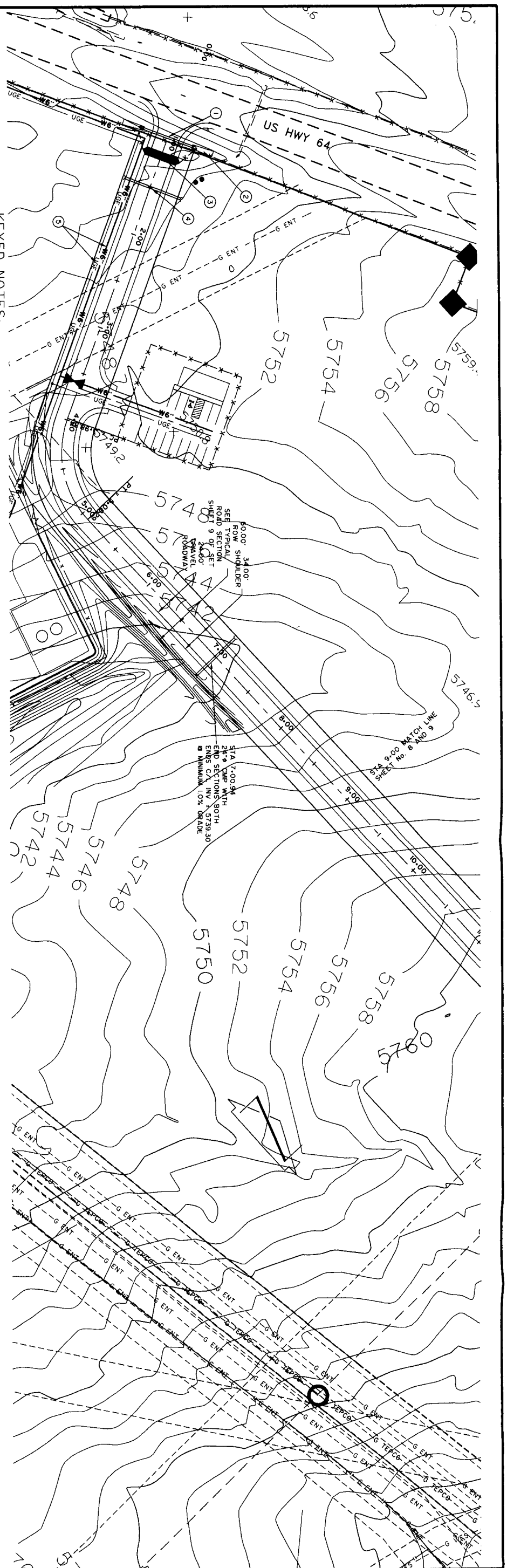
OF
15





KEYED NOTES:

1. STA 0+96 INSTALL 60.0'± - 24"ø CMP WITH CONCRETE BLANKETS BOTH ENDS. C/L INV = 5743.00 ø MINIMUM 3.33% GRADE TO CONTINUE DRAINAGE IN RIGHT OF WAY AS PER NMDOT STANDARD SHI-22-1/2. & SHI-22-2/2.
2. POURED IN PLACE CONCRETE PIPE CULVERT BLANKET AT MAXIMUM 8:1 SLOPE BOTH ENDS AS PER NMDOT STANDARD SHI-22-1/2. & SHI-22-2/2.
3. STA 1+16± 30.0' LONG BY 8.0' WIDE CATTLE GUARD WITH STEEL 4.0' WINGS. USE PRECAST CONCRETE SILLS AND 7.5 STEEL GRATE SECTIONS. INSTALL RIGHT OF WAY FENCE FROM END OF WINGS TO EXISTING RIGHT OF WAY FENCE.
4. STA 1+50± INSTALL 60.0'± - 24"ø CMP WITH END SECTIONS BOTH ENDS. C/L INVERT = 5744.25 ø 5.83% GRADE FOR ON SITE DRAINAGE FROM DRAIN BASIN TO HOLDING BASIN.
5. SEE SHEET No. 7 FOR INSTALLATION OF WATER AND ELECTRIC SPECIFICATIONS.

PLAN AND PROFILE ENTRANCE ROAD
CROWE BLANCO PROPERTIES LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
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PROJ. 09467
SCALE:1" = 50'H
FILE:09467SET
SHEET 8 OF 15

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
No. 36814
STATE OF NEW MEXICO
RICHARD P. CHENEY
12/31/13

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

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PLAN AND PROFILE ENTRANCE ROAD
CROWE BLANCO PROPERTIES LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

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OF
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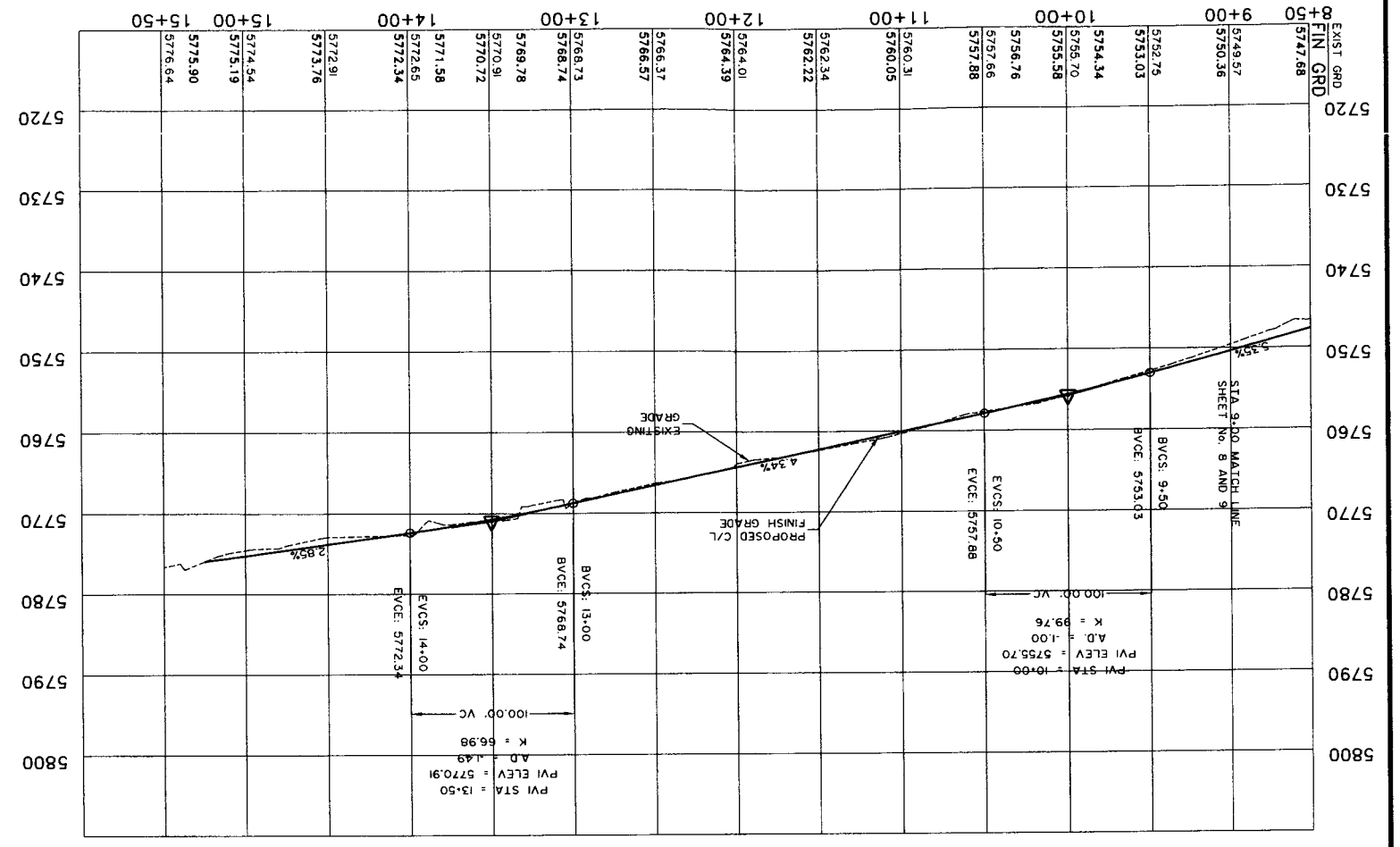
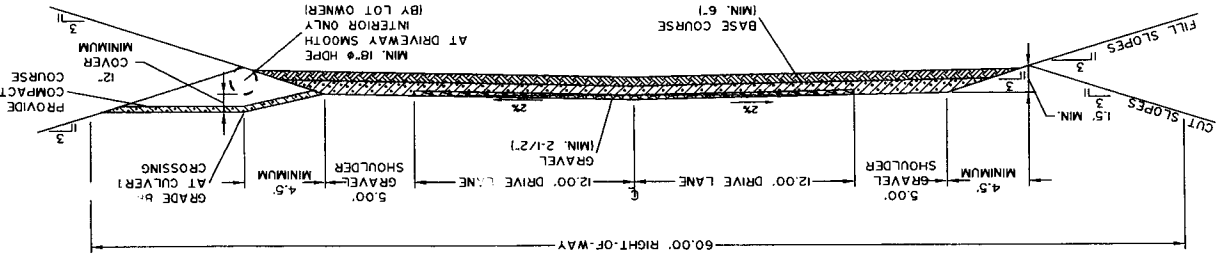


TYPICAL ENTRANCE ROAD SECTION 60' R/W
SCALE:1" = 5'



CHEN-TY-WALTERS-ECHOLS LLC
ENGINEERS ▲ SURVEYORS
906 W. APACHE ▲ FARMINGTON, NEW MEXICO 87401 ▲ (505)327-3303

BY	REVISION	DATE

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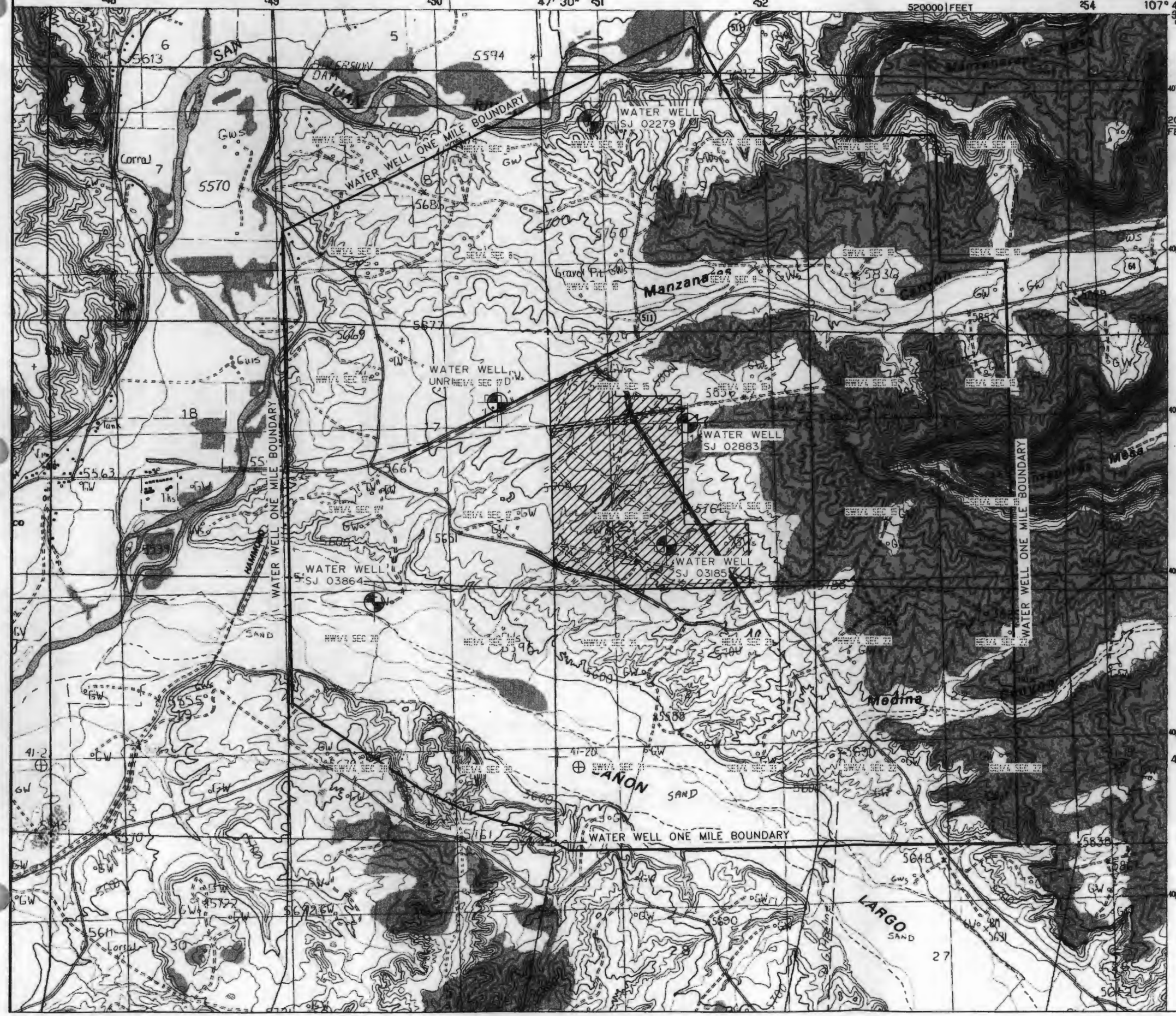
26

BLANCO QUADRANGLE
NEW MEXICO–SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



WATER WELL LOCATIONS
WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
LYING IN SECTION 16,
T29N R09W, N.M.P.M.,
SAN JUAN COUNTY,
NEW MEXICO

UTILIZING AVAILABLE AERIAL PHOTOGRAPHY, INDUSTRIAL ECOSYSTEMS PERSONNEL PERFORMED A PHYSICAL INSPECTION OF AREAS OF UNUSUAL PLANT GROWTH THAT MIGHT HAVE INDICATED FREE FLOWING SPRINGS. NO FREE FLOWING SPRINGS WERE ENCOUNTERED. A SEARCH OF AVAILABLE RESOURCES DID NOT INDICATE ANY RECORD OF FREE FLOWING SPRINGS.

1000 500 0 1000
SCALE: 1"=1000'

DATE	REVISION	BY

PRINTED: October 28, 2013
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CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-5303

SPRINGS AND WATER WELLS WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 1000'
FILE: 09467SETDDN
SHEET 10 OF 15

HOMES WITHIN ONE MILE
OF
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
LYING IN SECTION 16,
T29N R09W, N.M.P.M.,
SAN JUAN COUNTY,
BLANCO, NEW MEXICO

ADDRESS KEYED NOTES:

(1) 103 ROAD 4445 - 507'
(2) 105 ROAD 4445 - 648'
(3) 46 ROAD 4440 - 630'
(4) 44 ROAD 4440 - 651'
(5) 42 ROAD 4440 - 801'
(6) 41 ROAD 4440 - 522'
(7) 43 ROAD 4440 - 609'
(8) 7560 US HIGHWAY 64 - 591'
(9) 7561 US HIGHWAY 64 - 90'-712' (MANZANERAS COMPRESSION STATION)
(10) 36 ROAD 4460 - 3295'
(11) 35 ROAD 4460 - 3501'
(12) 18 ROAD 4461 - 5128'
(13) 13 ROAD 4461 - 5508'
(14) 91 A ROAD 4460 - 5582'
(15) 91 ROAD 4460 - 5737'
(16) 95 ROAD 4460 - 6043'
(17) 18 ROAD 4464 - 595'
(18) 61 NM 511 - 5126'
(19) 288 ROAD 4800 - 5913'

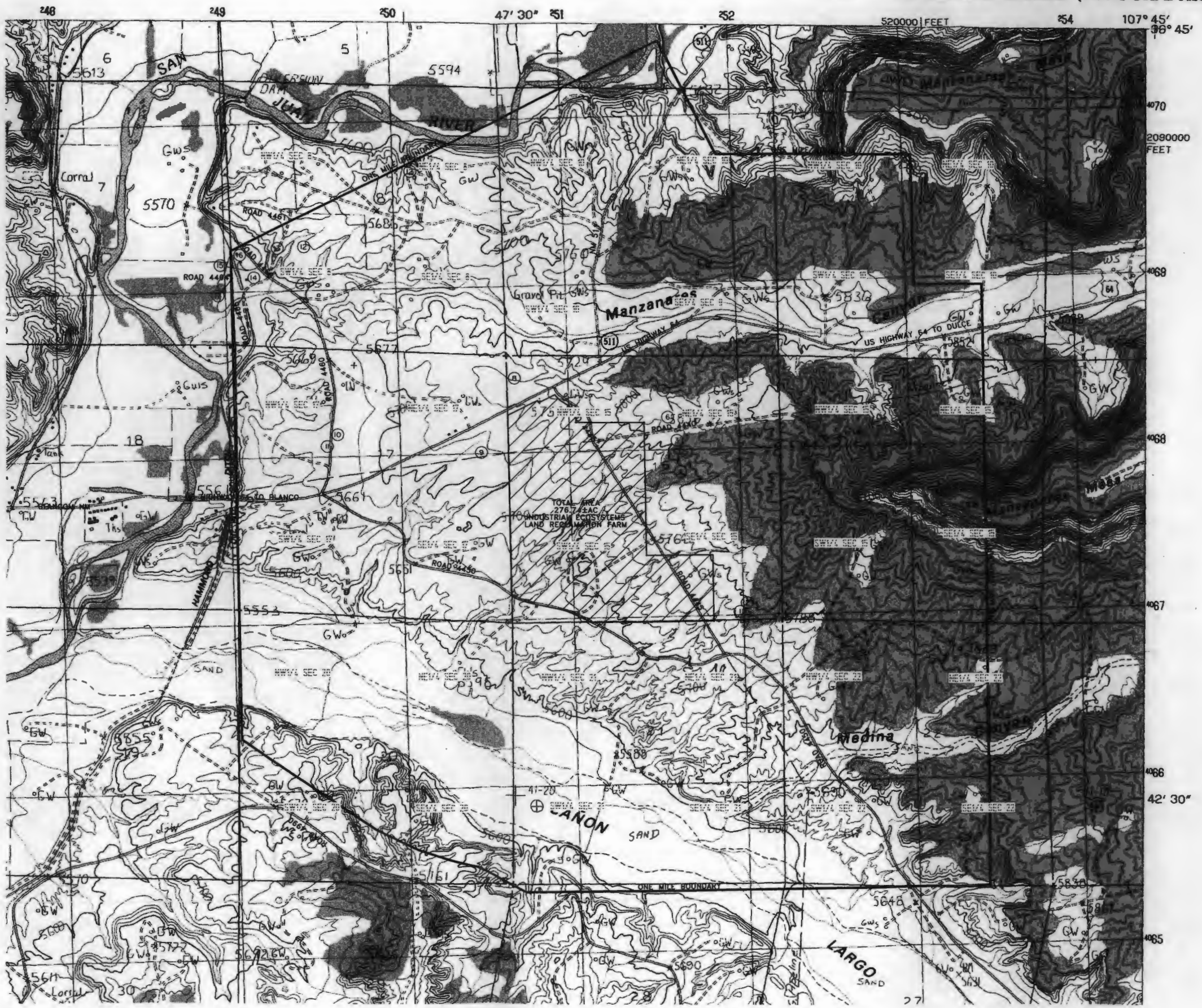
NOTE:

1. PHOTO IMAGE IS FROM GOOGLE EARTH MAPPING.

2. THE LOCATIONS OF THE KEYED NOTES ON THIS PLAN ARE PER SAN JUAN COUNTY ADDRESSING GPS LOCATIONS.

1000 500 0 1000 2000 3000
SCALE: 1" = 1000'

BLANCO QUADRANGLE
NEW MEXICO–SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



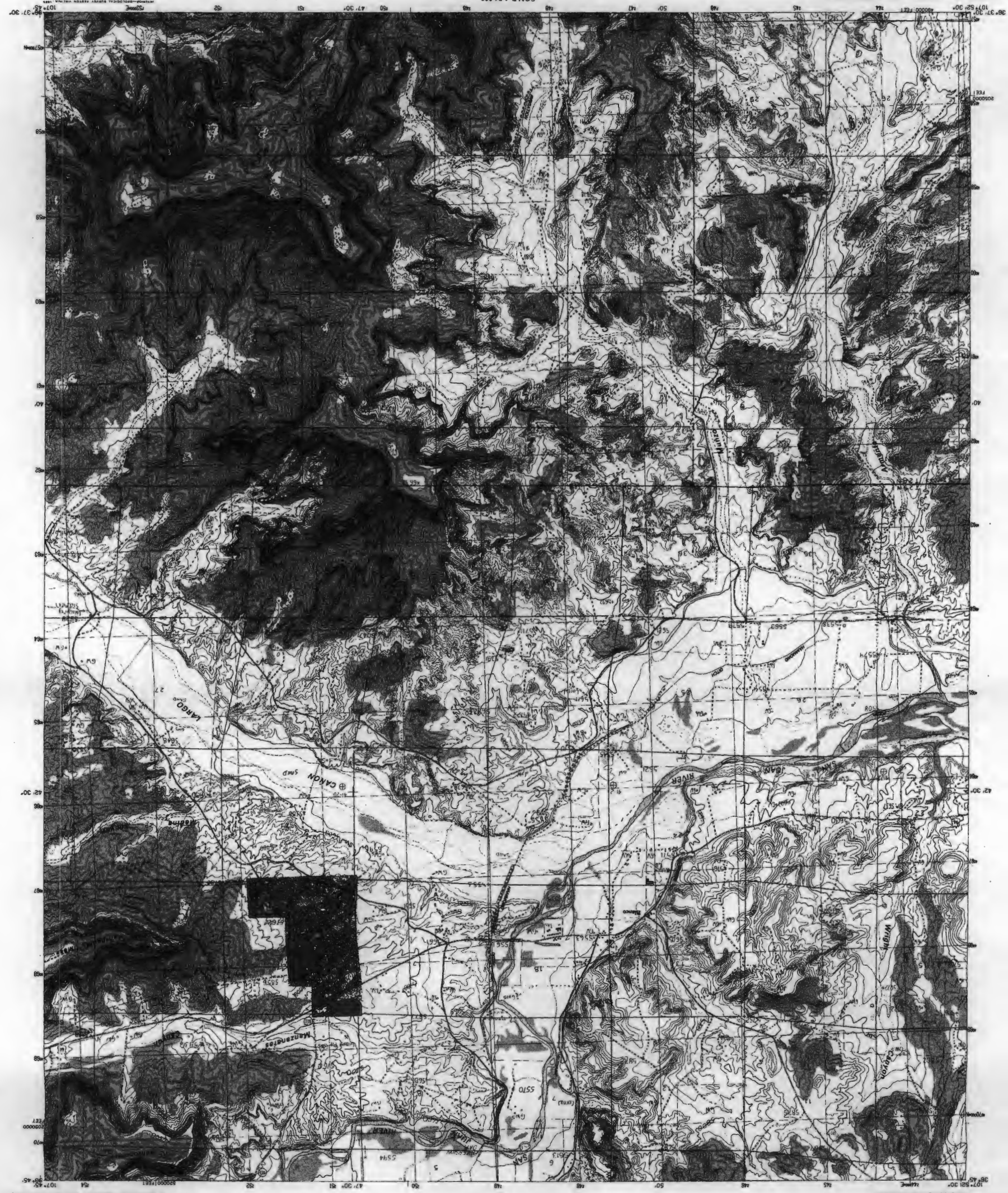
CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

BY	REVISION	DATE

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\09467ONEMILE.dwg

BUILDINGS WITHIN ONE MILE
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 1000'
FILE: 09467ONEMILE
SHEET
11
OF
15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CONTOUR INTERVAL 20 FEET
PROVISIONAL MAP
ROAD CLASSIFICATION
ROAD LEGEND
BLANCO, NEW MEXICO
1983
PROVISIONAL EDITION 1983
ADJOINING 7.5 QUADRANGLE NAMES
QUADRANGLE LOCATION
NEW MEXICO
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225
OR RESTON, VIRGINIA 22092
PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN
FIELD CHECKED
MAP EDITED
HORIZONTAL DATUM
VERTICAL DATUM
1983 MAGNETIC NORTH DECLINATION
To place on the predicted North American Datum of 1983, move
the projection lines as shown by dashed corner ticks
UTM GRID DESIGNATION
1,000-METER GRID: ZONE 13
ANGULAR RELATIONSHIP OF GRID NORTH TO TRUE NORTH
Federal and State Reservations shown on this map
There may be private holdings within the boundaries of any
If taken with land 55 meters east)
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BLANCO QUADRANGLE
NEW MEXICO-SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
OFF-SITE TOPOGRAPHY
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO
CHENEY-WALTERS-ECHOLS INC.
ENGINEERS • SURVEYORS
909 W. APACHE • FARMINGTON, NEW MEXICO 87401 • (505)327-3303
DATE
REVISION
BY
PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\09467drn3.dwg
DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 2000'
FILE: 09467DRN3
SHEET
12
OF
15

"We're People Helping People"

Guardian

ABSTRACT & TITLE CO., INC.

MICHAEL L. SMITH, President

221 N. Auburn • Farmington, New Mexico 87401

(505) 325-2895 • FAX (505) 327-1585

March 27, 2012

Cheney-Walters-Echols, Inc.
909 W. Apache
Farmington, NM 87401

ATTN: Richard Cheney

RE: Ownership Search for:
Blanco Land Subdivision No. 2
Lot 2A, 4A, 3A, 5A,
PT. Lots 1A, 6A and 7A
Blanco Land Subdivision No.1
Lot 4
Guardian File: 1351121

Dear Mr. Cheney:

Referring to the captioned matter, we enclose a list of the owners and their addresses pursuant to the San Juan County Records. A map has been provided to indicate location of each owner that is within 1 mile from subject property, excluding roadway and alleys. We certify the attached list to be completed and accurate as to such owners and their addresses according to the records of the San Juan County Clerk through March 22, 2013 at 5:00 p.m.

We trust this information will be sufficient for your purpose. Enclosed is our invoice #15582R. If you have any question concerning this matter, please do not hesitate to contact us.

Sincerely,

Micahel L. Smith
MLS/cb
enclosures

GUARDIAN ABSTRACT & TITLE CO., INC.
221 NORTH AUBURN
FARMINGTON, NEW MEXICO 87401

PROPERTY OWNERS WITHIN ½ MILE, EXCLUDING ROADWAYS AND ALLEYS OF THE FOLLOWING DESCRIBED PROPERTY: ***Blanco Land Subdivision No. 2***
Lot 2A, 4A, 3A, 5A,
PT. Lots 1A, 6A and 7A
Blanco Land Subdivision No.1
Lot 4

OWNER: Crowe Blanco Properties, LLC
4050 Pennsylvania Ave. Ste. 215
Kansas City, MO 64111-4111
1495/99, 1495/98

ADJOINING OWNER	ADDRESS	LEGAL DESCRIPTION
United States of America (Federal Lands)	Attn: BLM Office 1235 La Plata Hwy Farmington, NM 87401 (Per Phone Book) Note: No address in San Juan County records For United States of America	T29N, R9W, Sec. 15 W1/2, Pt. E1/2 T29N, R9W, Sec. 22 NW1/4, SW1/4, Pt. E1/2 T29N, R9W, Sec. 21 All T29N, R9W, Sec. 20 Pt. NE1/4, Pt. NW1/4, Pt. S1/2 T29N, R9W, Sec. 17 SE1/4, Pt. NW1/4, Pt. SW1/4, Pt. NE1/4 T29N, R9W, Sec. 9 Pt. NW1/4, Pt. NE1/4 Pt. SW1/4, Pt. NW1/4SE1/4, Pt. S1/2SE1/4 T29N, R9W, Sec. 8 S1/2SW1/4, SE1/4, Pt. N1/2 T29N, R9W, Sec. 10 SW1/4, Pt. S1/2NW1/4 Pt. SW1/4NE1/4, Pt. SE1/4

		T29N, R9W, Sec. 27 Pt. N1/2 T29N, R9W, Sec. 28 Pt. N1/2
Crowe Blanco Properties LLC 1495/99, 1495/98	4050 Pennsylvania Ave. Ste. 215 Kansas City, MO 64111-4111	Blanco Land Subdivision No. 2 Pt. Lots 1A, 6A and 7A
El Paso Field Services Company 1305/176, 1296/5	Attn: Enterprise Property Tax P.O Box 4018 Houston, TX 77210-4324	T29N, R9W, Sec. 17 Pt. NE1/4
Atchison, Michael E. 1499/232	P.O Box 537 Blanco, NM 87412-7412	Michael E. Atchison Subdivision No. 1 Lot 3
Bolack, Tommy Trustee 1521/603	3901 Bloomfield Hwy Farmington, NM 87401-7401	Michael E. Atchison Subdivision No. 1 Lots 1, 2, 4, 5, T29N, R9W, Sec. 16 N1/2NE1/4
Price, Michael D. 1298/336	P.O Box 5 Flora Vista, NM 87415-7415	Blanco Land Subdivision No. 1 Lot 1
Castro, Alfred R. and Curley, Elvera 1540/232	P.O Box 571 Blanco, NM 87412-7412	T29N, R9W, Sec. 16 NW1/4NE1/4
Joiner, David W. and Nancy S. Waggoner, Jeff W. and Deena A. 1508/320	P.O Box 570 Blanco, NM 87412-0570	T29N, R9W, Sec. 16 SW1/4NE1/4
Prado, Ralph 1411/400, 1404/863	6784 US 64 Bloomfield, NM 87413-9565	Blanco Land Subdivision No. 1 Lot 3 T29N, R9W, Sec. 16 SE1/4NE1/4

Adams, William J. and Sondra A. 1278/14	P.O Box 28093 Santa Fe, NM 87592-8093	T29N, R9W, Sec. 16 NE1/4NE1/4
Prouse, Bradley D. and Wendy R. 1454/197	2851 County Road 116 Hesperus, CO 81326-8715	Blanco Land Subdivision No. 1 Lot 2
Bolli, Richard E. and Joellen M. 1469/943	P.O Box 579 Blanco, NM 87412-0579	T29N, R9W, Sec. 16 SE1/4SE1/4
Valencia, Seledonio and Oralia 1233/668	P.O Box 233 Bloomfield, NM 87413-0233	T29N, R9W, Sec. 8 Pt. N1/2SW1/4
Valencia, Seledonio and Orie 1054/425	P.O Box 233 Bloomfield, NM 87413-0233	T29N, R9W, Sec. 8 Pt. N1/2SW1/4
Valencia, Leeivigildo Dorina 1042/191	P.O Box 491 Blanco, NM 87412-0491	T29N, R9W, Sec. 8 Pt. NW1/4SW1/4
Valencia, Leo 1244/375	P.O Box 491 Blanco, NM 87412-0491	T29N, R9W, Sec. 8 Pt. NW1/4SW1/4
Martinez, Debbie L. and Jerry G. 1501/606	P.O Box 402 Blanco, NM 87412-0402	T29N, R9W, Sec. 8 Pt. NW1/4SW1/4
Chavez, Mary Rodriquez, Frances J. 1477/973	P.O Box 392 Blanco, NM 87412-0392	T29N, R9W, Sec. 8 Pt. N1/2SW1/4
Hood, John N. and Julie A. 1371/55	P.O Box 482 Blanco, NM 87412-7412	T29N, R9W, Sec. 8 Pt. NE1/4SW1/4
Wood, Annette 1211/998	4528 67th St. Albuquerque, NM 87120-7120	T29N, R9W, Sec. 8 Pt. NE1/4SW1/4

Chavez, Koggie 1211/655	8841 Grove St. Westminster, CO 80030-3328	T29N, R9W, Sec. 8 Pt. NE1/4SW1/4
Montoya, Joe 1452/1027	HC 71 Box 15 Dulce, NM 87528-7528	T29N, R9W, Sec. 8 Pt. N1/2SW1/4
Hawthorne, Doris E. 1492/1006	P.O Box 305 Blanco, NM 87412-7412	T29N, R9W, Sec. 8 Pt. NE1/4SW1/4
Valencia, Johnny 1130/610	P.O Box 475 Blanco, NM 87412-0475	T29N, R9W, Sec. 8 Pt. NW1/4SW1/4
Atencio, Esther AKA Valencia, Esther 1190/320	P.O Box 1295 Aztec, NM 87410-1295	T29N, R9W, Sec. 8 Pt. N1/2SW1/4
San Juan County 1116/693	100 S. Oliver Dr Aztec, NM 87410-2400	T29N, R9W, Sec. 17 E1/2NW1/4SE1/4NW1/4
Archuleta, Milton J. Trustee 1060/205	330 Road 4599 Blanco, NM 87412-9730	T29N, R9W, Sec. 8 Pt. NE1/4NE1/4
Archuleta, Milton Don 1532/12	7414 US 64 Blanco, NM 87412-7412	T29N, R9W, Sec. 8 Pt.NE1/4NE1/4
Lewis, Irene C. and Gary 1537/423, 1538/62	P.O Box 466 Blanco, NM 87412-0000	T29N, R9W, Sec. 9 Pt. NW1/4NW1/4
Jacquez, Richard D. and Debra K. 1296/477, 1263/949	475 Road 4599 Blanco, NM 87412-7412	T29N, R9W, Sec. 4 Pt. SW1/2 Pt. W1/2SE1/4
Jeter, Larry A. and Patricia D. 1417/928	P.O Box 506 Blanco, NM 87412-7412	T29N, R9W, Sec. 9 Pt. NE1/4NW1/4

Chavez, Dennis O. and Maria Emma Living Trust 1236/417, 1328/176, 1236/426, 1236/427, 1328/175	288 Road 4800 Bloomfield, NM 87413-7413	T29N, R9W, Sec. 9 Pt. NE1/4NW1/4
Herbert, Avula Idell 737/95	3780 Kimball St. Thatcher, AZ 85552-5552	T29N, R9W, Sec. 4 Pt. SE1/4SW1/4
McCoy, Robert E. Sr. and Nola C. McCoy, B. Lynn 890/548, 1514/397	694 Road 4990 Bloomfield, NM 87413-7413	T29N, R9W, Sec. 4 Pt. SE1/4SW1/4
James, Juanita N. Trustee 1552/643	24 Road 5817 Farmington, NM 87401-9527	T29N, R9W, Sec. 4 Pt. W1/2SE1/4
Farmington Investment 451/232, 346/214, 453/281 346/215	P.O Box 229 Farmington, NM 87499-0229	T29N, R9W, Sec. 9 Pt. NW1/4NE1/4
Hutton, Kathryn K. 863/507	539 S. Grant Casper, WY (2012 Tax Bill lists owner Of Property as Farmington Investment Co. et al and K K Hutton. Tax Bill Sent to Farmington Investment at P.O Box 229 Farmington, NM 87499-0229)	T29N, R9W, Sec. 9 Pt. NW1/4NE1/4
Porter, Kathryn, Custodian Porter, Amanda K.	2770 Forestdale Road New Brighton, MN 55112 (2012 Tax Bill lists owner Of Property as Farmington Investment Co. et al and K K Hutton. Tax Bill Sent to Farmington Investment at P.O Box 229 Farmington, NM 87499-0229)	T29N, R9W, Sec. 9 Pt. NW1/4NE1/4

NMTC 31448 LTIC

WARRANTY DEED

SNM Properties, LLC, a New Mexico Limited Liability Company, for consideration paid, grant to Crowe Blanco Properties, LLC, a New Mexico Limited Liability Company, whose address is 4050 Pennsylvania Ave., Ste. 215, Kansas City, MO 64111, the following described real estate in SAN JUAN County, New Mexico:

Lot Four (4) of the BLANCO LAND SUBDIVISION NO. 1, San Juan County, New Mexico, as shown on the Plat of said Subdivision filed for record September 26, 2000 in Book 1309, page 455, records of said County.

AND

Lot(s) One A (1A), Two A (2A), Three A (3A), Four A (4A), Five A (5A), Six A (6A) of the BLANCO LAND SUBDIVISION NO. 2, San Juan County, New Mexico, as shown on the Plat of said Subdivision filed for record May 30, 2001 in Book 1322, page 796, records of said County.

Subject to patent reservations, restrictions, and easements of record and taxes for the year 2009 and subsequent years.

with warranty covenants.

WITNESS our hands and seals this 11th day of June, 2009.

SNM Properties, LLC
By: Brad Magee, Managing Member

200908593 06/12/2009 11:43 AM
1 of 1 B1495 P99 R $39.00
San Juan County, NM DEBBIE HOLMES

SAN JUAN COUNTY COUNTY CLERK STATE OF NEW MEXICO

AR

Individual Capacity:

State of New Mexico)
) ss.
County of San Juan)

This instrument was acknowledged before me on the 11th day of June, 2009, by Brad Magee, Managing Member of and on behalf of SNM Properties, LLC, a New Mexico Limited Liability Company.

My commission expires: March 18, 2010

Notary Public

(Seal)

GREG SCHOEFFLER NOTARY PUBLIC STATE OF TEXAS

NMTC 31448 LTIC

WARRANTY DEED

Brad D. Magee and Marcia A. Magee, husband and wife, for consideration paid, grant to Crowe Blanco Properties, LLC, a New Mexico Limited Liability Company whose address is 4050 Pennsylvania Ave., Suite 215, Kansas City, MO 64111, the following described real estate in SAN JUAN County, New Mexico:

Lot Seven A (7A) of the BLANCO LAND SUBDIVISION NO. 2, San Juan County, New Mexico, as shown on the Plat of said Subdivision filed for record May 30, 2001 in Book 1322, page 796, records of said County.

Subject to patent reservations, restrictions, and easements of record and taxes for the year 2009 and subsequent years.

with warranty covenants.

WITNESS our hands and seals this 11th day of June, 2009.

Brad D. Magee

Marcia A. Magee

200908592 06/12/2009 11:43 AM
1 of 1 B1495 P98 R $9.00
San Juan County, NM DEBBIE HOLMES

SAN JUAN COUNTY COUNTY CLERK STATE OF NEW MEXICO

AR

Individual Capacity:

State of New Mexico)
) ss.
County of San Juan)

This instrument was acknowledged before me on the 11th day of June, 2009, by Brad D. Magee and Marcia A. Magee, husband and wife.

My commission expires: March 18, 2010

Notary Public

(Seal)

GREGORY BOEEC NOTARY PUBLIC STATE OF NEW MEXICO

Facility Description & Diagram
(19.15.36.8.C.4 NMAC)

The facility consists of the following areas:

Processing Area: Cell # 2- consists of 8.57 useable acres (9.22 acres w/pond area). This cell will contain the liquid processing and separation equipment, including mobile shaker and slurry tanks, up to twenty-eight steel tanks and centrifuges housed in a 80'x200' building. The processing area is 200' x 300' or 60,000 square-foot lined enclosure with a 2 ½ foot compacted earthen berm surrounded by six-foot tall chain-link fence to prevent unauthorized entrance. The area is lined with a 60-mil HDPE liner (or equivalent), covered with a 12-inch layer of sand protecting the liner, followed by approximately 4 to 5 1/2 feet of topsoil to allow vehicular traffic in/out of the Processing Area and constructed to contain 1 1/3 the volume of the largest tank or all interconnected tanks.

Landfarm: Comprised of 17 cells encompassing a total of 81.10 useable acres (86.18 acres w/pond area) available for active treatment/remediation or as final disposition of remediated materials. Four cells - numbers 7 - 10 are designated as the four active "treatment" cells consisting of 35.21 useable acres (37.56 acres w/pond area). Thirteen cells – numbers 1, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17 & 18 are designated as final disposition "receiving" cells consisting of 45.89 useable acres (48.62 acres w/pond area).

The perimeter of the facility will fenced with a four (4) foot field fence topped with barbed wire.

Entrance/Exit for the facility will be gained through gates which will remain locked when the facility is not in operation and/or when there are no personnel on the facility.

The office will be located at the entrance of the facility to monitor all incoming and outgoing traffic.

Interior roads will be developed within the facility to provide access for personnel, transporters and visitors.

Also refer to the following engineering designs:

FENCES, GATES, CATTLEGUARDS, ROADS

- Sheet 3 of 15 — On-Site Waterways & Setbacks
  - Cattle Guards
- Sheet 5 of 15 — Retention Dikes & Details
  - D/5-Field Fence & Post Detail
  - F/5-Field Fence Corner Post Detail
  - G/5-Field Fence Gate Installation Detail
  - J/5-Typical Cell Entry Detail
- Sheet 7 of 15 — Operation Facility Site Plan
- Sheet 8 of 15 — Profile Entrance Road
- Sheet 9 of 15 — Profile Entrance Road
- Sheet C106 — Surface Grading & Drainage Plan
  - Interior Access Road & Driveway
  - 6' Chain Link Fence Foundation
  - 6' High Chain Link Gate

PIPELINES CROSSING THE FACILITY

- Sheet 1 of 15 — Boundary Survey

RETENTION POND/DIKES

- Sheet 4 of 15 — Drainage Basins
- Sheet 5 of 15 — Retention Dikes & Details
  - A/5-Typical Overflow Plan
  - B/5-Typical Retention Pond Slope Detail
  - C/5-Dike Overflow Detail
- Sheet 15 of 15 — Run-On/Off Control Plan
- Cell Berm Profiles — Sheets 1 of 16 through 6 of 16 (Located in Binder Section 19.15.36.8.C.5-Engineering Designs-Pages 5.18-5.33)

LINERS, PIPING, TANKS, BUILDING & CHEMICAL STORAGE AREAS

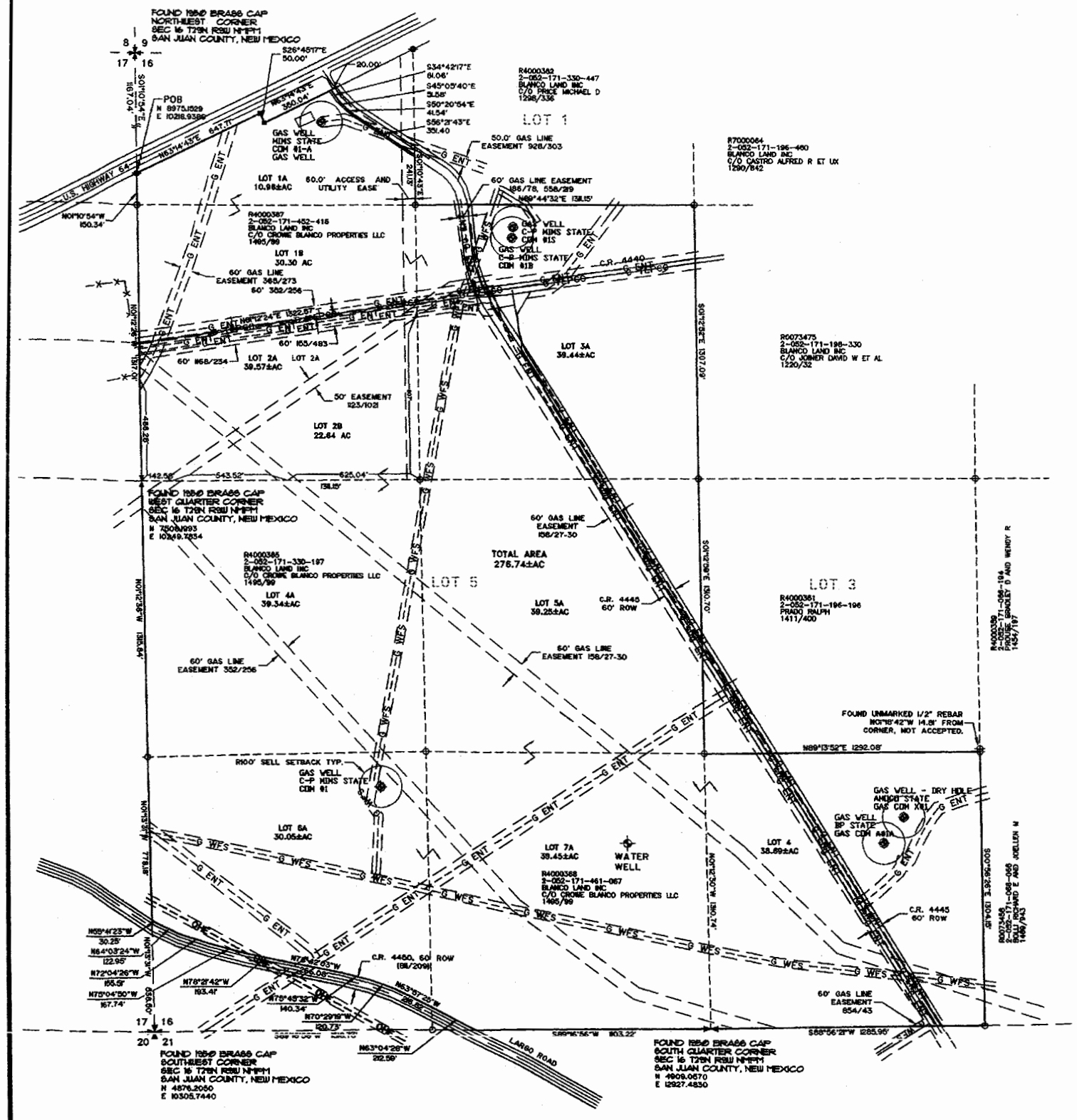
- Sheet 5 of 15 — Retention Dikes & Details
  - H/5-Manure Stockpile Containment Detail
- Sheet 7 of 15 — Operation Facility Site Plan
- Sheet C101 — Cover Sheet
- Sheet C102 — General Notes & Engineering
- Sheet C103 — Improvement Plan
- Sheet C104 — Proposed Site Plan
  - Hydrofluoric Acid Totes Containment Location & Details
  - Chemical Feed Injection Pump w/H2S Breaker Tote
- Sheet C105 — Liner Grading & Drainage Plan
- Sheet C106 — Surface Grading & Drainage Plan
  - Liquids Collection System-Sections C-C & D-D
  - HDPE Liner w/Pipe Penetration Detail
- Sheet C107 — Foundation Plan
  - 4/C107-H2S Secondary Containment Detail
- Sheet C108 — Horizontal Control Plan
- Sheet C109 — Piping Plan
- Sheet C110 — Process Plan and Engineer Design

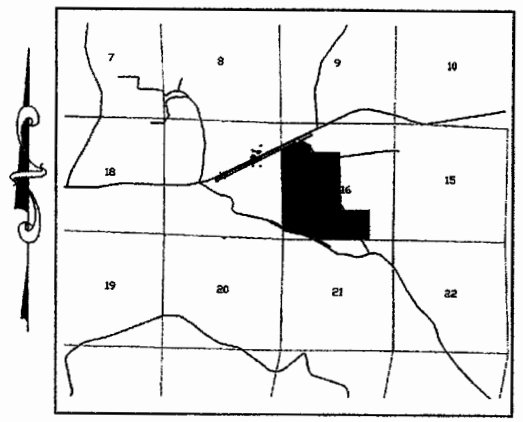
BERMS

- Sheet 5 of 15 — Retention Dikes & Details
  - E/5-Detail of Earth Berms for Cells and Perimeter
  - J/5-Typical Cell Entry Detail
- Sheet 15 of 15 — Run-On/Off Control Plan
- Cell Berm Profiles — Sheets 1 of 16 through 16 of 16 (Located in Binder Section 19.15.36.8.C.5-Engineering Designs-Pages 5.18-5.33)
- Sheet C106 — Surface Grading & Drainage Plan
  - Process Boundary Berm-Section A-A
  - Typical Process Interior Berm-Section B-B
  - Drive Over Berm-Section E-E

BOUNDARY SURVEY PLAT

For Crowe Blanco Properties, LLC
Land Farm Permit
Lot 4 of the Blanco Land Subdivision No.1
as recorded in Book 1309, page 455
and part of Lot 1A, Lots 2A thru 5A and a portion of Lots 6A and 7A
of the Blanco Land Subdivision No.2
as recorded in Book 1322, page 796
and lying in the
W1/2 and the SW1/4 SE1/4 of Section 16, T29N R09W, N.M.P.M.
San Juan County, New Mexico
Operated by: Industrial Ecosystems, Inc.





VICINITY MAP
(nts)

LEGEND

- G WFS —— = WILLIAMS FIELD SERVICES GAS LINE
- G ENT —— = ENTERPRISE GAS LINE
- G TEPCO —— = TEPCO GAS LINE
- = SECTION CORNER AS NOTED
- = QUARTER CORNER AS NOTED
- = SET 1/2" REBAR W/CAP LS 6859
- = FOUND REBAR W/SURVEY CAP 8894 UNLESS NOTED OTHERWISE
- = HWY DEPT BRASS CAP 8"/8" MON

1" = 300'

300 150 0 300 600 900

SCALE: 1" = 300'

DESCRIPTION

A tract of land being Lot 4 of the Blanco Land Subdivision No. 1 as recorded in Book 1309, page 455 and Lots 1A through 7A of Blanco Land Subdivision No. 2 as recorded in Book 1322, page 796, also lying in the West Half (W1/2) and the Southeast Quarter of the Southwest Quarter (SW1/4 SW1/4) of Section 16, T29N, R09W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

COMMENCING at the Northwest Corner of the above said Section 16;

THENCE: S01°10'54"E and along the west line of said Section 16 for a distance of 867.04 feet to a point of intersection with the south right-of-way line of U.S. Highway 64 and the Northwest Corner of the above said Lot 1A and the Point of Beginning of said tract;
THENCE: NORTHEASTERLY and along the north line of the above said Lot 1A and the south line of U.S. Highway 64 the following courses and distances and N63°14'43"E for a distance of 647.71 feet;
THENCE: S26°45'17"E for a distance of 50.00 feet;
THENCE: N63°14'43"E for a distance of 350.04 feet to a point 20' southwest of the centerline of County Road 4445 as existing at the time of this survey;
THENCE: LEAVING said south line of U.S. Highway 64 and the north line of Lot 1A and along the 20' offset line and parallel with the centerline of County Road 4445 the following courses and distances and S34°42'17"E for a distance of 61.06 feet;
THENCE: S45°05'40"E for a distance of 3.58 feet;
THENCE: S50°20'54"E for a distance of 44.54 feet;
THENCE: S56°21'43"E for a distance of 351.40 feet to a point on the east line of said Lot 1A;
THENCE: LEAVING said 20' offset line and along the east line of said Lot 1A and S01°10'43"E for a distance of 24.13 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 1A and the Northwest Corner of the above said Lot 3A;
THENCE: N89°44'32"E and along the north line of said Lot 3A for a distance of 1381.15 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 3A;
THENCE: S01°12'52"E and along the east line of said Lot 3A for a distance of 1307.09 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of said Lot 3A and the Northeast Corner of the above said Lot 5A;
THENCE: S01°12'59"E and along the east line of said Lot 5A for a distance of 1310.70 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 5A and the Northwest Corner of said Lot 4;
THENCE: N89°13'52"E and along the north line of said Lot 4 for a distance of 1292.08 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 4;
THENCE: S00°56'28"E and along the east line of said Lot 4 for a distance of 1304.16 feet to a found rebar with survey cap marked LS 8894 and a point on the south line of the above said Section 16 and the Southeast Corner of said Lot 4;
THENCE: S88°56'28"W and along the south line of said Lot 4 and the south line of said Section 16 for a distance of 1285.95 feet to the South Quarter Corner of the above said Section 16, a 1950 BLM brass cap monument;
THENCE: CONTINUING along the south line of said Section 16 and the south line of Lot 7A and S89°16'56"W for a distance of 903.22 feet to a point being 30' north of the center of County Road 4450 as existing at the time of this survey;
THENCE: LEAVING said south line of said Section 16 and the south line of said Lot 7A and along the 30' offset line and parallel with the centerline of County Road 4450 the following courses and distances and N63°04'28"W for a distance of 292.59 feet;
THENCE: N63°37'25"W for a distance of 285.82 feet;
THENCE: N70°29'19"W for a distance of 120.73 feet;
THENCE: N75°49'32"W for a distance of 140.34 feet;
THENCE: N78°42'03"W for a distance of 266.08 feet;
THENCE: N78°27'42"W for a distance of 193.41 feet;
THENCE: N75°04'30"W for a distance of 167.74 feet;
THENCE: N72°04'26"W for a distance of 165.9 feet;
THENCE: N64°03'24"W for a distance of 122.95 feet;
THENCE: N55°49'23"W for a distance of 30.25 feet to a point on the west line of said Section 16 and the west line of Lot 6A;
THENCE: LEAVING said 30' offset line and along the west line of said Lot 6A and the west line of said Section 16 and N01°13'52"W for a distance of 773.18 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 6A and the Southwest Corner of said Lot 4A;
THENCE: CONTINUING along the west line of said Section 16 and the west line of Lot 4A and N01°12'36"W for a distance of 1305.84 feet to the West Quarter Corner of the above said Section 16 and the Northwest Corner of said Lot 4A and the Southwest Corner of said Lot 2A, a 1950 BLM brass cap monument;
THENCE: N01°12'26"W and along the west line of said Section 16 and the west line of said Lot 2A for a distance of 1317.04 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 2A and the Southwest Corner of said Lot 1A;
THENCE: CONTINUING along the west line of said Section 16 and the west line of said Lot 1A and N01°10'54"W for a distance of 150.34 feet and back to the south right-of-way line of U.S. Highway 64 and the point of beginning of said tract.

Said tract contains 276.74 acres, more or less, and is subject to any and all easements of record or in existence.

CERTIFICATION

I, George T. Walters, a New Mexico Professional Surveyor certify that I conducted and am responsible for this Boundary Survey Plat, that this Boundary Survey is true and correct to the best of my knowledge and belief, and that this Boundary Survey Plat meets the Minimum Standards for Surveying in New Mexico.

I further certify that this is a boundary of an existing tract and is not a land division or subdivision as defined in the New Mexico Subdivision Act.

George T. Walters
Professional Land Surveyor No. 6859
State of New Mexico

2-24-2012
Date

REFERENCE LIST:
OWNERSHIP IS ACCORDING TO THE SAN JUAN COUNTY ASSESSORS OFFICE.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1353 PG 390.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1392 PG 735.
WARRANTY DEED IN FAVOR OF BLANCO LAND, INC. IN BK 1206 PG 401.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 155 PG 483.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 180 PG 27.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 352 PG 256.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 365 PG 273.
RIGHT OF WAY GRANT IN FAVOR OF SOUTHERN UNION GATHERING COMPANY IN BK 528 PG 303.
RIGHT OF WAY AND EASEMENT IN FAVOR OF MERIDIAN OIL GATHERING, INC. IN BK 823 PG 102.
RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 868 PG 234.
BLANCO LAND SUBDIVISION NO.1 RECORDED IN BK 1309 PG 455.
BLANCO LAND SUBDIVISION NO.2 RECORDED IN BK 1322 PG 796.

BASIS OF BEARING: THE BASIS OF BEARING FOR THIS SURVEY IS THE BLANCO LAND SUBDIVISIONS.

BY	REVISION	DATE

PRINTED: June 26, 2013
FILE: \\Gtw\GTW (D)\2009GTW\09467\09467NEW.dwg

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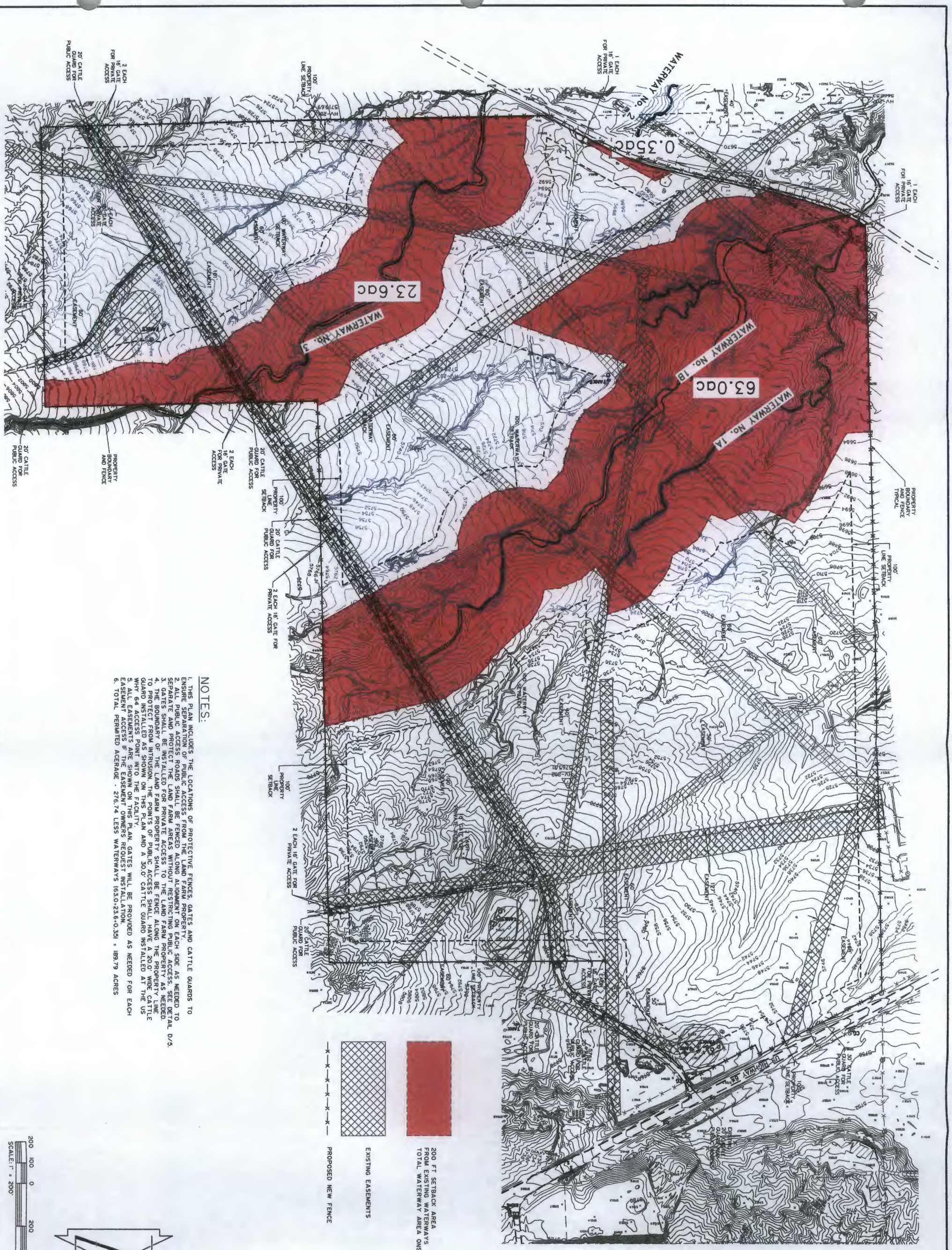
909 W. APACHE • FARMINGTON, NEW MEXICO 87401 • (505)327-3303

BOUNDARY SURVEY
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 02/24/2012
DRAWN BY: LH
PROJ. 09467
SCALE: 1"= 300'
FILE: 09467
SHEET 1 OF 15



NOTES:

1. THIS PLAN INCLUDES THE LOCATIONS OF PROTECTIVE FENCES, GATES AND CATTLE GUARDS TO ENSURE SEPARATION OF PUBLIC ACCESS FROM THE LAND FARM PROPERTY.
2. ALL PUBLIC ACCESS ROADS SHALL BE FENCED ALONG ALIGNMENT ON EACH SIDE AS NEEDED TO SEPARATE AND PROTECT THE LAND FARM AREAS WITHOUT RESTRICTING PUBLIC ACCESS. SEE DETAIL D/5.
3. GATES SHALL BE INSTALLED FOR PRIVATE ACCESS TO THE LAND FARM PROPERTY AS NEEDED.
4. THE BOUNDARY OF THE LAND FARM PROPERTY SHALL BE FENCE ALONG THE PROPERTY LINE TO PROTECT FROM INTRUSION. THE POINTS OF PUBLIC ACCESS SHALL HAVE A 20.0' WIDE CATTLE GUARD INSTALLED AS SHOWN ON THIS PLAN AND A 30.0' CATTLE GUARD INSTALLED AT THE US HWY 64 ACCESS POINT INTO THE FACILITY.
5. ALL EASEMENTS ARE SHOWN ON THIS PLAN. GATES WILL BE PROVIDED AS NEEDED FOR EACH EASEMENT ACCESS IF THE EASEMENT OWNERS REQUEST INSTALLATION.
6. TOTAL PERMITED ACERAGE - 276.74 LESS WATERWAYS (63.0+23.6+0.35) = 189.79 ACRES

ON-SITE WATERWAYS AND SETBACKS
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1"=200'
FILE:09467DRN3
SHEET 3 OF 15

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DATE	REVISION	BY

PRINTED: October 29, 2013
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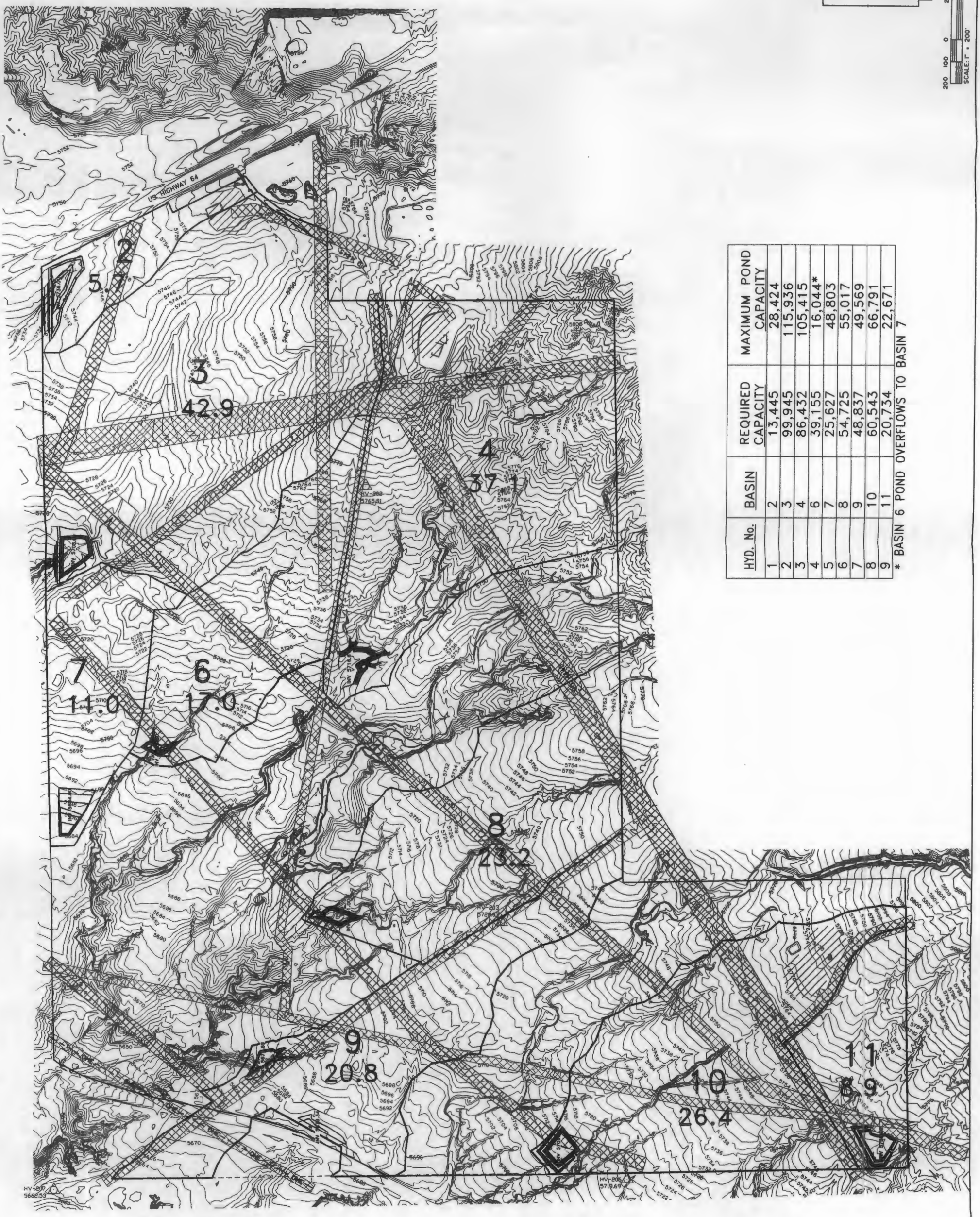
ENGINEERS · SURVEYORS
809 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 29, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\09467drn3.dwg

DRAINAGE BASINS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467DRN3
SHEET 4 OF 15

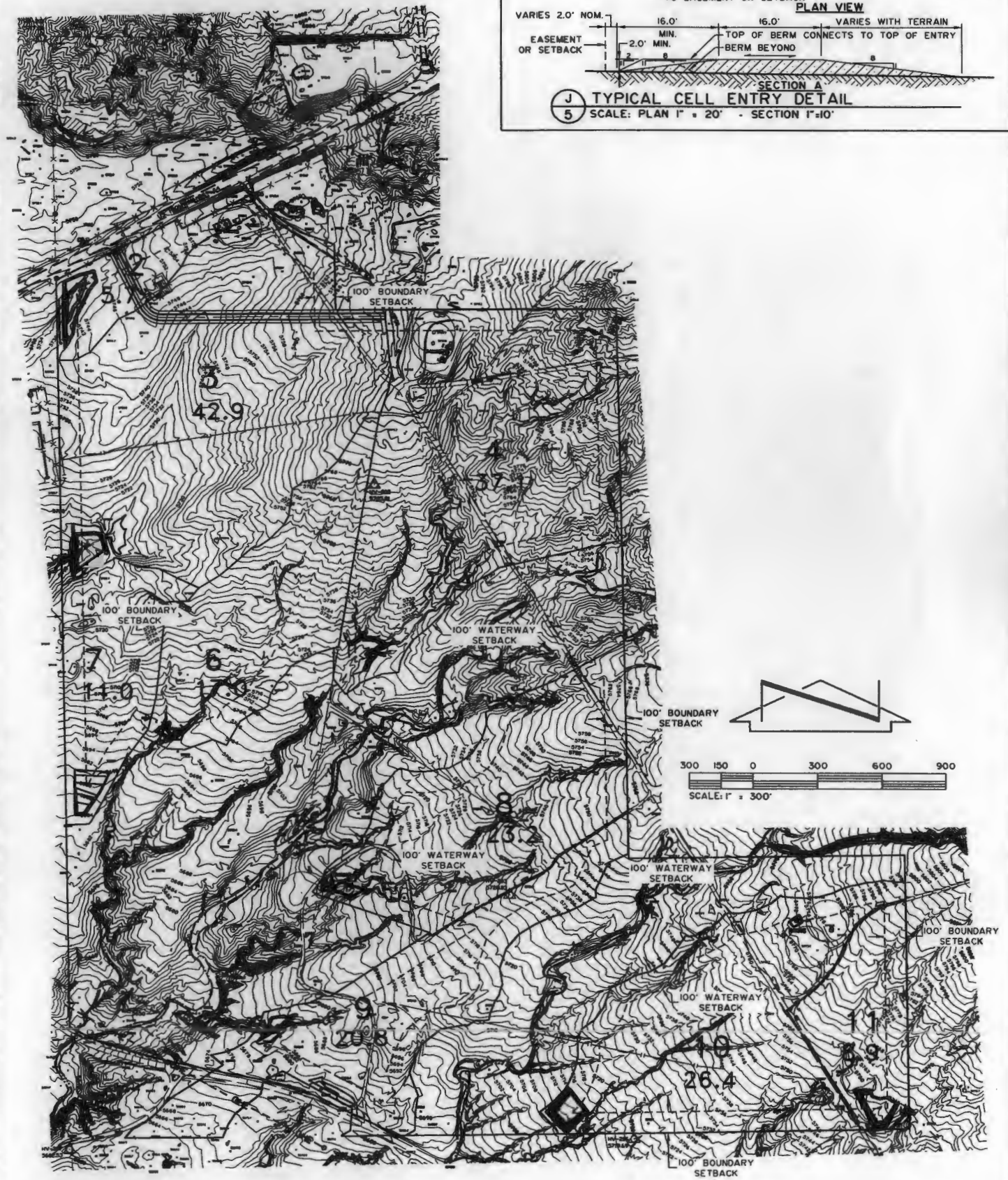


HYD. No.	BASIN	REQUIRED CAPACITY	MAXIMUM POND CAPACITY
1	2	13,445	28,424
2	3	99,945	115,936
3	4	86,432	105,415
4	6	39,155	16,044*
5	7	25,627	48,803
6	8	54,725	55,017
7	9	48,837	49,569
8	10	60,543	66,791
9	11	20,734	22,671

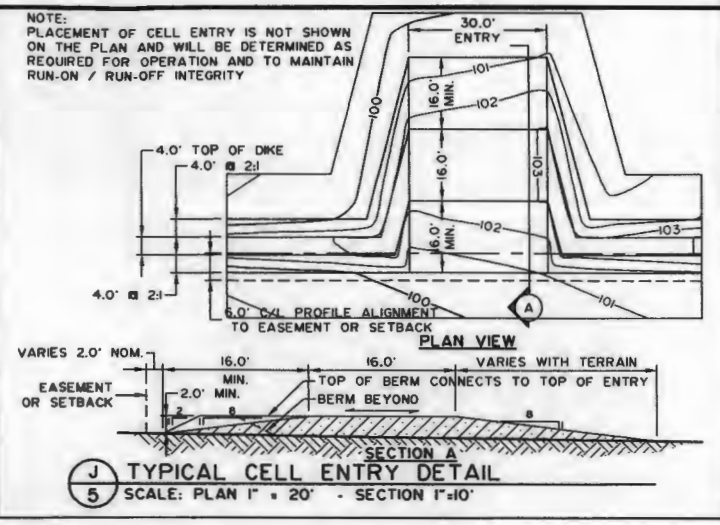
* BASIN 6 POND OVERFLOWS TO BASIN 7

NOTES:

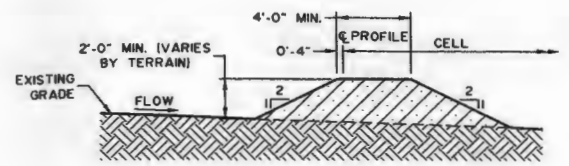
THE DIKES WERE DESIGNED TO RETAIN THE 25 YEAR 1 HOUR STORM.
EACH DIKE HAS 1 FOOT OF FREEBOARD AT THE SPILLWAY OVERFLOW SECTION.
BERMS AND V-DITCHES THAT PROTECT WATERWAYS WILL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR REMEDIATION OF SOILS.
DIKES WILL BE CONSTRUCTED WHEN THE CELLS THAT CONTRIBUTE STORMWATER RUNOFF TO THAT DIKE BECOME ACTIVE.
GATES WILL BE INSTALLED AS NEEDED.
EARTHWORK: PLACE AND COMPACT FILL IN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED DENSITIES THROUGHOUT THE LIFT.
FILL LIFTS SHALL NOT EXCEED 8 INCHES.
MATERIAL SHALL HAVE A MINIMUM OF 95% COMPACTION.



NOTE:
PLACEMENT OF CELL ENTRY IS NOT SHOWN ON THE PLAN AND WILL BE DETERMINED AS REQUIRED FOR OPERATION AND TO MAINTAIN RUN-ON / RUN-OFF INTEGRITY

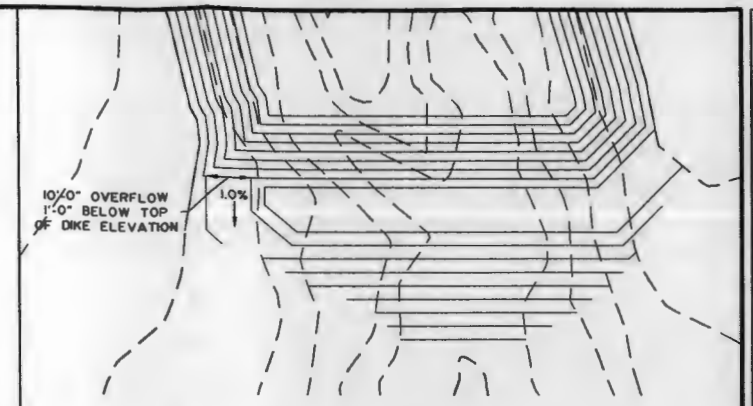


J/5 TYPICAL CELL ENTRY DETAIL
SCALE: PLAN 1" = 20' - SECTION 1"=10'



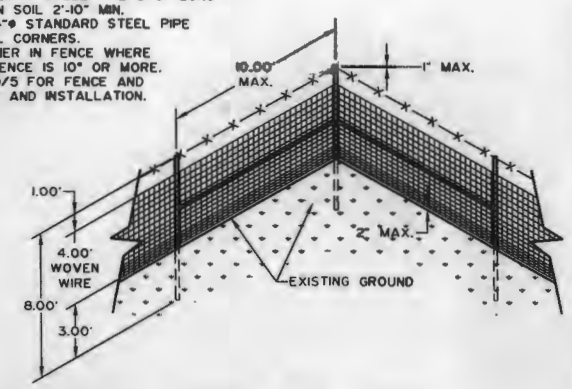
EARTH BERM WITHOUT DITCH
CREATE BERM BY DUMPING MATERIAL ON EXISTING SURFACE TO INTERCEPT RUNOFF WHEN NATURAL GRADES ARE PRESENT TO ENSURE DRAINAGE TO RETENTION AREA.

E/5 DETAIL OF EARTH BERM FOR CELLS
SCALE 1" = 5'

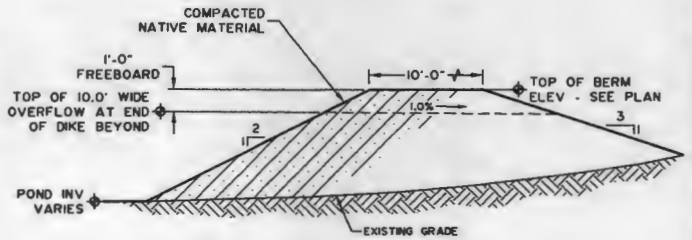


A/5 TYPICAL OVERFLOW PLAN
SCALE: 1" = 20'

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL CORNERS.
3. INSTALL CORNER IN FENCE WHERE ANGULAR DIFFERENCE IS 10° OR MORE.
4. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.



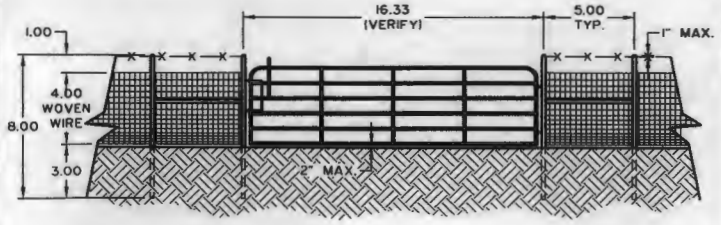
F/5 FIELD FENCE CORNER POST DETAIL
SCALE 1" = 5'



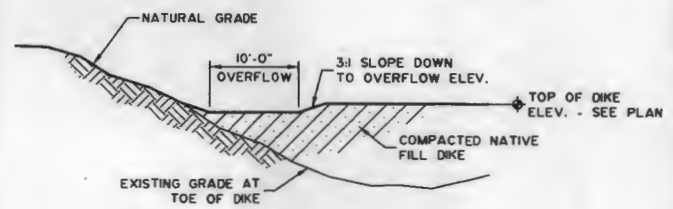
1. DESIGN STO[illegible] SIZING: 25 YEAR, 1 HOUR
2. MINIMUM DEPTH OF FREEBOARD: 1 FOOT

B/5 TYPICAL RETENTION POND SLOPE DETAIL
SCALE: 1/4" = 1'-0"

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL GATE OPENINGS.
3. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.
4. GATE TO BE 52" POWDER RIVER CLASSIC GATE WITH HINGE AND LOCKABLE LEVER LATCH.
5. GATE AT ENTRY SHALL BE TWO (2) 16' GATES WITH HINGE AND CENTER LOCKABLE LEVER LATCH.



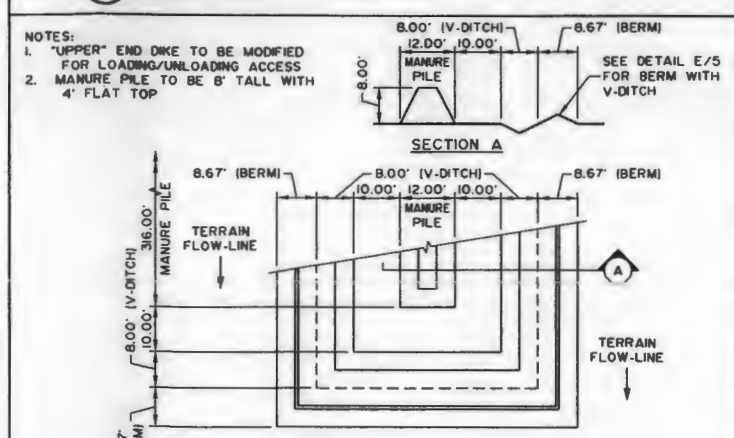
G/5 FIELD FENCE GATE INSTALLATION DETAIL
SCALE 1" = 5'



NOTE:
OVERFLOW MAY BE PLACED AT EITHER END OF THE RETENTION DIKE - SEE PLAN FOR SUGGESTED LOCATION.

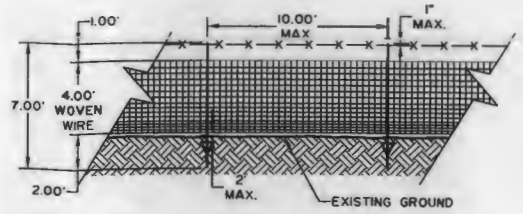
C/5 DIKE OVERFLOW DETAIL
SCALE: 1" = 10'

NOTES:
1. "UPPER" END DIKE TO BE MODIFIED FOR LOADING/UNLOADING ACCESS
2. MANURE PILE TO BE 8' TALL WITH 4' FLAT TOP



H/5 MANURE STOCKPILE CONTAINMENT DETAIL
SCALE : N.T.S.

NOTE:
1. USE 7.0' STEEL TEE POST DRIVE 18" TO 24" IN GROUND MAXIMUM 10' APART.
2. USE 4.0' HIGH WOVEN STEEL WIRE FIELD FENCE TIED TO TEE POST AT TOP, BOTTOM AND MIDDLE OF FENCE.
3. INSTALL 1 (ONE) STRAND TWISTED HEAVY GAGE BARBED WIRE TIED AT EACH TEE POST WITHIN 1" OF POST TOP.
4. INSTALL 1 (ONE) 4"ø STANDARD STEEL PIPE POST EVERY 100 (ONE HUNDRED) FEET OF STRAIGHT FENCE.



D/5 FIELD FENCE AND TEE POST DETAIL
SCALE 1" = 5'

DATE	REVISION	BY

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FILE: D:\DRAWINGS-LEH\2009\09467\09467drn3.dwg

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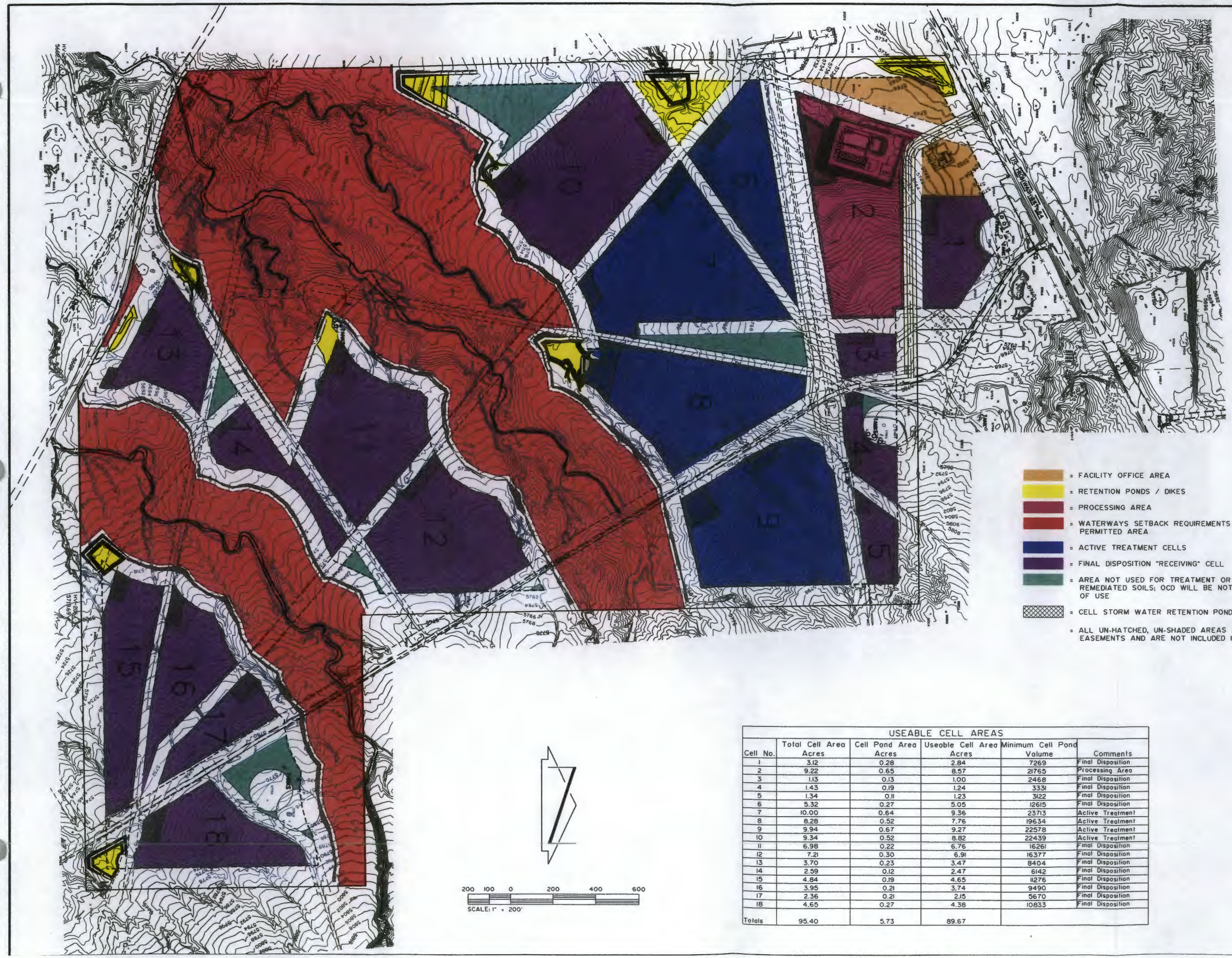
RETENTION DIKES AND DETAILS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1"=300'
FILE: 09467DRN3
SHEET 5 OF 15

46



USEABLE CELL AREAS

Cell No.	Total Cell Area Acres	Cell Pond Area Acres	Useable Cell Area Acres	Minimum Cell Pond Volume	Comments
1	3.12	0.28	2.84	7269	Final Disposition
2	9.22	0.65	8.57	21765	Processing Area
3	1.13	0.13	1.00	2468	Final Disposition
4	1.43	0.19	1.24	3331	Final Disposition
5	1.34	0.11	1.23	3122	Final Disposition
6	5.32	0.27	5.05	12615	Final Disposition
7	10.00	0.64	9.36	23713	Active Treatment
8	8.28	0.52	7.76	19634	Active Treatment
9	9.94	0.67	9.27	22578	Active Treatment
10	9.34	0.52	8.82	22439	Active Treatment
11	6.98	0.22	6.76	16261	Final Disposition
12	7.21	0.30	6.91	16377	Final Disposition
13	3.70	0.23	3.47	8404	Final Disposition
14	2.59	0.12	2.47	6142	Final Disposition
15	4.84	0.19	4.65	11276	Final Disposition
16	3.95	0.21	3.74	9490	Final Disposition
17	2.36	0.21	2.15	5670	Final Disposition
18	4.65	0.27	4.38	10833	Final Disposition
Totals	95.40	5.73	89.67		

DATE	REVISION	BY

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CELL MAP
CROWE BLANCO PROPERTY LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 200'
FILE: 09467DRN3
SHEET 6 OF 15

KEYED NOTES:

1. THE AREA SET ASIDE FOR WATER SHALL BE EXCLUDED FROM ANY CONSTRUCTION.
2. STORM WATER RETENTION POND DIKES TYPICAL. SEE SHEET 5 AND 6 FOR SPECIFICATIONS.
3. INSTALL 536.0'± 6"ø CLASS 200 PVC WATER LINE. CONNECT TO EXISTING 6'ø WATER LINE AT NORTHWEST CORNER OF PROPERTY.
4. INSTALL 6"x6"x6" TEE WITH 1 - 6" VALVE IN VALVE BOX.
5. EXTEND 186.0'± NEW 6"ø TO FENCE LINE OF TANK BATTERY AREA FOR FUTURE USE.
6. INSTALL 536.0'± OF UNDERGROUND ELECTRICAL CONDUIT TO BE SIZED BY THE CITY OF FARMINGTON ELECTRICAL COMPANY.
7. INSTALL APPROVED UNDERGROUND ELECTRICAL JUNCTION BOX.
8. EXTEND 172.0'± NEW UNDERGROUND ELECTRICAL CONDUIT TO FENCE LINE OF TANK BATTERY AREA.
9. CONTRACTOR TO EXTEND BOTH WATER AND UNDERGROUND ELECTRICAL SERVICE TO PROPOSED BUILDING AREA AS DIRECTED BY THE OWNER.

NOTE:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY CROSSINGS AND COORDINATE WITH EACH UTILITY OPERATOR PRIOR TO INSTALLATION OF NEW UTILITIES.

DATE	REVISION	BY

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OPERATION FACILITY SITE PLAN
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

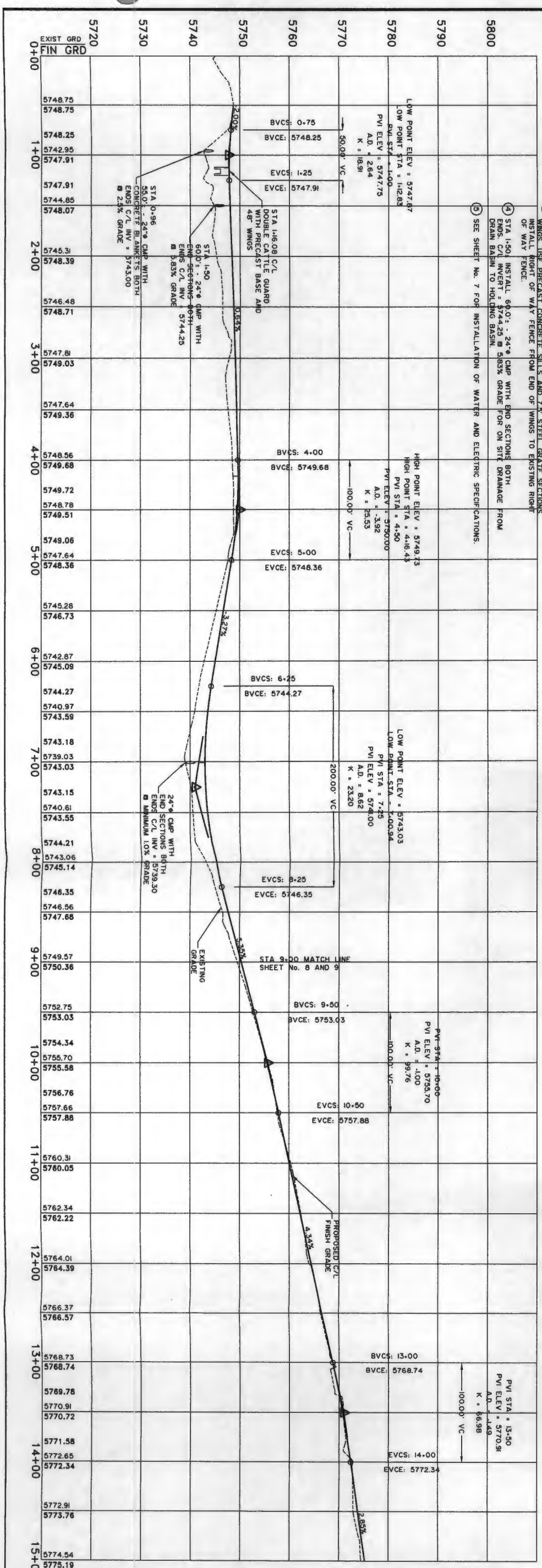
DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 100'
FILE: 9467SET
SHEET 7 OF 15

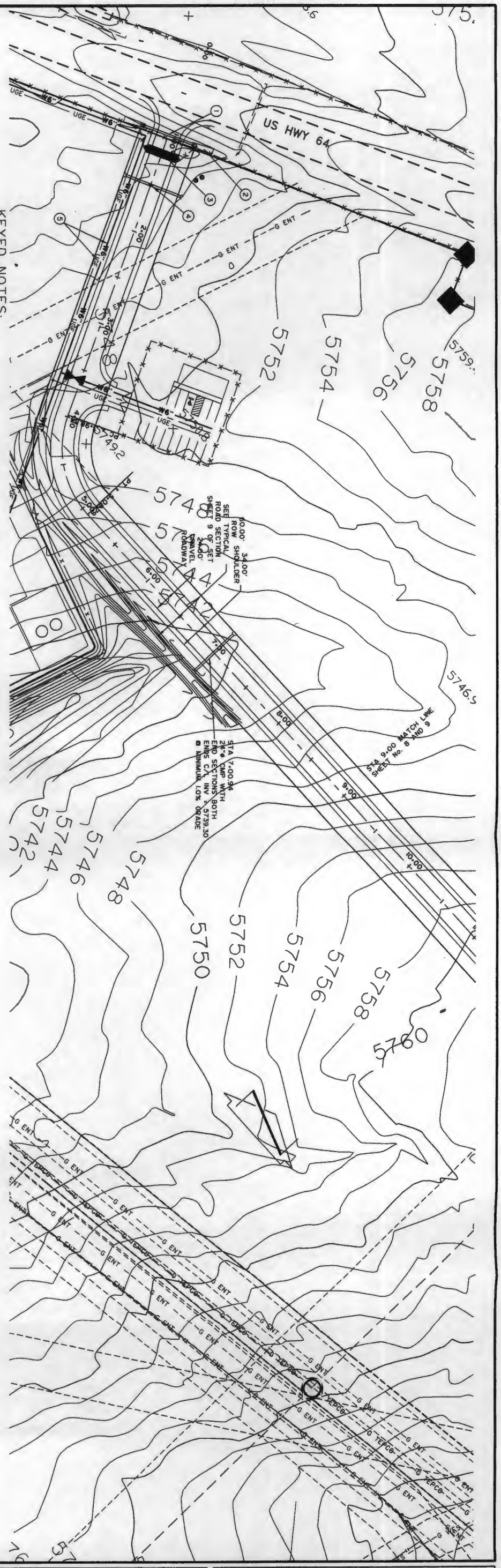
100 50 0 100 200 300
1" = 100' SCALE IN FEET

4.8

KEYED NOTES:

1. STA 0+96 INSTALL 60.0'± - 24"ø CMP WITH CONCRETE BLANKETS BOTH ENDS C/L INV = 5743.00 @ MINIMUM 3.33% GRADE TO CONTINUE DRAINAGE IN RIGHT OF WAY AS PER NMDOT STANDARD SH-22-1/2. & SH-22-2/2.
2. POURED IN PLACE CONCRETE PIPE CULVERT BLANKET AT MAXIMUM 8:1 SLOPE BOTH ENDS AS PER NMDOT STANDARD SH-22-1/2. & SH-22-2/2.
3. STA 1+16± 30.0' LONG BY 8.0' WIDE CATTLE GUARD WITH STEEL 4.0' WINGS. USE PRECAST CONCRETE SILLS AND 7/8 STEEL GRATE SECTIONS. INSTALL RIGHT OF WAY FENCE FROM END OF WINGS TO EXISTING RIGHT OF WAY FENCE.
4. STA 1+50± INSTALL 60.0'± - 24"ø CMP WITH END SECTIONS BOTH ENDS. C/L INVERT = 5744.25 @ 5.83% GRADE FOR ON SITE DRAINAGE FROM DRAIN BASIN TO HOLDING BASIN.
5. SEE SHEET No. 7 FOR INSTALLATION OF WATER AND ELECTRIC SPECIFICATIONS.





DRAWN BY: LH	PLAN AND PROFILE ENTRANCE ROAD
PROJ. 09467	CROWE BLANCO PROPERTIES LLC
SCALE:1" = 50'H	OPERATED BY INDUSTRIAL ECOSYSTEMS
FILE:09467SET	BLANCO, NEW MEXICO
SHEET 8 OF 15	
DATE: 10/25/2013	

NEW MEXICO PROFESSIONAL ENGINEER — RICHARD P. CHENEY — 9651 — REGISTERED PROFESSIONAL LAND SURVEYOR — NEW MEXICO

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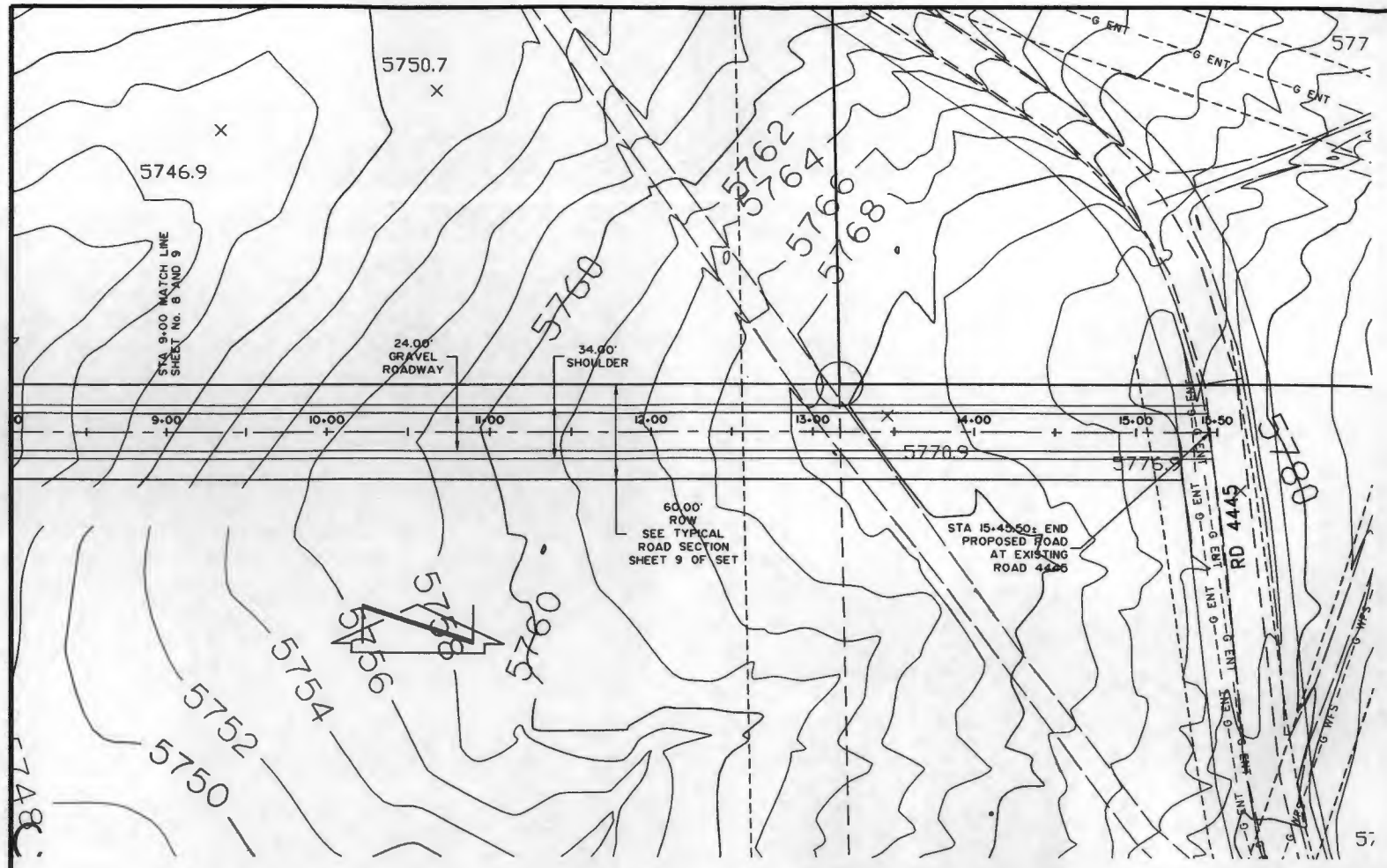
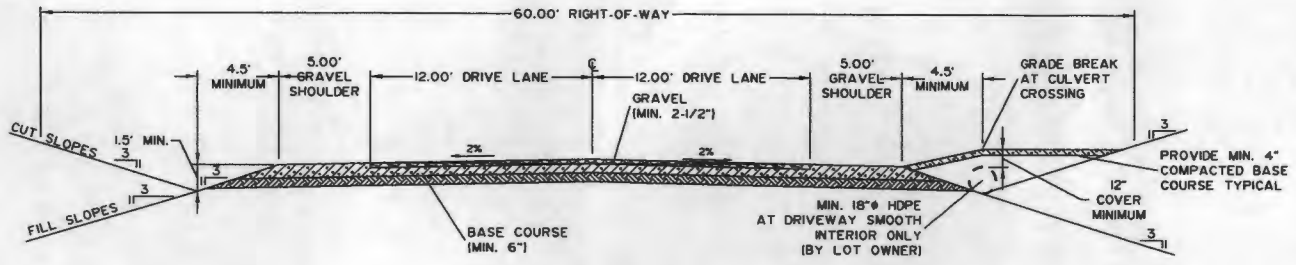
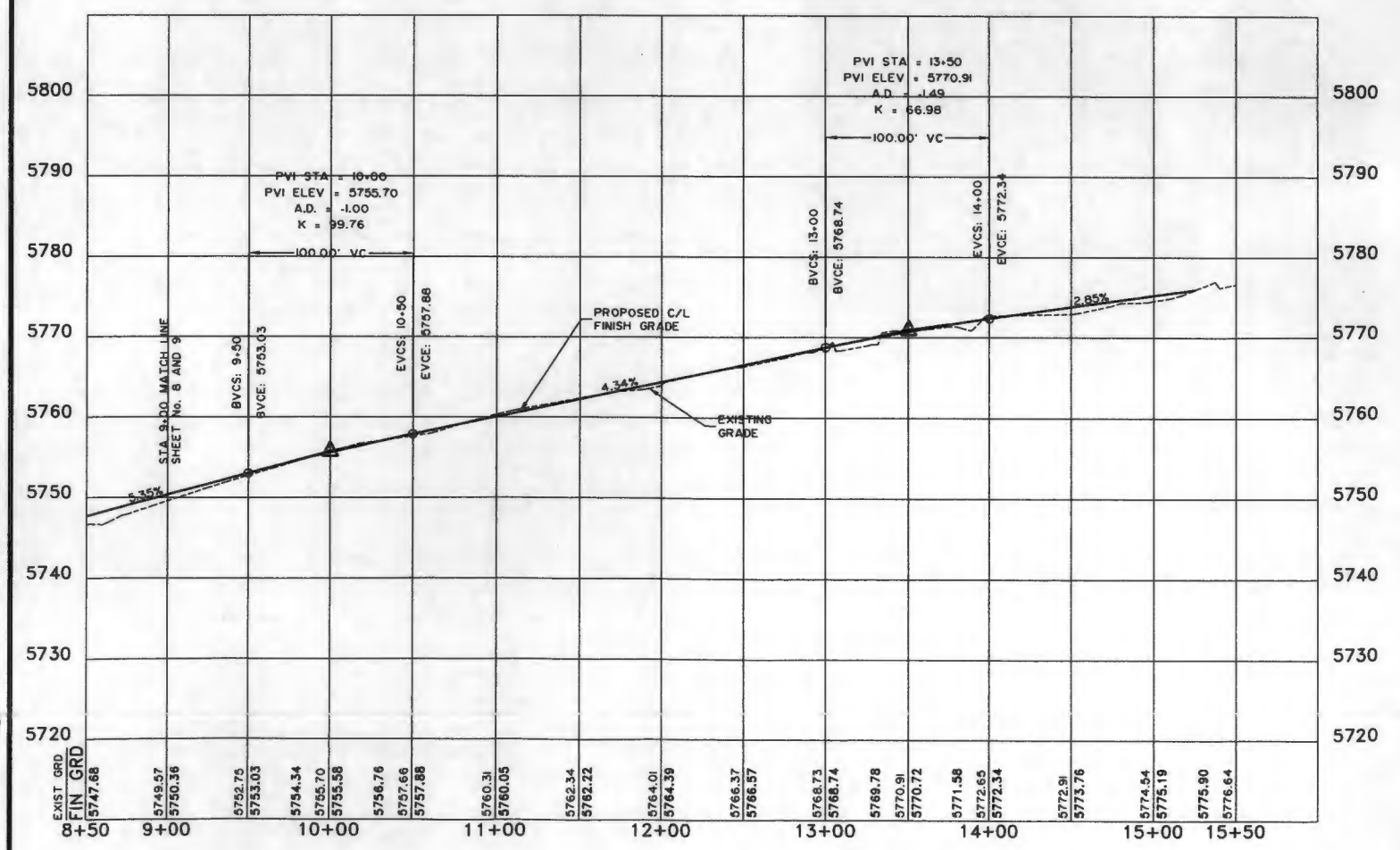




TYPICAL ENTRANCE ROAD SECTION 60' R/W
SCALE: 1" = 5'



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PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\94673st.dwg

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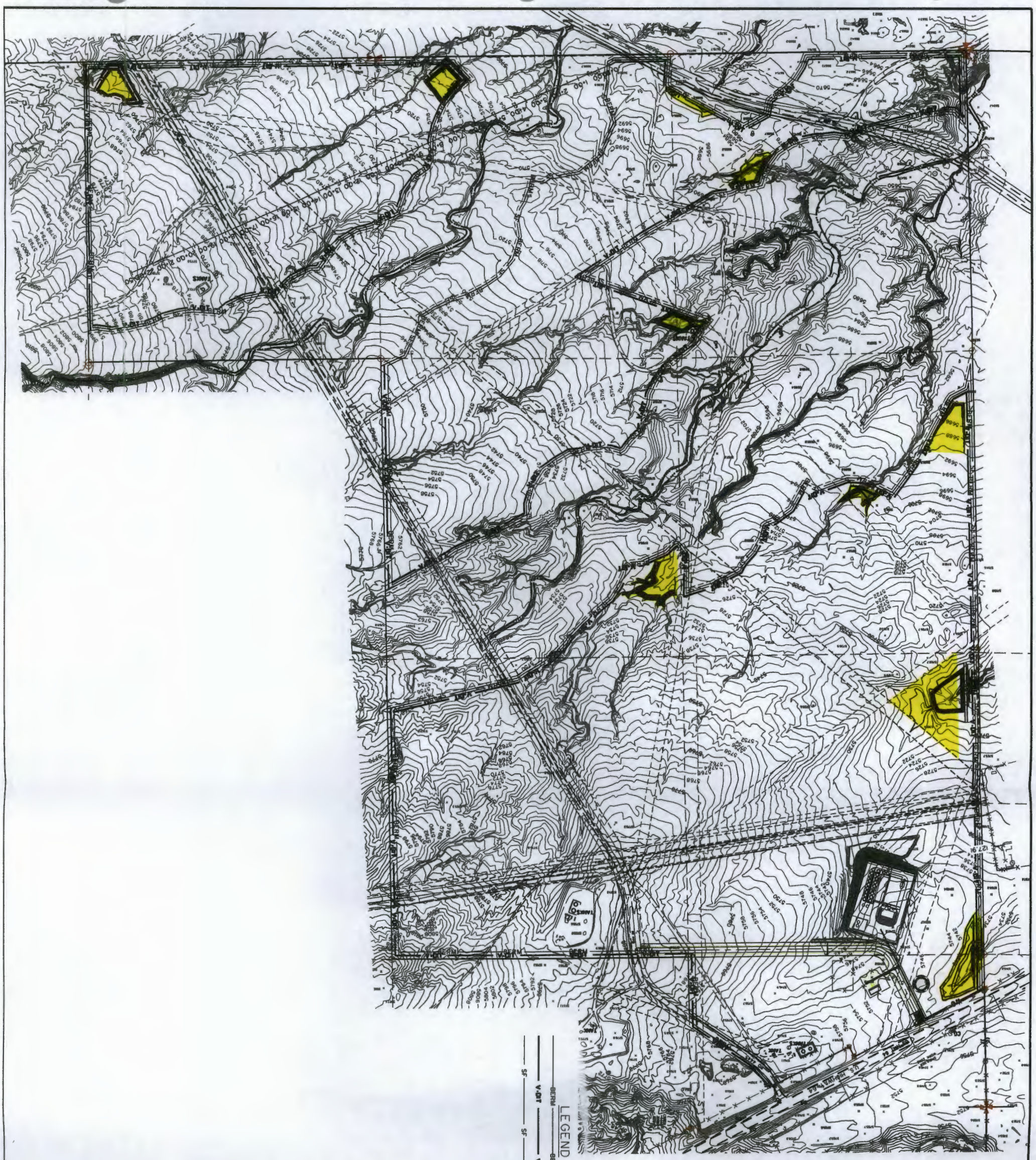
PLAN AND PROFILE ENTRANCE ROAD
CROWE BLANCO PROPERTIES LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 50'H
FILE: 09467SET
SHEET 9 OF 15

4.10



RUN-ON/OFF CONTROL PLAN
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467SET
SHEET 15 OF 15

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467set.dwg

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS, INC.
BLANCO FACILITY PROCESS AREA ENGINEERING DESIGN
BLANCO, SAN JUAN COUNTY, NEW MEXICO

AUGUST, 2011

REVISED FEBRUARY, 2013

PROJECT SITE
BLANCO, NEW MEXICO

VICINITY MAP
NOT TO SCALE

SHEET INDEX

SHEET NO.	DRAWING
C101	COVER SHEET
C102	GENERAL NOTES AND LEGEND
C103	IMPROVEMENT PLAN
C104	PROPOSED SITE PLAN
C105	LINER GRADING AND DRAINAGE PLAN
C106	SURFACE GRADING AND DRAINAGE PLAN
C107	FOUNDATION PLAN
C108	HORIZONTAL CONTROL PLAN
C109	PIPING PLAN
C110	PROCESS PLAN AND ENGINEER DESIGN PLAN

PROJECT SITE

SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF
SECTION 16, TOWNSHIP 29 WEST, RANGE 9 WEST,
SAN JUAN COUNTY, NEW MEXICO

LOCATION MAP
NOT TO SCALE

PREPARED BY:

SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BLVD.
FARMINGTON, NM 87401
ATTN: DOUGLAS W. MIZE, PE
PHONE: 505-325-7535

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION ON BEHALF OF SOUDER, MILLER & ASSOCIATES.

DOUGLAS W. MIZE, PE 13678
SENIOR PROJECT ENGINEER

11.4.2013
DATE

DOUGLAS W. MIZE
NEW MEXICO
13678
11.4.2013
PROFESSIONAL ENGINEER

No.	Revision	Date	Description	By	Chk'd
1		4/2012	OCD REVIEW COMMENTS	DWM	
2		2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
COVER SHEET

SOUDER, MILLER & ASSOCIATES
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FARMINGTON, NM 87401
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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	OJB	DWM

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Date: AUGUST, 2011
Scale: Horiz: NTS Vert: N/A
Project No: 5119829
Sheet: C101

4.12

P:\5481 Ensp Ponca (5119829)\CADC3d\process plan design\REVISIONS 9-30-2013\5119829COVER NOTES SITE LAYOUTS.dwg _ 11/4/2013 12:05 PM

GENERAL NOTES

1) THE SITE WORK SHALL BE IN ACCORDANCE WITH ALL SAN JUAN COUNTY, NEW MEXICO AND STATE OF NEW MEXICO CODES FOR CONSTRUCTION.

2) EXISTING UTILITIES ARE SHOWN BASED UPON INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY UTILITY LOCATIONS AND ELEVATIONS TO AVOID POTENTIAL CONFLICTS. ANY CONFLICTS SHALL BE DIRECTED TO THE UTILITY PROVIDER, THE OWNER AND THE ENGINEER.

3) THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH ALL UTILITY COMPANIES WITH REGARD TO RELOCATING, ADJUSTING, REPLACING, AND/OR REPAIRING UTILITIES DURING CONSTRUCTION.

4) THE CONTRACTOR SHALL NOTIFY LOCAL FIRE DEPARTMENT 24 HOURS BEFORE CONSTRUCTION ACTIVITIES BEGIN.

5) THE CONTRACTOR SHALL SLOPE ALL TRENCHES AND SLOPES AS REQUIRED TO COMPLY WITH STATE AND FEDERAL CODES TO PROTECT LIFE AND SAFETY OF WORKMEN DURING CONSTRUCTION.

6) THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION ACTIVITY SAFETY INCLUDING, BUT NOT LIMITED TO, TRENCH EXCAVATION AND SHORING, TRAFFIC CONTROL AND SITE SECURITY.

7) THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STREETS FREE AND CLEAR OF ANY DEBRIS THAT IS TRACKED FROM THE SITE.

8) THE CONTRACTOR SHALL KEEP, AND UPDATE, AN AS-BUILT SET OF DRAWINGS DURING THE CONSTRUCTION OF THE PROJECT. AS-BUILT DRAWINGS SHALL BE DELIVERED TO THE OWNER AFTER CONSTRUCTION.

9) PRIOR TO AND DURING CONSTRUCTION, ALL ACCESS ROADS SHALL BE SERVICEABLE AND MAINTAINED FOR FIRE PROTECTION AND EMERGENCY VEHICLE ACCESS.

10) ITEMS DESIGNATED FOR REMOVAL WITHOUT SALVAGE SHALL BE PLACED IN AN ENVIRONMENTALLY SUITABLE DISPOSAL SITE.

11) THE CONTRACTOR SHALL BE RESTRICTED TO A 35 TON (MAXIMUM) NON-VIBRATORY ROLLER FOR COMPACTION IN AREAS WHERE THE USE OF HEAVIER EQUIPMENT COULD DAMAGE UNDERGROUND UTILITIES OR PERMANENTLY DAMAGE ADJACENT STRUCTURES.

12) THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEAN-UP OF SPILLS ASSOCIATED WITH THE CONSTRUCTION OF THE PROJECT AND SHALL RESPOND TO SPILLS OF HAZARDOUS MATERIALS (SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS THAT MAY THREATEN THE PUBLIC OR THE ENVIRONMENT, TO THE PROJECT MANAGER. ANY SPILLS ASSOCIATED WITH THE PROJECT SHALL BE CLEANED-UP BY THE CONTRACTOR. THE CONTRACTOR SHALL BEAR ALL EXPENSES OF THE COST OF CLEAN UP OF SUCH SPILLS.

13) THE CONTRACTOR SHALL REPLACE ALL DESTROYED OR DAMAGED SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL TO THOSE REMOVED OR DAMAGED.

14) TOPOGRAPHY INFORMATION, INCLUDING HORIZONTAL AND VERTICAL DATA, SHOWN ON THESE PLANS IS SHOWN ACCORDING TO INFORMATION PROVIDED BY OWNER. SOUDER, MILLER & ASSOCIATES HAS RELIED ON THIS DATA TO BE ACCURATE FOR THIS DESIGN.

15) THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS, AND APPURTENANCES NECESSARY TO COMPLETE THE WORK INTENDED AND SHOWN ON THE DRAWINGS.

16) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS ASSOCIATED WITH THE PROJECT.

17) ALL WORK IN THE VICINITY OF LIVE STREAMS, WATER IMPROVEMENTS, WETLANDS, OR IRRIGATION SUPPLIES SHALL BE COMPLETED IN SUCH A MANNER AS TO MINIMIZE VEGETATION REMOVAL, SOIL DISTURBANCE AND EROSION.

18) ALL DESIGN SLOPES ON THE SITE ARE SHOWN AS 3:1 (H:V) UNLESS OTHERWISE SPECIFIED.

19) THE CONTRACTOR SHALL REQUEST A LINE SPOT, CALL 811, BEFORE DIGGING.

20) SITE COMPACTION WORK SHALL BE COMPLETED AND IN ACCORDING TO GEOTECHNICAL REPORT PREPARED BY GEOMAT, INC. (PROJECT No. 102-1039)

21) ALL ELECTRICAL DRAWINGS AND ASSOCIATED SPECIFICATIONS ARE TO BE PROVIDED BY OWNER.

PIPING NOTES:

1) ALL PIPING SHALL BE PLACED 3' BELOW FINISH GRADE.
2) ALL PIPING SHALL BE 4" HDPE DR17 EXCEPT WHERE STEEL PIPING IS USED TO TIE INTO TANKS AND AT PENETRATIONS.
3) BOND BREAKER SHALL BE USED ON ALL PENETRATIONS THROUGH CONCRETE FLOORS AND WALLS.
4) ISOLATION VALVES SHOWN, SHALL CONSIST OF THE ISOLATION VALVE AND VALVE BOX COVERS.
5) CONTRACTOR SHALL INSTALL 4"X3" REDUCER @ TJ PUMPS.
6) ALL PUMPS HALL BE MOUNTED ON A CONCRETE PAD PER MANUFACTURERS RECOMMENDATIONS
7) ALL PUMP SHALL BE COVERED WITH AN INSULATION BOX TO PROTECT PUMP AND PIPING FROM FREEZING. ALL PIPING SHALL BE CONTAINED WITHIN BOX ENCLOSURE @ THE POINT IT IS BURIED 3' BELOW GRADE.

LEGEND

— · — · —	SWALE
—— 6995 ——	EXISTING MAJOR CONTOUR
—— 5994 ——	EXISTING MINOR CONTOUR
——6995——	FINISH MAJOR CONTOURS
——6994——	FINISH MINOR CONTOURS
— — — —	PROPERTY LINE
x 6999.00 FG	FINISH GRADE ELEVATION
⟶	SLOPE
——x——	CHAINLINK FENCE
⟹	DIRECTION OF FLOW
———	4"ø HDPE PIPING OR STEEL & DIRECTION OF FLOW

ABBREVIATIONS

FG	FINISH GRADE
INV	INVERT
TOE	TOE OF POND
TOP	TOP OF POND/LINER
FL	FLOWLINE
ME	MATCH EXISTING

EARTHWORK VOLUMES

CUT -4622.57 CY

FILL -8792.26 CY

EARTHWORK VOLUMES BASED UPON A ZERO SHRINK/SWELL FACTOR. CONTRACTOR TO BASE BID UPON CONTRACTOR'S TAKE OFF.

EMERGENCY CONTACT NUMBERS

FIRE AND POLICE EMERGENCIES	911
TERRY LATTIN, INDUSTRIAL ECOSYSTEMS, INC., MANAGER	505-632-1782

ENGINEER
DOUGLAS W. MIZE, P.E.
SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BOULEVARD
FARMINGTON, NEW MEXICO
(505) 325-7535

OPERATOR
TERRY LATTIN, MANAGER
INDUSTRIAL ECOSYSTEMS, INC.,
505-632-1782
49 CR 3150
Aztec, NM 87410

OWNER
CROWE BLANCO PROPERTY LLC.

PROJECT INTENT

THE INTENT OF THESE DRAWINGS ARE TO PROVIDE A DESIGN FOR THE PROCESS ENGINEERING AND GRADING AND DRAINAGE CONSTRUCTION PLAN SET THAT REPRESENTS THE CONSTRUCTION AROUND THE PROCESS PLAN.

DOUGLAS W. MIZE NEW MEXICO 13678 11.4.2013 PROFESSIONAL ENGINEER

New Mexico One Call, Inc. NMOC Call Two Working Days Before You Dig It's Free and It's the Law!

To Request a Line Locate Dial 811

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

Revision	Date	Description	By	Ckd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

INDUSTRIAL ECOSYSTEMS INC — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
GENERAL NOTES AND LEGEND

4.13

SOUDER, MILLER & ASSOCIATES
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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

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Date: AUGUST, 2011

Scale: Horiz: N/A Vert: N/A

Project No. 5119829

Sheet: C102

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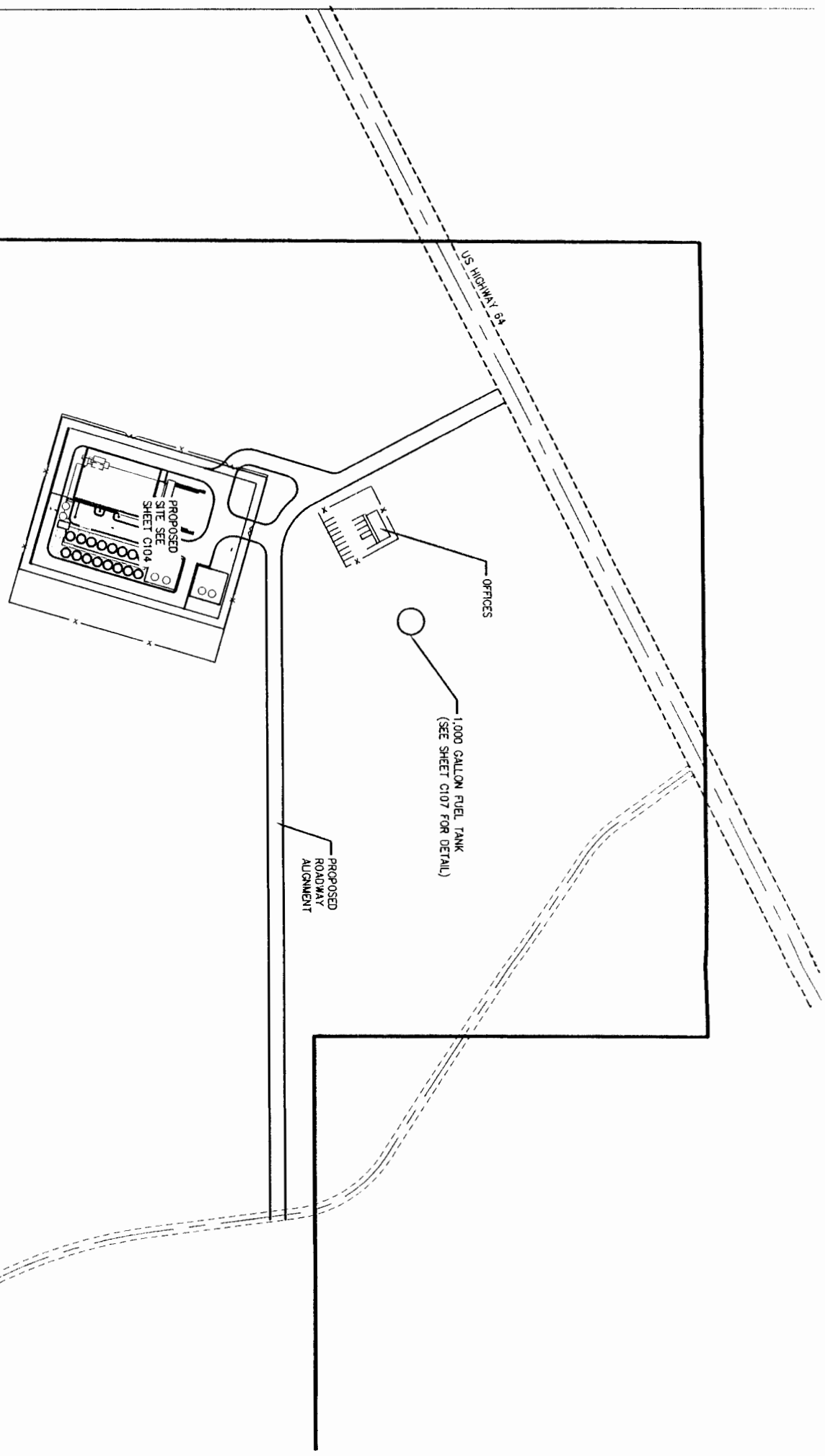

DOUGLAS W. MAZE
NEW MEXICO
13682
PROFESSIONAL ENGINEER
11.4.2012

SCALE: 1" = 100'

Sheet	C103
Project No	5119829
Scale: Horz	1"=100'
Vert	N/A
Date	AUGUST, 2011

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Designed	DWM
Drawn	DJB
Checked	DWM

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Surveying

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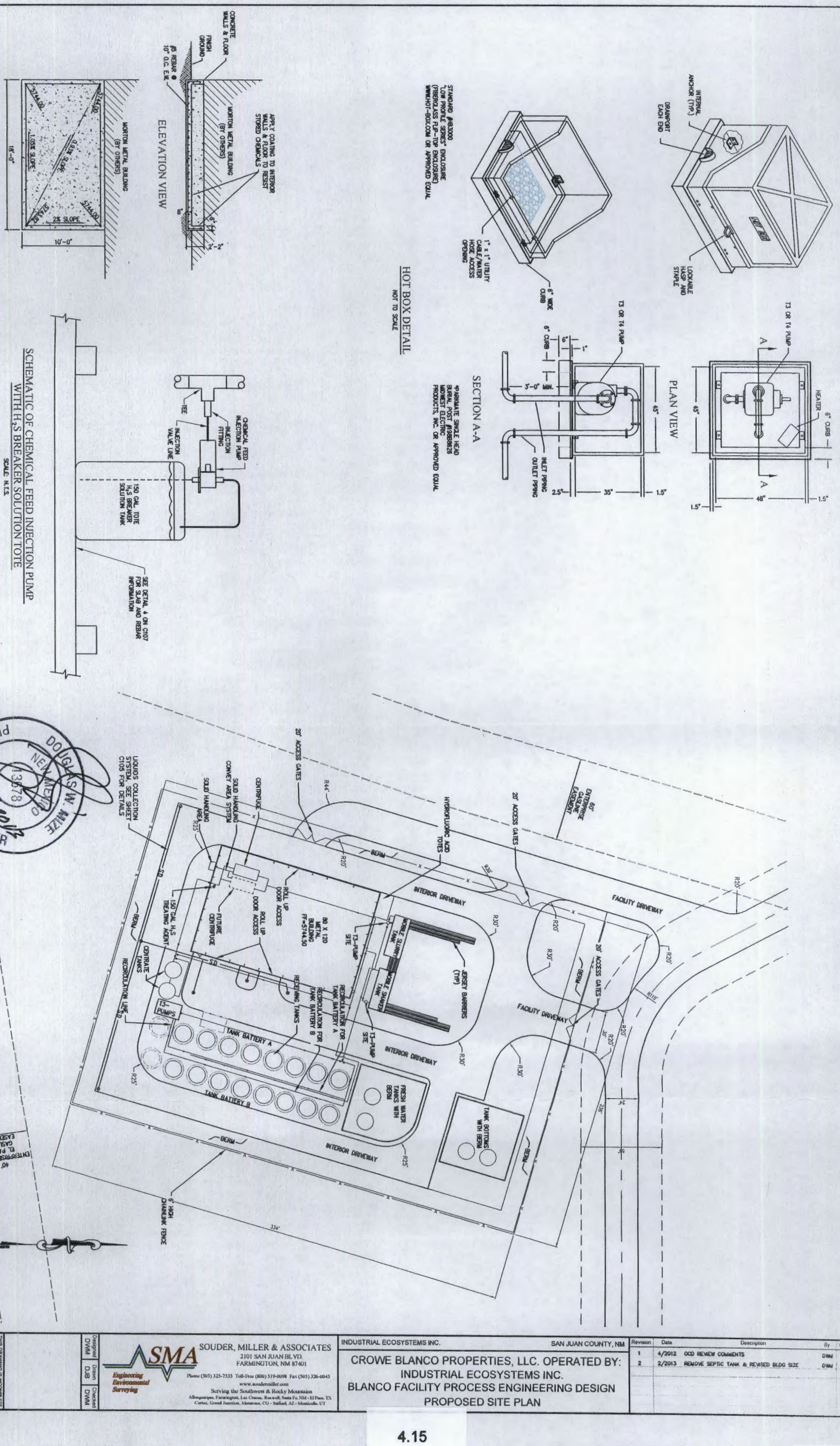
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
IMPROVEMENT PLAN

Revision	Date	Description	By	Check
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	



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Date: AUGUST, 2011
Scale: Horiz: 1" = 30' Vert: N/A
Project No: 5119829
Sheet: C104

Designed DWM | Drawn DJB | Checked DWM

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INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY: INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROPOSED SITE PLAN

Revision	Date	Description	By	Chk'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

5740.0
5745.0
CC106
5745
5740
ST30
ST35
ST40
ST45
5745.0
5740.0
5735.0
5730.0
CC105

CONTOUR INTERVAL 1'
SCALE: 1"=20'

NOTE: THE 12" SAND LAYER IS LOCATED TO WARN CONTRACTORS AND EQUIPMENT OPERATORS WHEN THEY ARE CLOSE TO THE HDPE LINER. ALL PERSONNEL SHOULD BE NOTIFIED OF THIS PARAMETER.

PROFESSIONAL ENGINEER
DOUGLAS W. MIZE
NEW MEXICO
13708
11.4.2013

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Date: AUGUST, 2011
Scale: Horiz. 1"=20'
Vert. N/A
Project No: 51198/29
Sheet: C105

Designed DWM | Drawn DJB | Checked DWM

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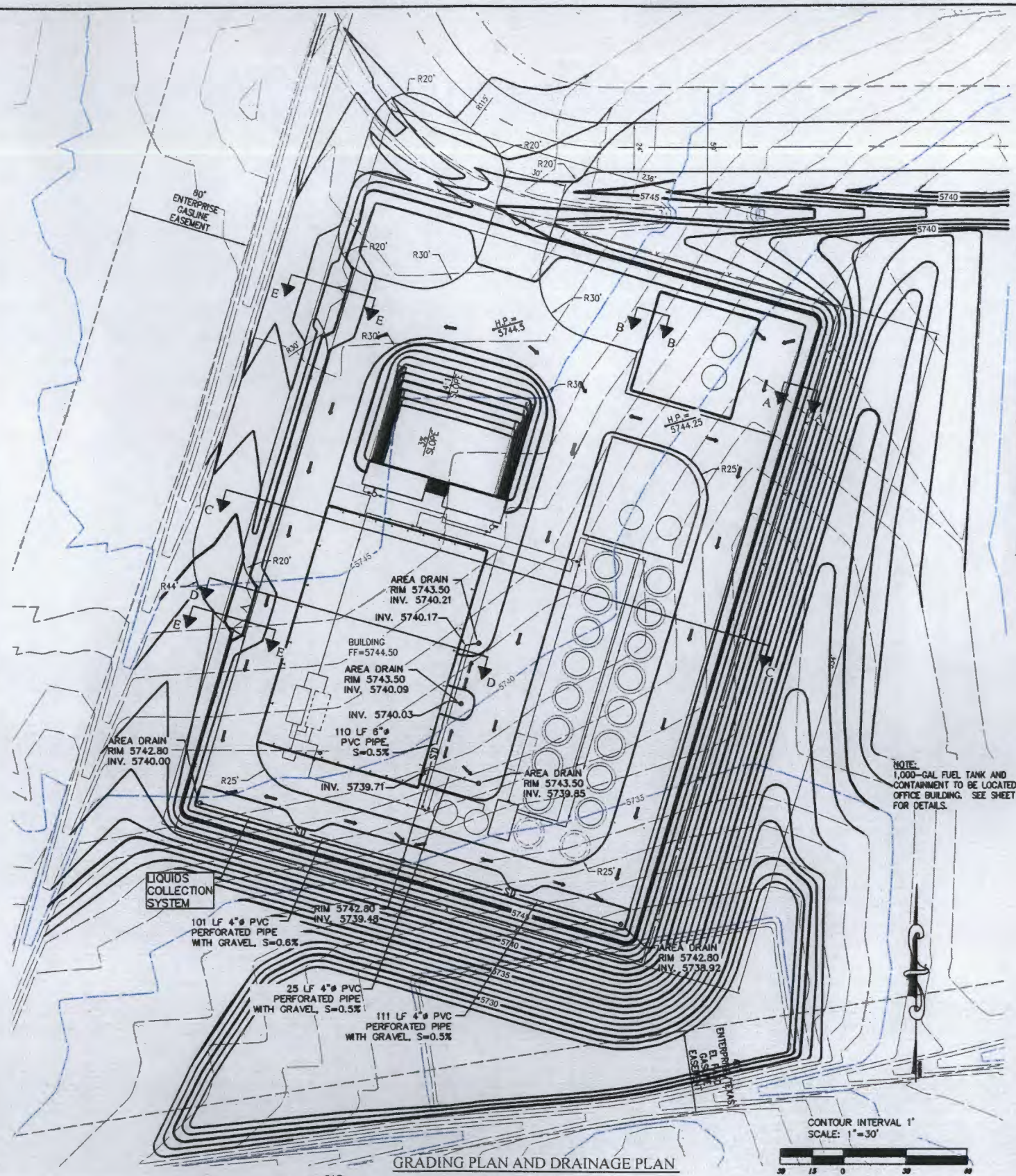
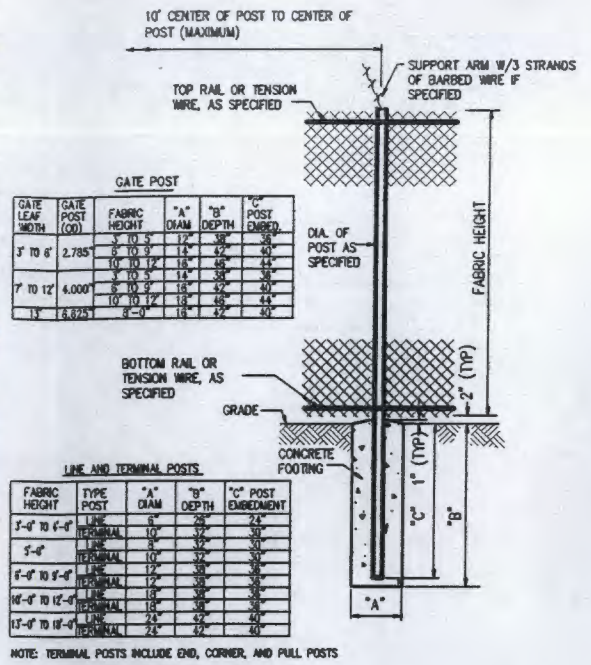
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
LINER GRADING AND DRAINAGE

Revision	Date	Description	By	Chk'd



GRADING PLAN AND DRAINAGE PLAN
SCALE: 1" = 30'



GATE POST

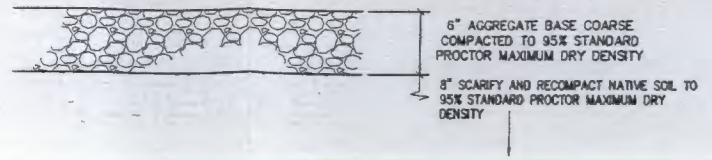
GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
3' TO 6'	2.785"	6' TO 9'	14"	42"	40"
		10' TO 12'	18"	66"	64"
7' TO 12'	4.000"	6' TO 9'	14"	42"	40"
		10' TO 12'	18"	66"	64"
13'	6.625"	6'-0"	18"	42"	40"

LINE AND TERMINAL POSTS

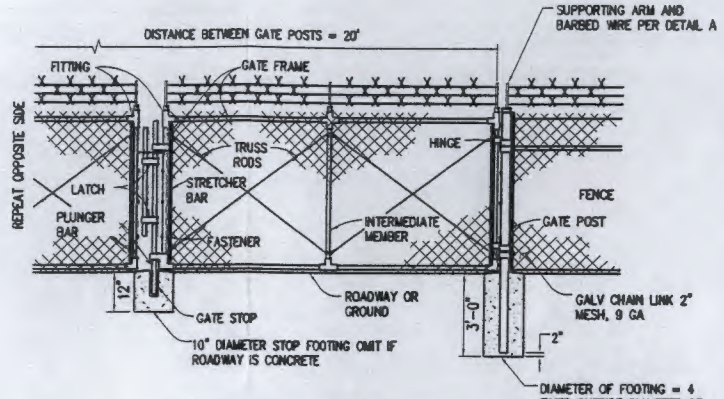
FABRIC HEIGHT	TYPE POST	"A" DIAM	"B" DEPTH	"C" POST EMBEDMENT
3'-0" TO 6'-0"	LINE	8"	36"	34"
	TERMINAL	10"	42"	40"
5'-0"	LINE	10"	42"	40"
	TERMINAL	12"	42"	40"
6'-0" TO 8'-0"	LINE	12"	42"	40"
	TERMINAL	14"	42"	40"
10'-0" TO 12'-0"	LINE	12"	42"	40"
	TERMINAL	14"	42"	40"
13'-0" TO 18'-0"	LINE	24"	42"	40"
	TERMINAL	24"	42"	40"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS

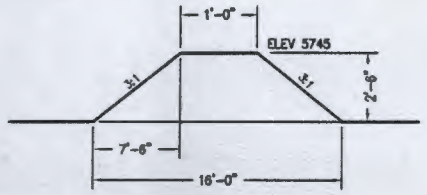
6' HIGH CHAIN LINK FENCE FOUNDATION
NOT TO SCALE



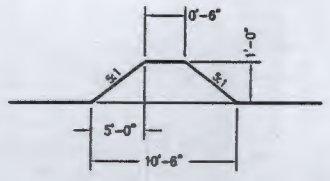
INTERIOR ACCESS ROAD AND FACILITY DRIVEWAY SECTION
NOT TO SCALE



6' HIGH CHAIN LINK GATE
NOT TO SCALE

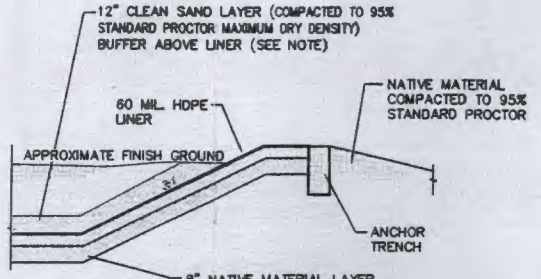


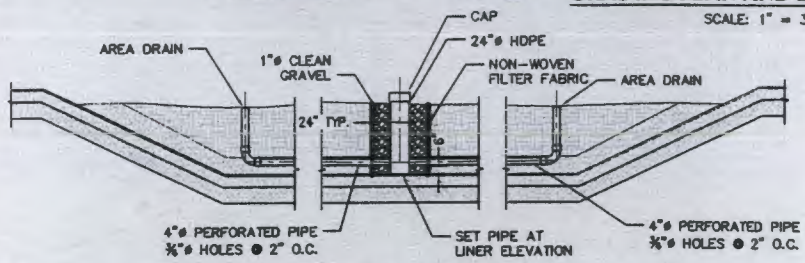
PROCESS BOUNDARY BERM SECTION A-A
NOT TO SCALE



TYPICAL PROCESS INTERIOR BERM SECTION B-B
NOT TO SCALE

TYPICAL SITE CROSS SECTION SECTION C-C
NOT TO SCALE





LIQUIDS COLLECTION SYSTEM
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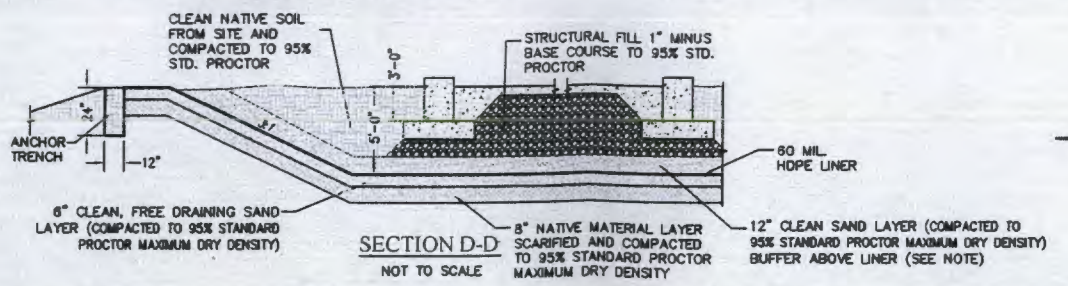
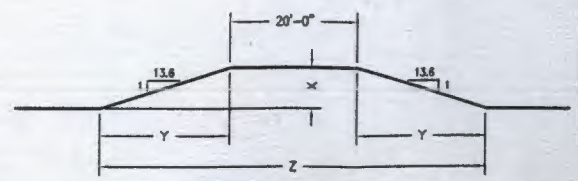


SECTION D-D
NOT TO SCALE



DRIVE OVER BERM SCHEDULE

BERM HIEGHT("X")	"Y" DIM.	"Z" DIM.
1'-0"	13.6'	47.2'
2'-0"	27.2'	74.4'
3'-0"	40.8'	101.6'
4'-0"	54.4'	128.8'

DRIVE OVER BERM SECTION E-E
NOT TO SCALE

NOTE: THE 12" SAND LAYER IS LOCATED TO WARN CONTRACTORS AND THE OPERATOR THAT WHEN DIGGING, THEY ARE CLOSE TO THE HDPE LINER. ALL PERSONNEL SHOULD BE NOTIFIED OF THIS PARAMETER.

Revision	Date	Description	By	Chkd
1	4/2012	GDD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC.

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
SURFACE GRADING AND DRAINAGE PLAN

DOUGLAS W. MIZE
NEW MEXICO
13878
PROFESSIONAL ENGINEER
11-4-2013

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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

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Date: AUGUST, 2011

Scale: Horiz: AS SHOWN
Vert: N/A

Project No: 5119829

Sheet: C106

4.17

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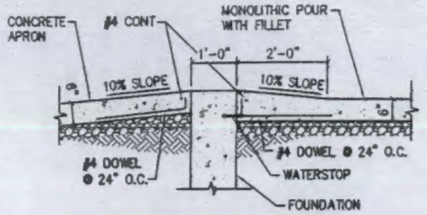
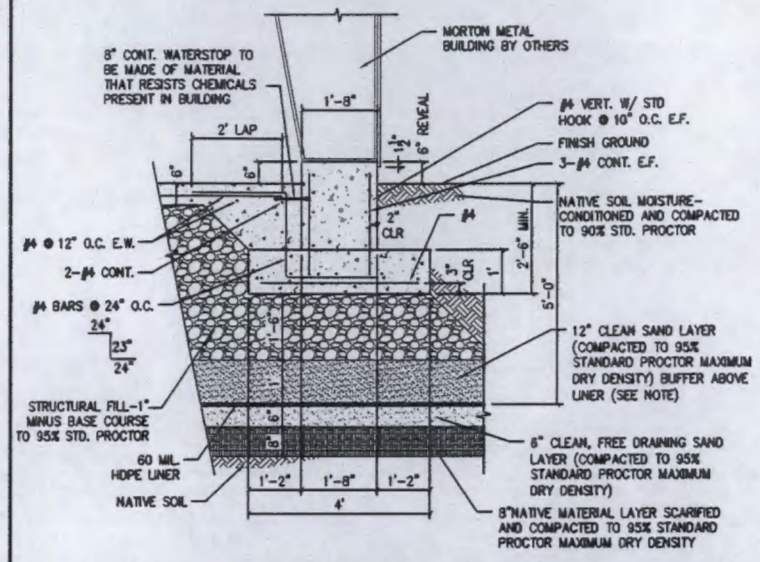
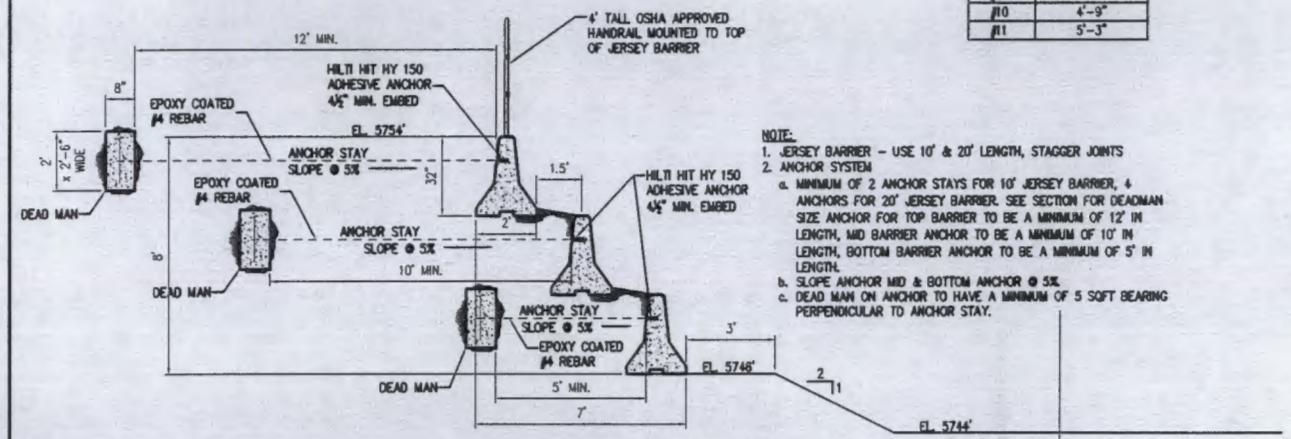


1 / C107 RAMP DETAIL
SCALE: 1/2"=1'-0"

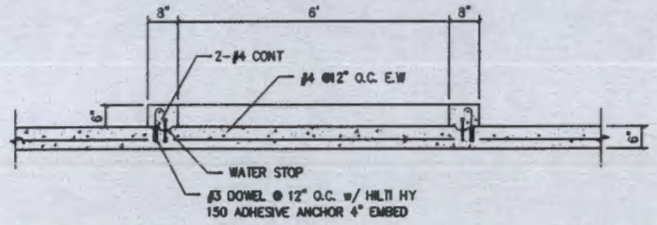


2 / C107 PERIMETER FOOTING DETAIL
SCALE: 1/2"=1'-0"

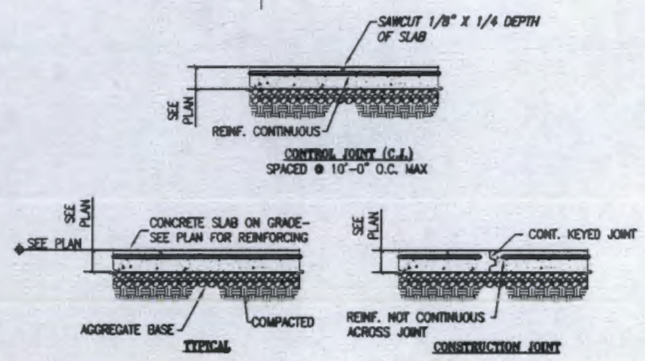


NOTE:
1. JERSEY BARRIER - USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
   a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
   b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%.
   c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SQFT BEARING PERPENDICULAR TO ANCHOR STAY.

3 / C107 JERSEY BARRIER DETAIL
NOT TO SCALE



4 / C107 SECONDARY CONTAINMENT DETAIL
SCALE: 1/2"=1'-0"



5 / C107 SLAB JOINTS
NOT TO SCALE

GENERAL STRUCTURAL NOTES

1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2009 EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318

2. DESIGN CRITERIA:
   A. VERTICAL:
      ROOF SNOW 25 PSF
   B. HORIZONTAL:
      (1) WIND*
      BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
      EXPOSURE "C"
      (2) SEISMIC*
      SITE CLASS "D"

3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
   E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.

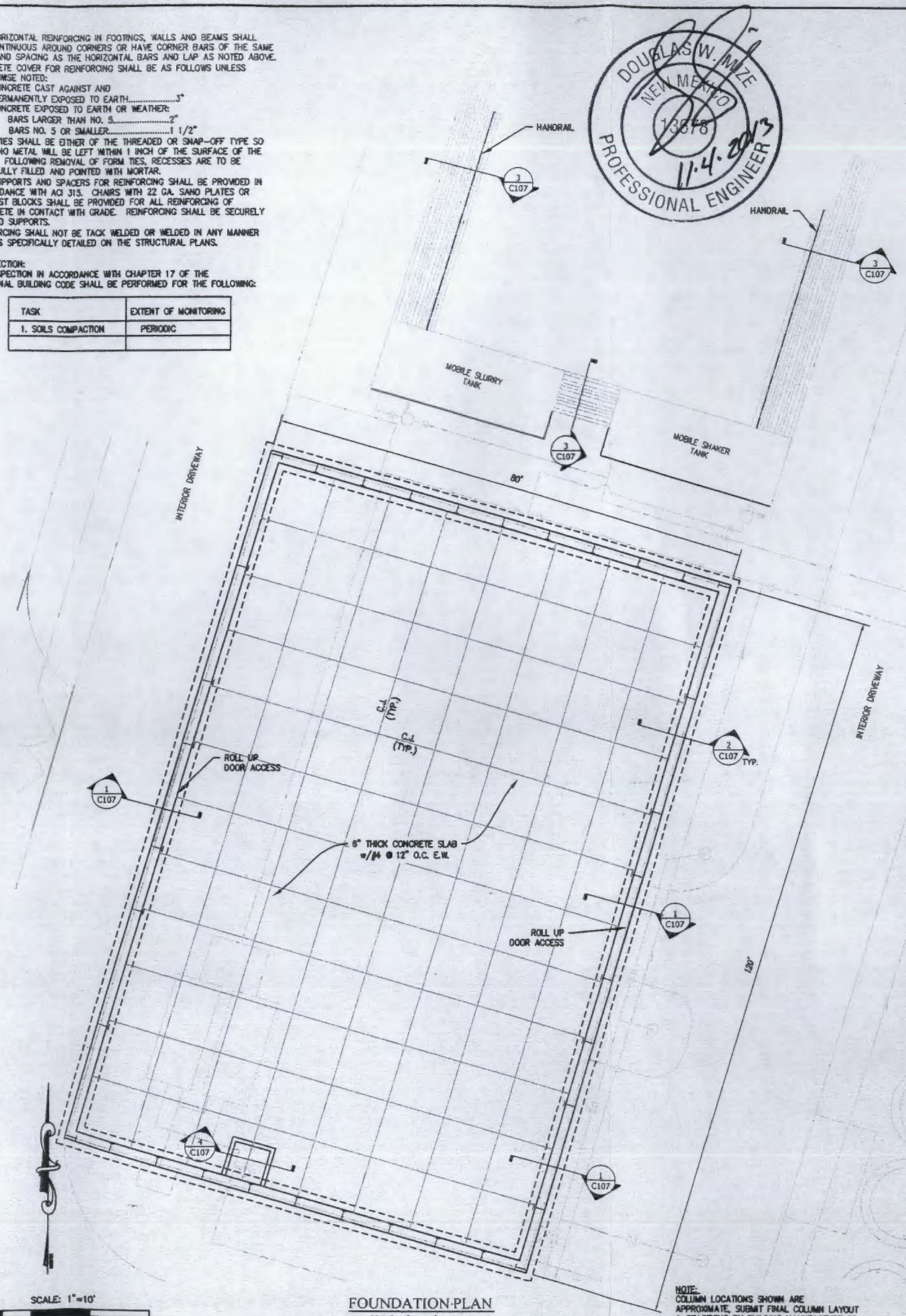
4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMAL WEIGHT CONCRETE:
      A. F'C = 3000 PSI @ 28 DAYS
      (4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

      (4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
      (5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
      A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
      B. CONCRETE EXPOSED TO EARTH OR WEATHER:
         1. BARS LARGER THAN NO. 5.....2"
         2. BARS NO. 5 OR SMALLER.....1 1/2"
      (6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
      (7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.

5. SPECIAL INSPECTION:
   A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC



FOUNDATION PLAN
SCALE: 1" = 10'

SCALE: 1"=10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE, SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

DOUGLAS W. MAZE
NEW MEXICO
13818
11.4.2013
PROFESSIONAL ENGINEER

Revision	Date	By	Ck'd	Description

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC.

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
FOUNDATION PLAN

SOUDER, MILLER & ASSOCIATES
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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
GYQ	DJB	DWM

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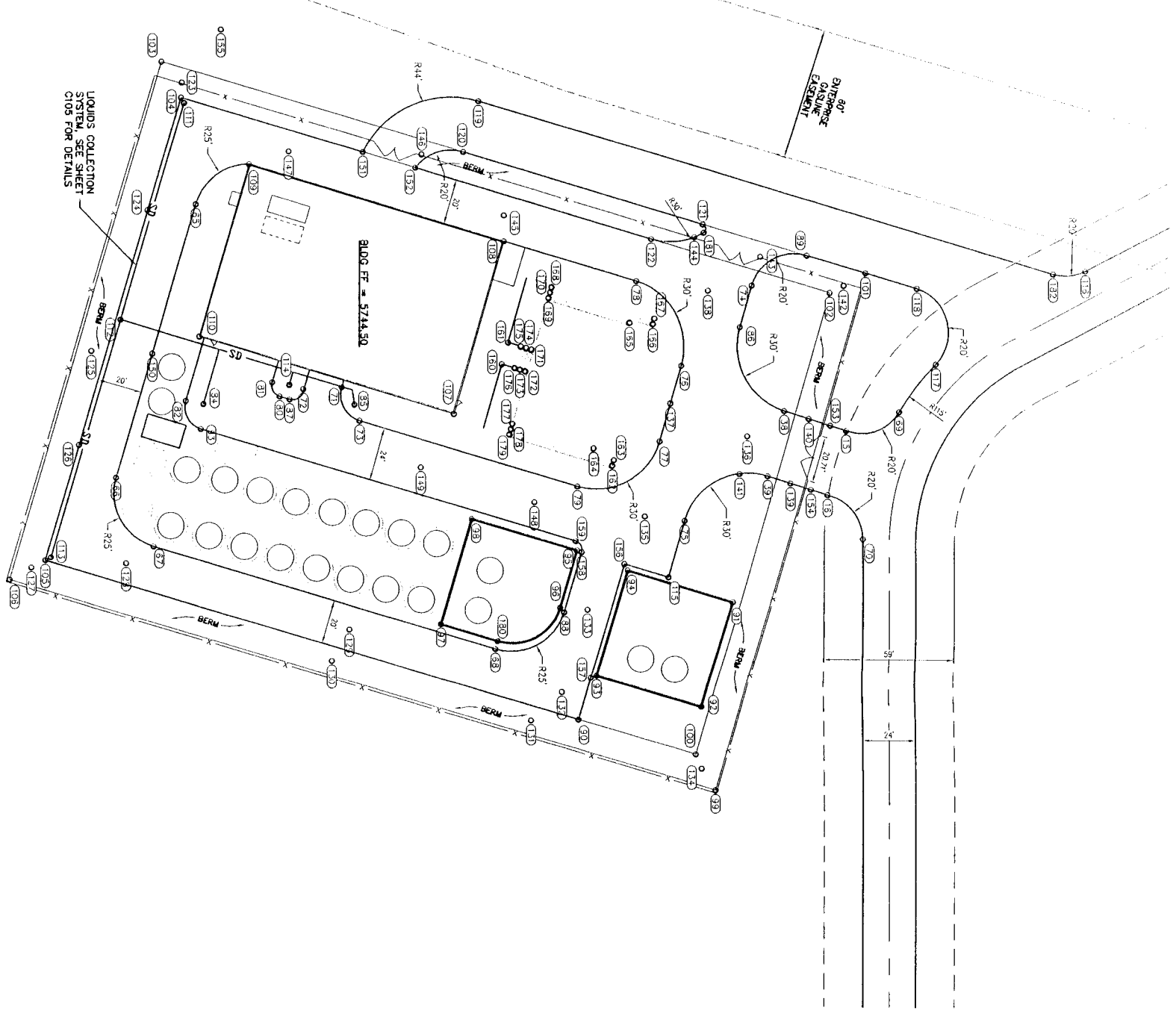
Date: AUGUST, 2011
Scale: Horiz: AS NOTED Vert: N/A
Project No: 5119829
Sheet: C107

4.18

P:\5-01 Engr Ponds (5119829)\CADD\Submissions plan design\REVISIONS 9-30-2013\5119829COVER NOTES SITE LAYOUTS.dwg , 11/4/2013 12:05 PM



HORIZONTAL CONTROL PLAN
SCALE: 1" = 30'

CONTOUR INTERVAL 1'
SCALE: 1"=30'

Point Table

Point #	Northing	Easting	Elevation	Description
15	35183.83	2363214.00	5745.53	EDGE OF ROAD
16	35175.38	2363332.73	5745.59	EDGE OF ROAD
34	35154.79	2363515.98	5744.20	EDGE OF ROAD
39	35144.21	2363744.42	5744.21	EDGE OF ROAD
63	34893.53	2363225.01	5743.99	EDGE OF ROAD
66	34883.92	2363146.85	5744.50	EDGE OF ROAD
67	34870.90	2363377.87	5744.00	EDGE OF ROAD
68	35025.11	2363423.00	5744.50	EDGE OF ROAD
69	35207.98	2363515.62	5747.32	EDGE OF ROAD
70	35191.25	2363772.43	5745.71	EDGE OF ROAD
71	34935.61	2363535.87	5744.00	EDGE OF ROAD
72	34938.29	2363536.85	5743.37	EDGE OF ROAD
73	34983.77	2363520.75	5744.00	EDGE OF ROAD
74	35141.16	2363260.00	5744.50	EDGE OF ROAD
75	35110.58	2363634.68	5743.97	EDGE OF ROAD
76	35109.22	2363758.49	5744.00	EDGE OF ROAD
77	35099.39	2363828.12	5744.00	EDGE OF ROAD
78	35088.85	2363858.28	5744.00	EDGE OF ROAD
79	35082.18	2363949.50	5744.00	EDGE OF ROAD
80	34927.59	2363610.18	5744.00	EDGE OF ROAD
81	34927.39	2363603.98	5744.00	EDGE OF ROAD
82	34885.23	2363512.44	5744.00	EDGE OF ROAD
83	34882.04	2363524.58	5744.00	EDGE OF ROAD
84	34883.19	2363613.74	5743.50	EDGE OF ROAD
85	34981.42	2363578.28	5743.99	STORM DRAIN
86	35155.82	2363578.28	5743.99	EDGE OF ROAD
87	34932.09	2363611.50	5744.00	EDGE OF ROAD
88	35056.12	2363408.03	5744.00	EDGE OF ROAD
89	35165.97	2362448.41	5747.00	EDGE OF ROAD
90	35092.70	2363454.85	5743.99	EDGE OF ROAD
91	35132.33	2363401.03	5744.00	TOP OF BERM
92	35118.44	2363448.54	5744.00	TOP OF BERM
93	35070.94	2363434.64	5744.00	TOP OF BERM
94	35084.84	2363387.13	5744.00	TOP OF BERM
95	35061.32	2363378.23	5744.00	TOP OF BERM
96	35084.41	2363403.90	5744.00	TOP OF BERM
97	35000.51	2363611.83	5744.00	TOP OF BERM
98	35014.41	2363634.33	5744.00	TOP OF BERM
99	35124.59	2363498.50	5741.36	BERM
100	35115.78	2363470.37	5744.00	BERM
101	35192.59	2362524.24	5747.06	BERM
102	35176.44	2362683.07	5744.00	BERM
103	34973.53	2363160.99	5741.87	BERM
104	34982.76	2363177.12	5743.00	BERM
105	34922.09	2363384.42	5743.00	BERM
106	34805.96	2363593.25	5741.36	BERM
107	35006.39	2363117.52	5744.00	BLDG
108	35028.85	2362742.74	5744.00	BLDG
109	34931.58	2362807.04	5744.00	BLDG
110	34891.21	2362783.81	5744.00	BLDG
111	34884.11	2362179.60	5742.80	STORM DRAIN
112	34855.74	2362278.58	5742.80	STORM DRAIN
113	34824.57	2362363.07	5742.80	STORM DRAIN
114	34931.97	2362304.98	5743.50	STORM DRAIN
115	35103.15	2362360.14	5743.99	EDGE OF ROAD
116	35292.93	2362252.75	5748.00	EDGE OF ROAD
117	35224.61	2362234.32	5748.00	EDGE OF ROAD
118	35216.02	2362281.04	5747.48	EDGE OF ROAD
119	35017.10	2362177.92	5745.42	EDGE OF ROAD
120	35010.37	2362200.96	5745.25	EDGE OF ROAD
121	35118.93	2362322.68	5748.15	EDGE OF ROAD

Point Table

Point #	Northing	Easting	Elevation	Description
122	35095.54	2362429.59	5743.99	EDGE OF ROAD
123	34983.03	2362170.40	5745.00	TOP OF BERM
124	34987.31	2362227.53	5743.05	FG
125	34842.72	2362390.54	5745.00	TOP OF BERM
126	34837.20	2362332.33	5743.04	FG
127	34815.81	2362387.77	5745.00	TOP OF BERM
128	34858.40	2362585.59	5743.27	FG
129	34939.04	2362414.71	5743.56	FG
130	34851.08	2362428.93	5745.00	TOP OF BERM
131	35041.19	2362455.43	5745.00	TOP OF BERM
132	35055.23	2362442.34	5743.83	FG
133	35088.89	2362404.93	5744.00	TOP OF BERM
134	35118.36	2362476.89	5745.00	TOP OF BERM
135	35092.51	2362342.52	5743.95	FG
136	35138.99	2362326.74	5744.00	FG
137	35104.31	2362312.30	5744.00	FG
138	35121.36	2362282.43	5743.95	FG
139	35138.53	2362347.65	5745.03	TOP OF BERM
140	35166.90	2362318.80	5745.11	TOP OF BERM
141	35135.44	2362343.48	5744.00	FG
142	35182.70	2362359.97	5745.11	TOP OF BERM
143	35145.03	2362347.10	5745.50	TOP OF BERM
144	35115.16	2362336.40	5745.54	TOP OF BERM
145	35028.78	2362329.23	5743.31	FG
146	34991.52	2362302.17	5745.00	TOP OF BERM
147	34931.48	2362601.26	5743.82	FG
148	35042.87	2362356.75	5743.93	FG
149	34991.39	2362341.32	5743.89	FG
150	34870.08	2362391.48	5744.00	EDGE OF ROAD
151	34986.02	2362601.26	5744.81	EDGE OF ROAD
152	34988.73	2362608.19	5744.81	EDGE OF ROAD
153	35178.58	2362421.77	5743.13	SWALE
154	35167.75	2362350.44	5744.01	SWALE
155	34900.69	2362148.32	5742.00	SWALE
156	35083.31	2362384.34	5743.99	EDGE OF ROAD
157	35069.33	2362435.90	5743.97	EDGE OF ROAD
158	35094.03	2362379.04	5744.00	EDGE OF ROAD
159	35061.30	2362374.07	5744.00	EDGE OF ROAD
160	35028.03	2362295.23	5744.07	TOP OF TANK
161	35030.84	2362265.83	5744.07	TOP OF TANK
162	35077.98	2362340.06	5747.39	TOP OF WALL
163	35078.69	2362337.58	5748.35	TOP OF WALL
164	35069.54	2362332.54	5750.94	TOP OF WALL
165	35068.80	2362278.70	5750.94	TOP OF WALL
166	35094.33	2362277.18	5748.34	TOP OF WALL
167	35097.04	2362274.75	5747.40	TOP OF WALL
168	35050.45	2362281.28	5747.41	TOP OF WALL
169	35049.08	2362265.98	5753.51	TOP OF WALL
170	35049.79	2362263.53	5750.38	TOP OF WALL
171	35041.42	2362288.72	5752.83	TOP OF WALL
172	35038.58	2362298.31	5752.57	TOP OF WALL
173	35038.20	2362297.61	5749.08	TOP OF WALL
174	35039.07	2362288.01	5749.08	TOP OF WALL
175	35036.60	2362287.31	5745.55	TOP OF WALL
176	35033.80	2362298.91	5745.55	TOP OF WALL
177	35032.52	2362321.63	5753.48	TOP OF WALL
178	35032.12	2362324.03	5750.37	TOP OF WALL
179	35031.42	2362328.44	5747.24	TOP OF WALL
180	35028.18	2362419.35	5744.00	TOP OF BERM
181	35119.42	2362336.31	5745.82	EDGE OF ROAD
182	35278.14	2362234.18	5748.00	EDGE OF ROAD

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Designed DWM | Drawn DJB | Checked DWM

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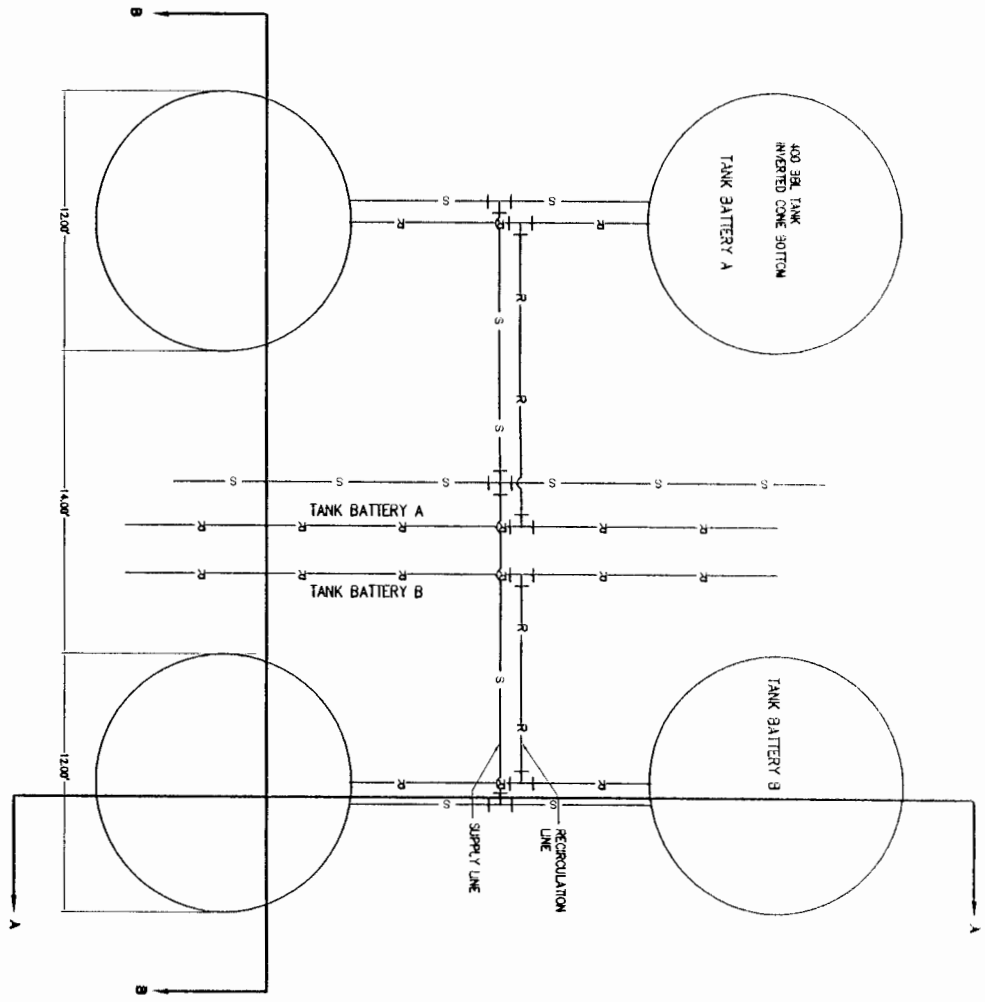
Date AUGUST, 2011
Scale Horiz 1" = 30'
Vert N/A
Project No 5119329
Sheet C108

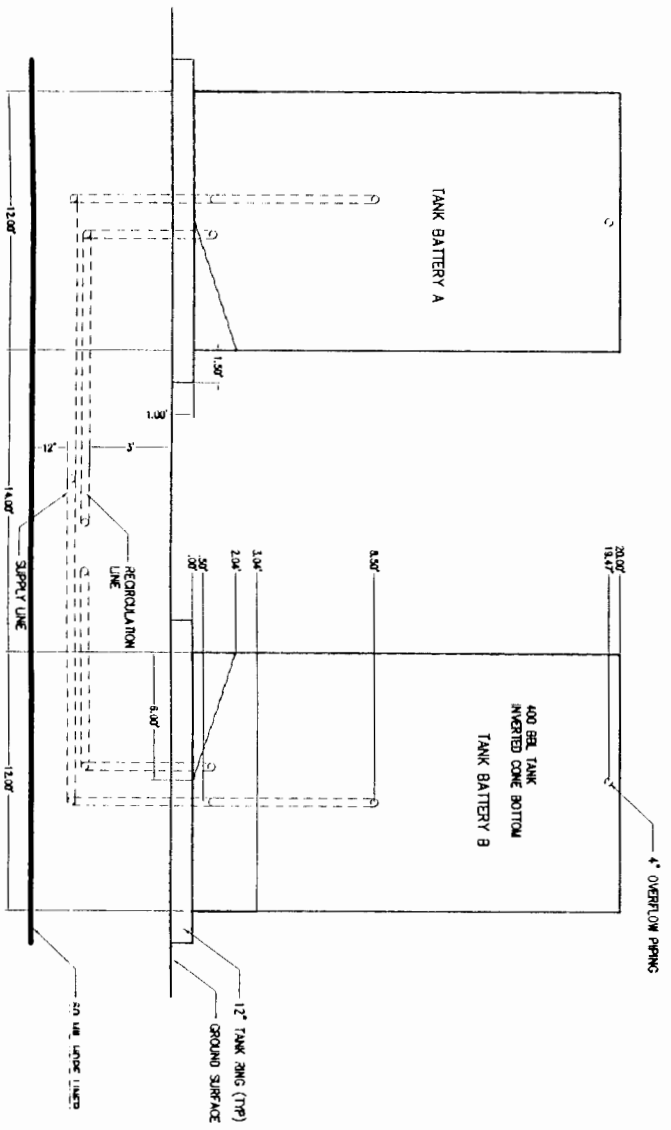
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
HORIZONTAL CONTROL PLAN

Revision	Date	Description	By	Chkd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

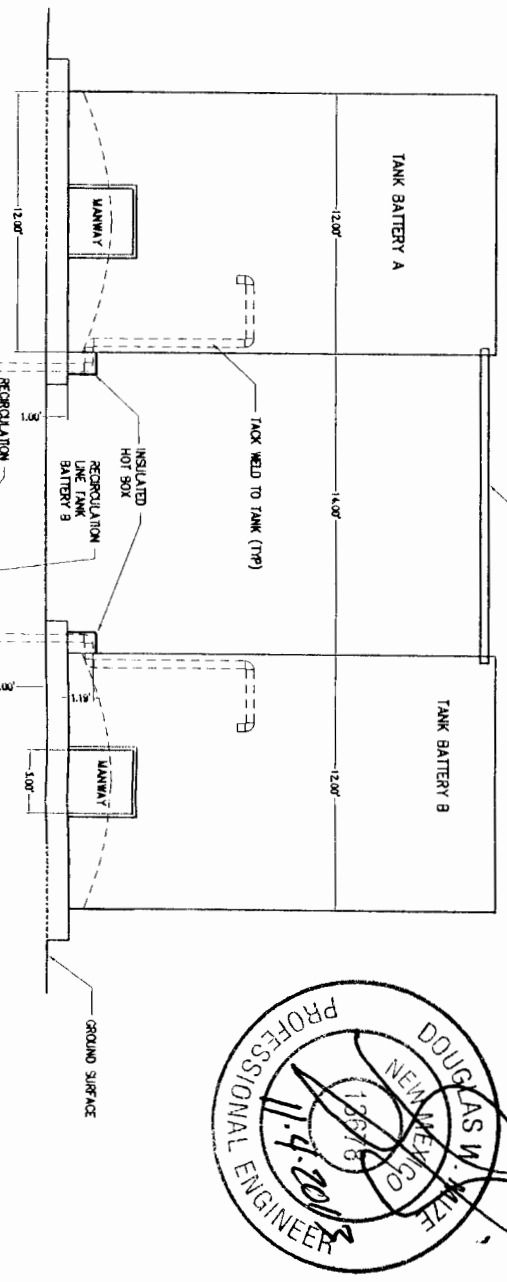


RECEIVING TANK TYPICAL PIPING
NOT TO SCALE

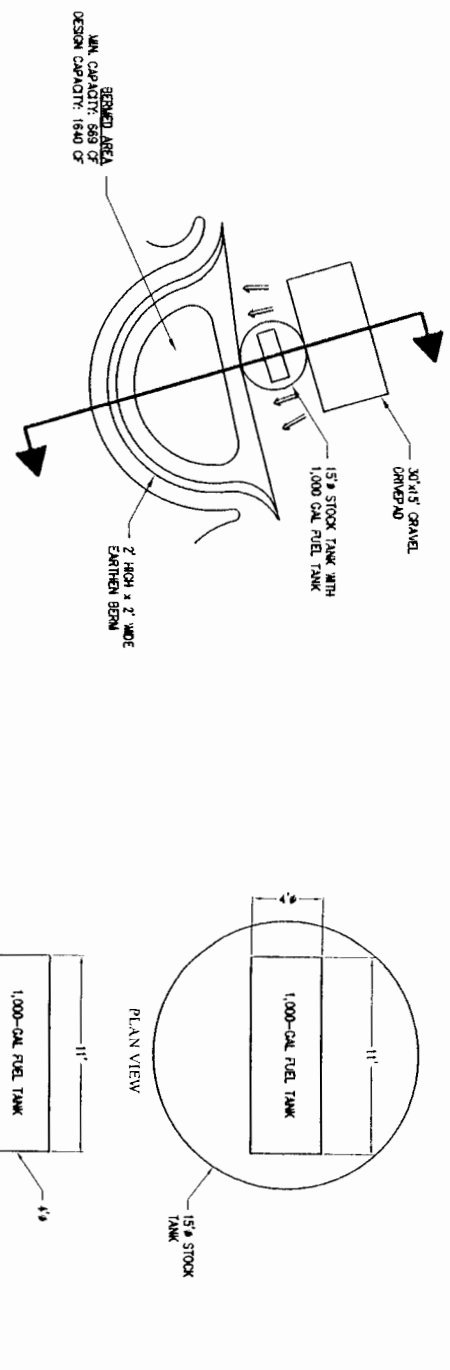


ELEVATION SECTION A-A
NOT TO SCALE

NOTE: SEE SECTION C-C, SHEET C105 FOR TYPICAL SITE CROSS-SECTION

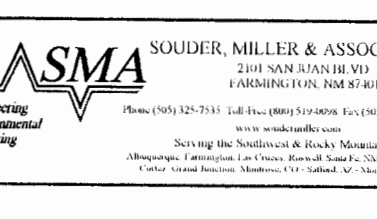


ELEVATION SECTION B-B
NOT TO SCALE



FUELING TANK & CONTAINMENT DRAINAGE
NOT TO SCALE

FUELING TANK & CONTAINMENT
NOT TO SCALE



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Designed	DWM
Drawn	DJB
Checked	DWM
Date	AUGUST, 2011
Scale	Horiz. NTS Vert. N/A
Project No	5119829
Sheet	C109

INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PIPING PLAN

Revision	Date	Description	By	Chk'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

4.21

CROWE BLANCO PROPERTIES, LLC OPERATED BY:
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROCESS PLAN AND ENGINEER DESIGN PLAN

INDUSTRIAL ECOSYSTEMS INC.

INDUSTRIAL ECOSYSTEMS INC.

SAN JUAN COUNTY, NM

No.	Revision	Date	Description	By	Ck'd
1		4/2012		DWM	
2		2/2013	ADD REVIEW COMMENTS REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM DWM	

Designed DWM | Drawn DJB | Checked DWM

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SMA Engineering Environmental Surveying

DOUGLAS W. MIZE
NEW MEXICO
13578
PROFESSIONAL ENGINEER
11.4.2013

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Date AUGUST, 2011
Scale HORZ AS SHOWN
VERT N/A
Project No S119829
Sheet C110

SCALE: 1"=30'

30' 15' 0 30'

NOTE:
PUMP FLOW (Q) IS BASED UPON 10 LBS/GALLON MUD AND IS THE AVERAGE PROCESSING CAPABILITY FOR THE CENTRIFUGE. LIGHTER MUD WILL HOLD A HIGHER FLOW AND A HEAVIER MUD WILL HAVE A LOWER FLOW. IT IS IMPORTANT THAT THE OPERATOR MAINTAIN A CONSISTENT MUD WEIGHT TO OPTIMIZE FACILITY OPERATION, i.e. MUD @ OR AROUND 10 LBS/GALLON.

EQUIPMENT SPECIFICATIONS.

MOBILE SHAKER TANK – SHAKER TANK SHALL BE 43' IN LENGTH, 8'-6" WIDE X 10' HIGH, 14' FLOOR (V-BOTTOM) 1/4" STEEL WALLS, ONE MAIN-WAY ON LOWER REAR SIDE WALL. LADDER AND PLATFORM ON FRONT OF TANK. TWO (2) CHOTRONIC 4'X8' SHALE SHAKERS MOUNTED ON TOP. (80 MESH SCREENS). SHAKER UNIT SHALL HAVE THE TOP COVERED WITH EXPANDED METAL "CUT TO FIT" TO PROHIBIT MUDLIFE FROM ENTERING THE UNIT.

MOBILE SLURRY HOLDING TANK – SLURRY HOLDING TANK SHALL BE 43' IN LENGTH, 8'-6" WIDE X 10' HIGH, 1/4" FLOOR (V-BOTTOM) 1/4" CORRUGATED WALLS. ONE MAIN-WAY ON LOWER REAR SIDE WALL. LADDER AND PLATFORM ON FRONT OF TANK. GORMAN RUPP 6" PUMP FOR TRANSFERRING SLURRY TO CENTRIFUGE OR STORAGE TANKS. SHAKER UNIT SHALL HAVE THE TOP COVERED WITH EXPANDED METAL "CUT TO FIT" TO PROHIBIT MUDLIFE FROM ENTERING THE UNIT.

CENTRIFUGE – THE CENTRIFUGE SHALL BE HUTCHINSON-HAYES MODEL 1448 14" DIAMETER, 48" LENGTH NORMAL CENTRIFUGAL FORCE 2118 G's AT 3250 RPM. MAXIMUM 3180 G's AT 4000 RPM. THE BASIC PURPOSE OF CENTRIFUGE IS TO SEPARATE THE LIQUID AND SOLIDS FROM THE FEED SLURRY IE: DRIL MUD, DRILL CUTTINGS, AND TANK BOTTOMS. A STAINLESS STEEL SCREW CONVEYOR (FACED WITH HARD TILES) GATHERS AND CONVEYS THESE SOLIDS TO A CENTRAL DISCHARGE AREA. THE CONVEYOR IS DRIVEN AT A SLIGHTLY SLOWER RPM THRU A PLANETARY GEAR REDUCER. THE LIQUIDS MIGRATE TO THE FRONT END OF THE MACHINE AND ARE DISPELLED THRU FOUR (4) ADJUSTABLE PLATE DAM OPENINGS, TO A CENTRAL DISCHARGE AREA THEN PUMPED TO A LIQUID STORAGE TANK TO BE DISPOSED OF.

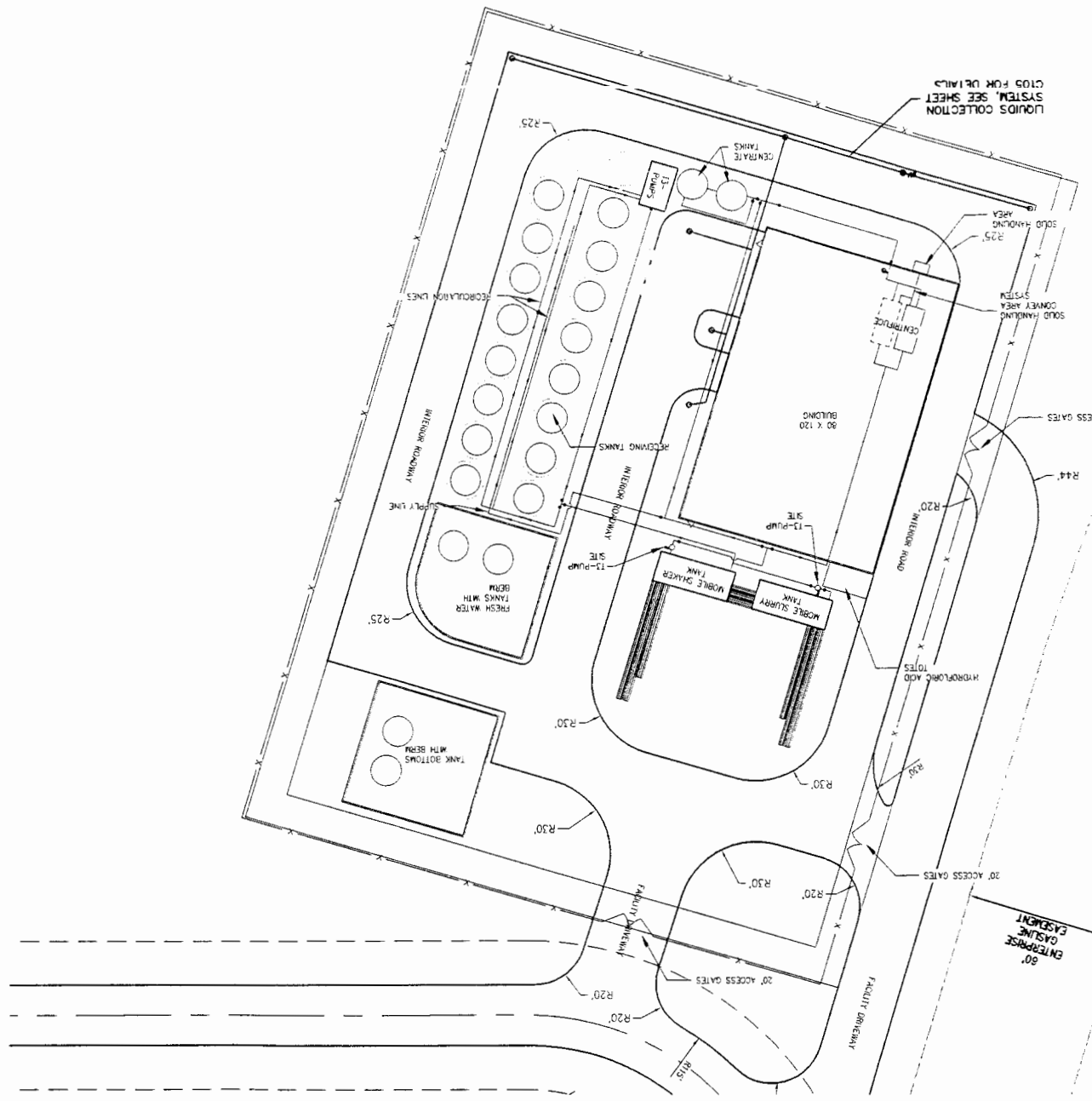
STORAGE TANKS – STORAGE TANKS SHALL BE STANDARD, 400 BARREL OIL FIELD TANKS (12' DIAMETER X 20' TALL).

CENTRATE TANK – THE CENTRATE TANK SHALL BE A 20' DIAMETER X 16' TALL STEEL TANK OF APPROXIMATELY 900 BARRELS.

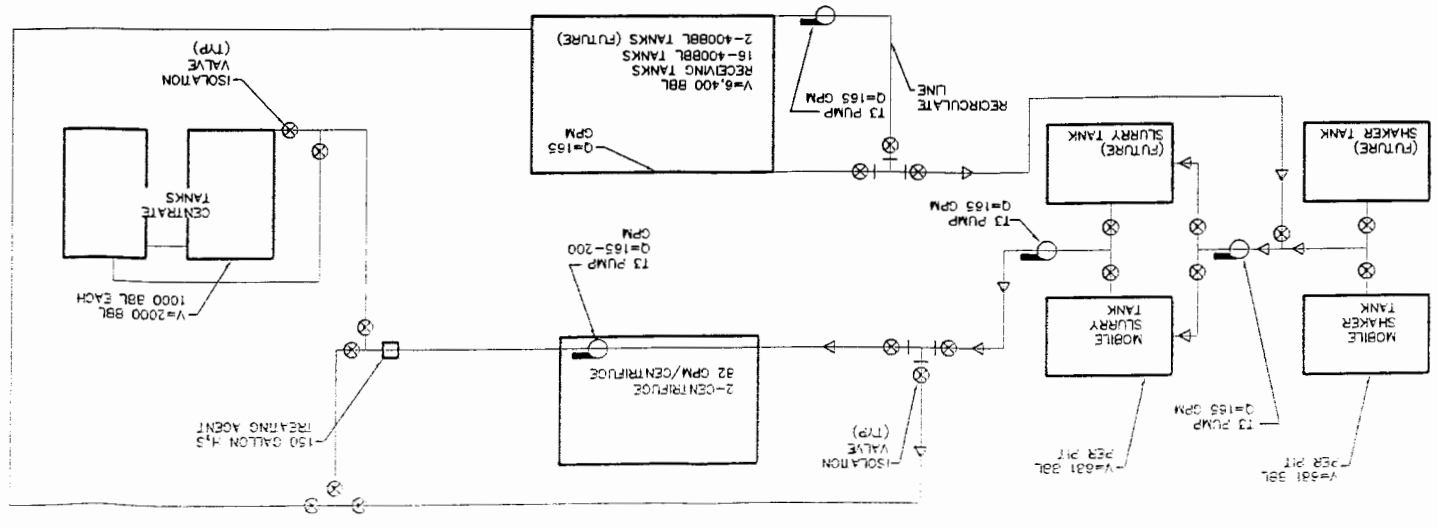
FRESH WATER TANK – THE FRESH WATER TANK SHALL BE A 12' DIAMETER X 20' TALL 400 BARREL TANK.

13 PUMPS – PUMPS ARE SIZED BASED UPON 10 LB/GAL MATER/SOLIDS MIXTURE AND THE RATE @ WHICH CENTRIFUGE CAN PROCESS MIXTURE.

PLAN VIEW. PROCESS AND ENGINEER DESIGN
SCALE: 1" = 30'



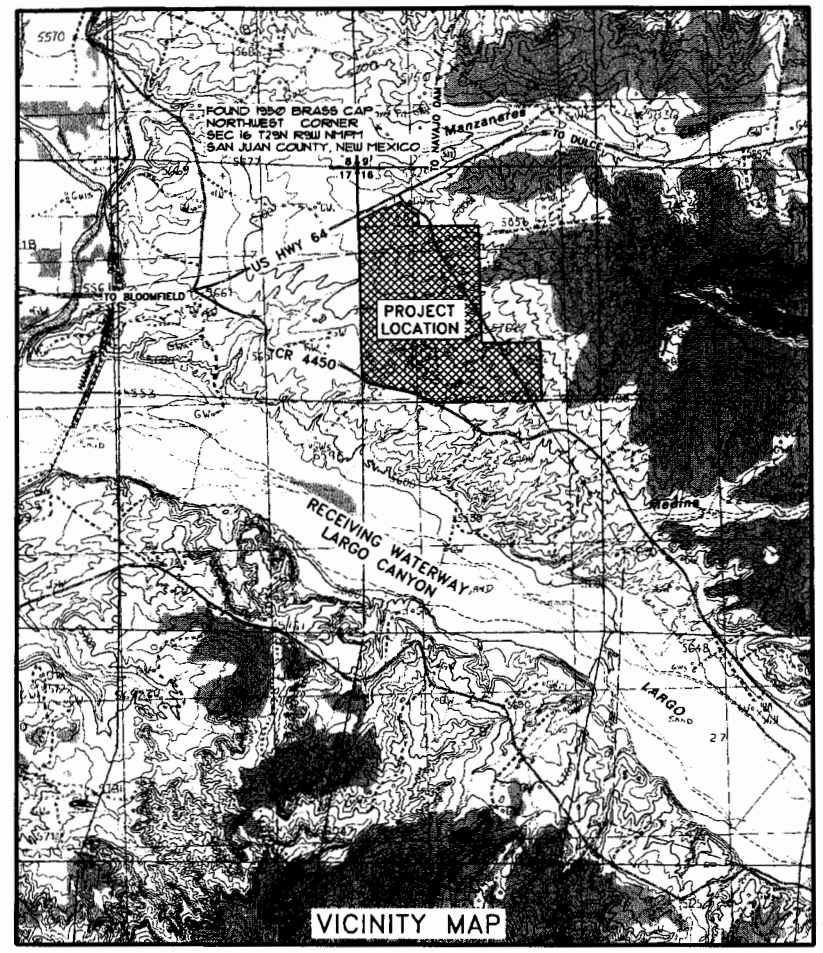
PROFILE VIEW. PROCESS AND ENGINEER DESIGN
NOT TO SCALE



Engineering Designs
(19.15.36.8.C.5 NMAC)

TECHNICAL DATA &
DESIGN ELEMENTS OF APPLICABLE TREATMENT, REMEDIATION & DISPOSAL METHOD

- Cheney Walters & Echols, Inc. — Permit Plan Set-Cover Sheet & Sheets 1 of 15 through 15 of 15
  Cell Berm Profiles-Sheets 1 of 16 through 16 of 16
- Souder, Miller & Associates — Blanco Facility Process Area Engineering Designs
  Sheets C101 through C110



PERMIT PLAN SET
FOR
CROWE BLANCO PROPERTIES LLC
OPERATED BY
INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

OCTOBER 2013

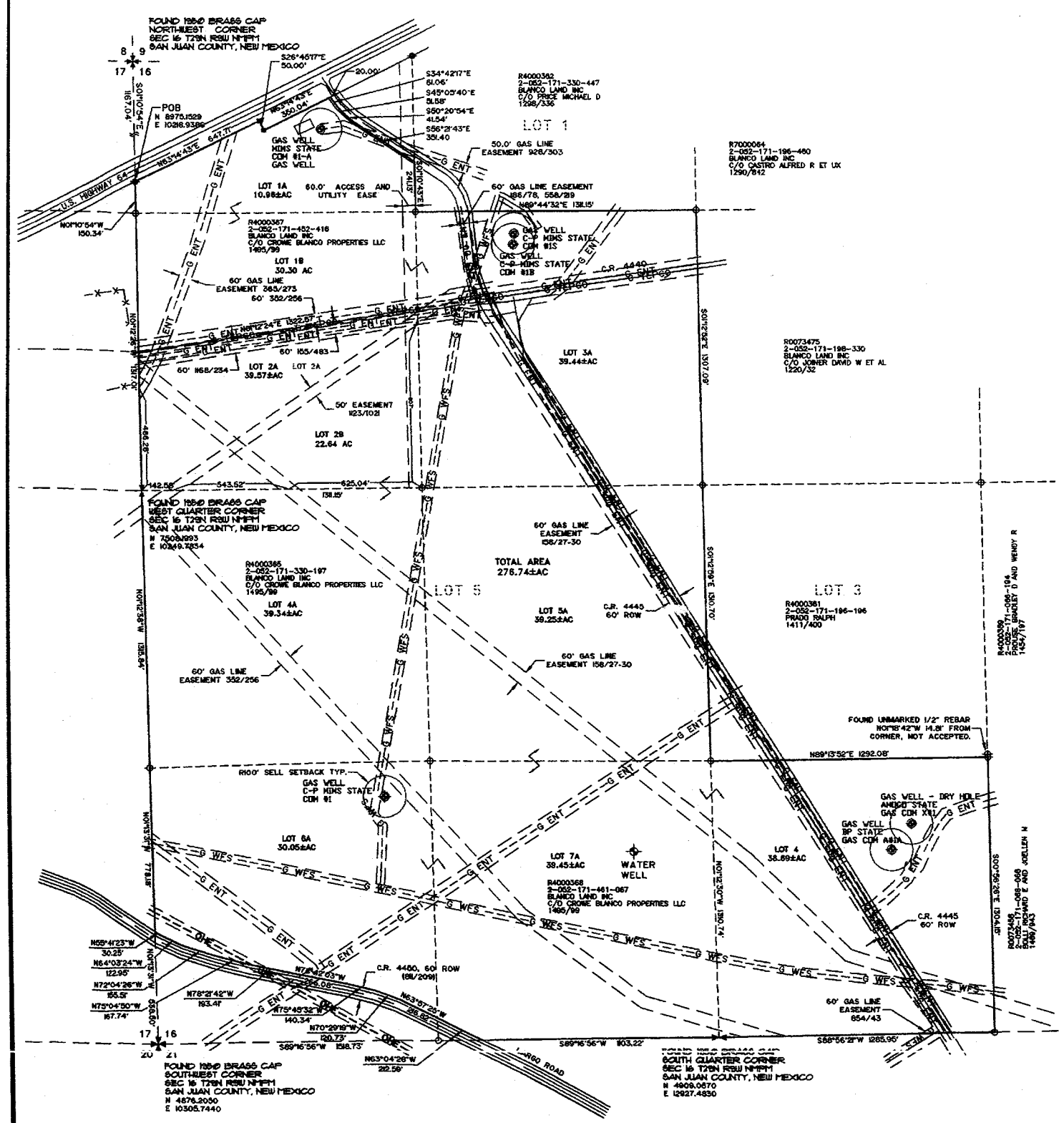
SHEET INDEX

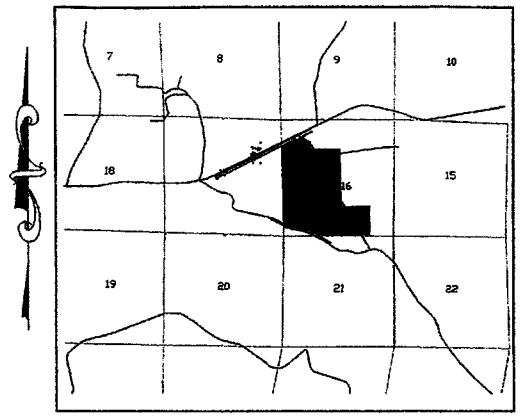
CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

Printed: October 28, 2013 - 4:47pm Filename: D:\DRAWINGS-LEH\2009\09467-1946?set.dwg

BOUNDARY SURVEY PLAT

For Crowe Blanco Properties, LLC
Land Farm Permit
Lot 4 of the Blanco Land Subdivision No.1
as recorded in Book 1309, page 455
and part of Lot 1A, Lots 2A thru 5A and a portion of Lots 6A and 7A
of the Blanco Land Subdivision No.2
as recorded in Book 1322, page 796
and lying in the
W1/2 and the SW1/4 SE1/4 of Section 16, T29N R09W, N.M.P.M.
San Juan County, New Mexico
Operated by: Industrial Ecosystems, Inc.

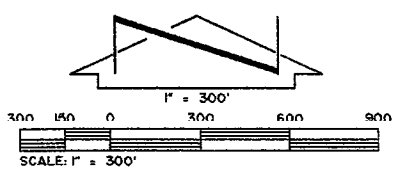




VICINITY MAP
(nts)

LEGEND

- G WFS —— = WILLIAMS FIELD SERVICES GAS LINE
- G ENT —— = ENTERPRISE GAS LINE
- G TEPCO —— = TEPCO GAS LINE
- = SECTION CORNER AS NOTED
- = QUARTER CORNER AS NOTED
- = SET 1/2" REBAR W/CAP LS 6159
- = FOUND REBAR W/SURVEY CAP 8894 UNLESS NOTED OTHERWISE.
- = HWY DEPT BRASS CAP R/W MON



DESCRIPTION

A tract of land being Lot 4 of the Blanco Land Subdivision No. 1 as recorded in Book 1309, page 455 and Lots 1A through 7A of Blanco Land Subdivision No. 2 as recorded in Book 1322, page 796, also lying in the West Half (W1/2) and the Southeast Quarter of the Southwest Quarter (SW1/4 SW1/4) of Section 16, T29N, R09W, N.M.P.M., San Juan County, New Mexico, being more particularly described as follows:

COMMENCING at the Northwest Corner of the above said Section 16;

THENCE: S01°10'54"E and along the west line of said Section 16 for a distance of 867.04 feet to a point of intersection with the south right-of-way line of U.S. Highway 64 and the Northwest Corner of the above said Lot 1A and the Point of Beginning of said tract;
THENCE: NORTHEASTERLY and along the north line of the above said Lot 1A and the south line of U.S. Highway 64 the following courses and distances and N63°14'43"E for a distance of 647.71 feet;
THENCE: S26°45'17"E for a distance of 50.00 feet;
THENCE: N63°14'43"E for a distance of 350.04 feet to a point 20' southwest of the centerline of County Road 4445 as existing at the time of this survey;
THENCE: LEAVING said south line of U.S. Highway 64 and the north line of Lot 1A and along the 20' offset line and parallel with the centerline of County Road 4445 the following courses and distances and S34°42'17"E for a distance of 6.06 feet;
THENCE: S45°05'40"E for a distance of 8.58 feet;
THENCE: S50°20'54"E for a distance of 41.54 feet;
THENCE: S65°28'43"E for a distance of 351.40 feet to a point on the east line of said Lot 1A;
THENCE: LEAVING said 20' offset line and along the east line of said Lot 1A and S01°10'43"E for a distance of 24.15 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 1A and the Northwest Corner of the above said Lot 3A;
THENCE: N89°44'32"E and along the north line of said Lot 3A for a distance of 1315.15 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 3A;
THENCE: S01°12'52"E and along the east line of said Lot 3A for a distance of 1307.09 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of said Lot 3A and the Northeast Corner of the above said Lot 5A;
THENCE: S01°12'59"E and along the east line of said Lot 5A for a distance of 1310.70 feet to a found rebar with survey cap marked LS 8894 at the Southeast Corner of the above said Lot 5A and the Northwest Corner of said Lot 4;
THENCE: N89°13'52"E and along the north line of said Lot 4 for a distance of 1292.08 feet to a found rebar with survey cap marked LS 8894 at the Northeast Corner of said Lot 4;
THENCE: S00°56'26"E and along the east line of said Lot 4 for a distance of 1304.35 feet to a found rebar with survey cap marked LS 8894 and a point on the south line of the above said Section 16 and the Southeast Corner of said Lot 4;
THENCE: S89°56'37"W and along the south line of said Lot 4 and the south line of said Section 16 for a distance of 1285.95 feet to the South Quarter Corner of the above said Section 16, a 1980 BLM brass cap monument;
THENCE: CONTINUING along the south line of said Section 16 and the south line of Lot 7A and S89°16'56"W for a distance of 803.22 feet to a point being 30' north of the center of County Road 4450 as existing at the time of this survey;
THENCE: LEAVING said south line of said Section 16 and the south line of said Lot 7A and along the 30' offset line and parallel with the centerline of County Road 4450 the following courses and distances and N63°04'26"W for a distance of 212.59 feet;
THENCE: N63°57'25"W for a distance of 235.62 feet;
THENCE: N70°29'19"W for a distance of 120.73 feet;
THENCE: N75°45'32"W for a distance of 140.34 feet;
THENCE: N78°42'03"W for a distance of 266.08 feet;
THENCE: N78°21'42"W for a distance of 193.41 feet;
THENCE: N75°04'50"W for a distance of 167.74 feet;
THENCE: N72°04'26"W for a distance of 155.5 feet;
THENCE: N64°02'26"W for a distance of 122.95 feet;
THENCE: N59°41'23"W for a distance of 30.25 feet to a point on the west line of said Section 16 and the west line of Lot 6A;
THENCE: LEAVING said 30' offset line and along the west line of said Lot 6A and the west line of said Section 16 and N01°10'54"W for a distance of 778.16 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 6A and the Southwest Corner of said Lot 4A;
THENCE: CONTINUING along the west line of said Section 16 and the west line of Lot 4A and N01°12'26"W for a distance of 1315.84 feet to the West Quarter Corner of the above said Section 16 and the Northwest Corner of said Lot 4A and the Southwest Corner of said Lot 2A, a 1980 BLM brass cap monument;
THENCE: N01°12'26"W and along the west line of said Section 16 and the west line of said Lot 2A for a distance of 1317.01 feet to a found rebar with survey cap marked LS 8894, the Northwest Corner of said Lot 2A and the Southwest Corner of said Lot 1A;
THENCE: CONTINUING along the west line of said Section 16 and the west line of said Lot 1A and N01°10'54"W for a distance of 150.34 feet and back to the south right-of-way line of U.S. Highway 64 and the point of beginning of said tract.

Said tract contains 276.74 acres, more or less, and is subject to any and all easements of record or in existence.

CERTIFICATION

I, George T. Walters, a New Mexico Professional Surveyor certify that I conducted and am responsible for this Boundary Survey Plat, that this Boundary Survey is true and correct to the best of my knowledge and belief, and that this Boundary Survey Plat meets the Minimum Standards for Surveying in New Mexico.

I further certify that this is a boundary of an existing tract and is not a land division or subdivision as defined in the New Mexico Subdivision Act.

NEW MEXICO 6159 REGISTERED PROFESSIONAL SURVEYOR GEORGE T. WALTERS

2-24-2012

George T. Walters
Professional Land Surveyor No. 6159
State of New Mexico
Date

REFERENCE LIST:
OWNERSHIP IS ACCORDING TO THE SAN JUAN COUNTY ASSESSORS OFFICE.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1355 PG 890.
REAL ESTATE CONTRACT IN FAVOR OF SNM PROPERTIES, LLC IN BK 1382 PG 735.
WARRANTY DEED IN FAVOR OF BLANCO LAND, INC. IN BK 1208 PG 401.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 155 PG 483.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 186 PG 27.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 382 PG 256.
PERMIT FOR RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 365 PG 273.
RIGHT OF WAY GRANT IN FAVOR OF SOUTHERN UNION GATHERING COMPANY IN BK 928 PG 305.
RIGHT OF WAY AND EASEMENT IN FAVOR OF MERIDIAN OIL GATHERING, INC. IN BK 823 PG 1025.
RIGHT OF WAY AND EASEMENT IN FAVOR OF EL PASO NATURAL GAS COMPANY IN BK 868 PG 234.
BLANCO LAND SUBDIVISION NO.1 RECORDED IN BK 1309 PG 455.
BLANCO LAND SUBDIVISION NO.2 RECORDED IN BK 1322 PG 796.

BASIS OF BEARING: THE BASIS OF BEARINGS FOR THIS SURVEY IS THE BLANCO LAND SUBDIVISIONS.

DATE	REVISION	BY

PRINTED: June 25, 2013
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CHENEY · WALTERS · ECHOLS
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

BOUNDARY SURVEY
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:02/24/2012
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PROJ. 09467
SCALE:1" = 300'
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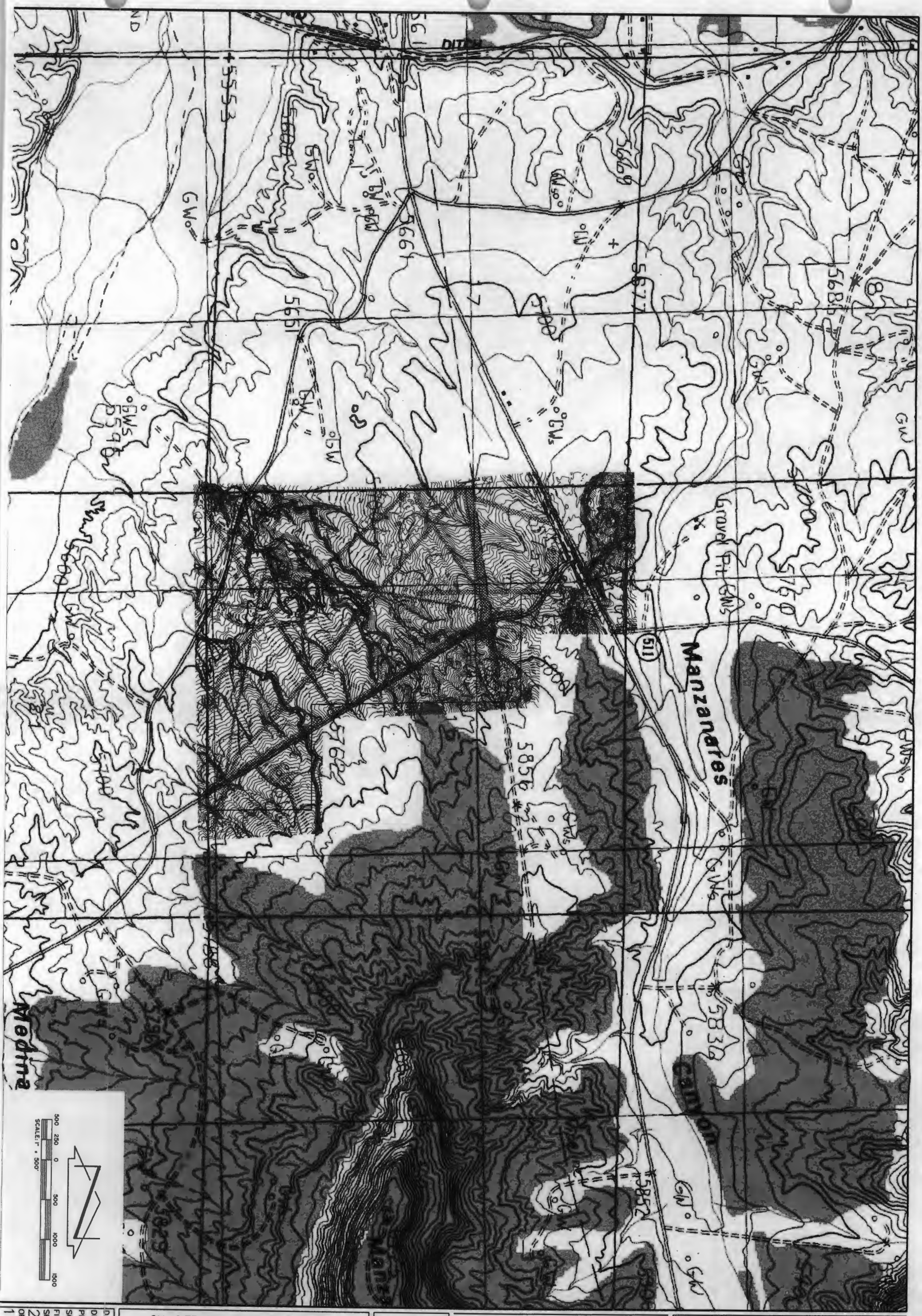
SHEET
1
OF
15



SCALE: 1" = 500'
500 250 0 500 1000 1500

ON-SITE OFF-SITE TOPOGRAPHY
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
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PROJ. 09467
SCALE: 1" = 300'
FILE: 09467DRN3
SHEET 2 OF 15

NEW MEXICO — No. 36541 — REGISTERED PROFESSIONAL ENGINEER & LAND SURVEYOR — RICHARD P. CHENEY — 10/25/13

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

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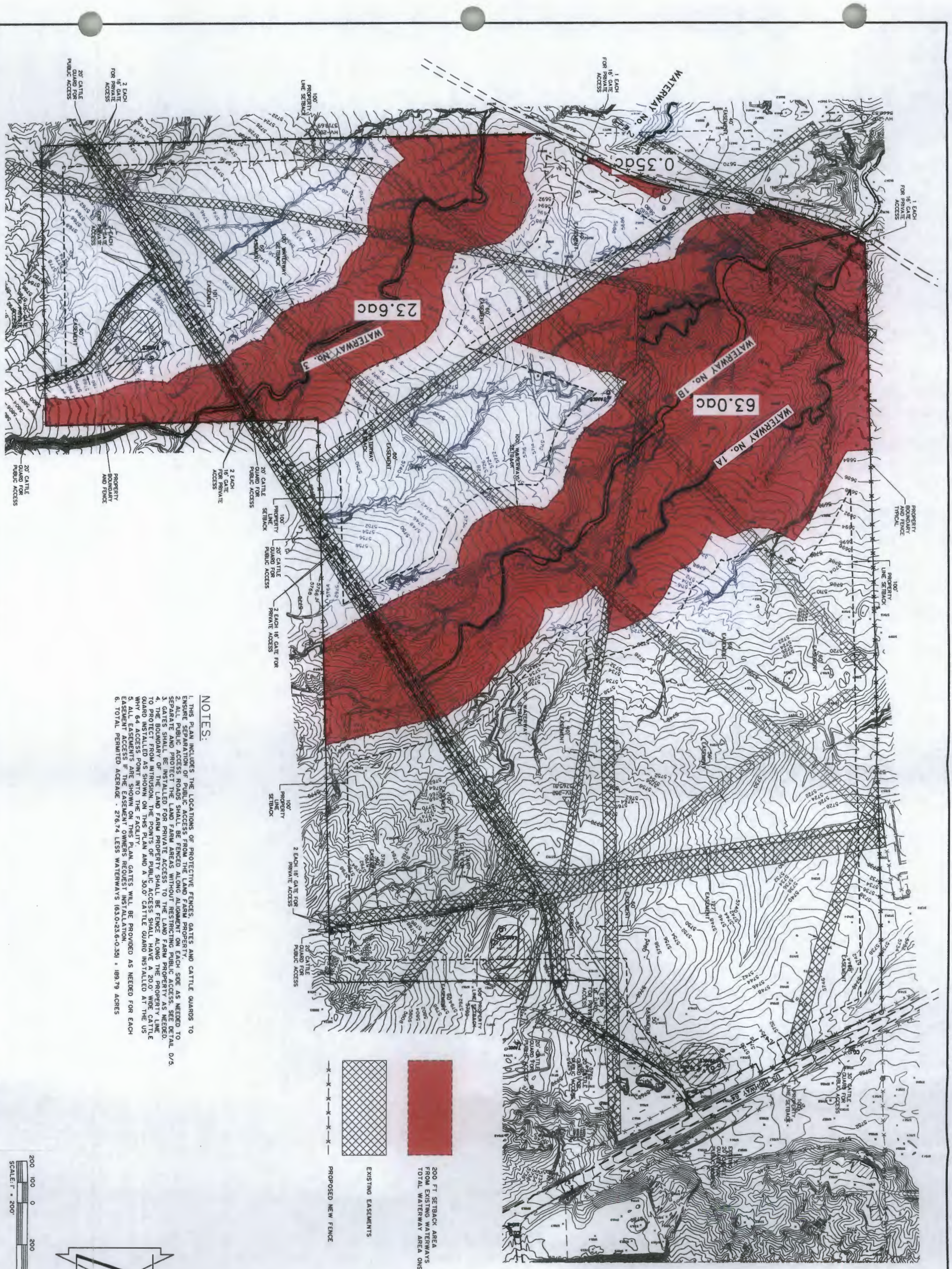

NOTES:

1. THIS PLAN INCLUDES THE LOCATIONS OF PROTECTIVE FENCES, GATES AND CATTLE GUARDS TO ENSURE SEPARATION OF PUBLIC ACCESS FROM THE LAND FARM PROPERTY.
2. ALL PUBLIC ACCESS ROADS SHALL BE FENCED ALONG ALIGNMENT ON EACH SIDE AS NEEDED TO SEPARATE AND PROTECT THE LAND FARM AREAS WITHOUT RESTRICTING PUBLIC ACCESS. SEE DETAIL D/5.
3. GATES SHALL BE INSTALLED FOR PRIVATE ACCESS TO THE LAND FARM PROPERTY AS NEEDED.
4. THE BOUNDARY OF THE LAND FARM PROPERTY SHALL BE FENCE ALONG THE PROPERTY LINE TO PROTECT FROM INTRUSION. THE POINTS OF PUBLIC ACCESS SHALL HAVE A 20.0' WIDE CATTLE GUARD INSTALLED AS SHOWN ON THIS PLAN AND A 30.0' CATTLE GUARD INSTALLED AT THE US HWY 64 ACCESS POINT INTO THE FACILITY.
5. ALL EASEMENTS ARE SHOWN ON THIS PLAN. GATES WILL BE PROVIDED AS NEEDED FOR EACH EASEMENT ACCESS IF THE EASEMENT OWNERS REQUEST INSTALLATION.
6. TOTAL PERMITED ACERAGE - 276.74 LESS WATERWAYS (63.0+23.6+0.35) = 189.79 ACRES

DATE:10/25/2013
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SHEET 3 OF 15

ON-SITE WATERWAYS AND SETBACKS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 29, 2013
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DRAINAGE BASINS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467DRN3
SHEET 4 OF 15

CHENEY·WALTERS·ECHOLS, INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

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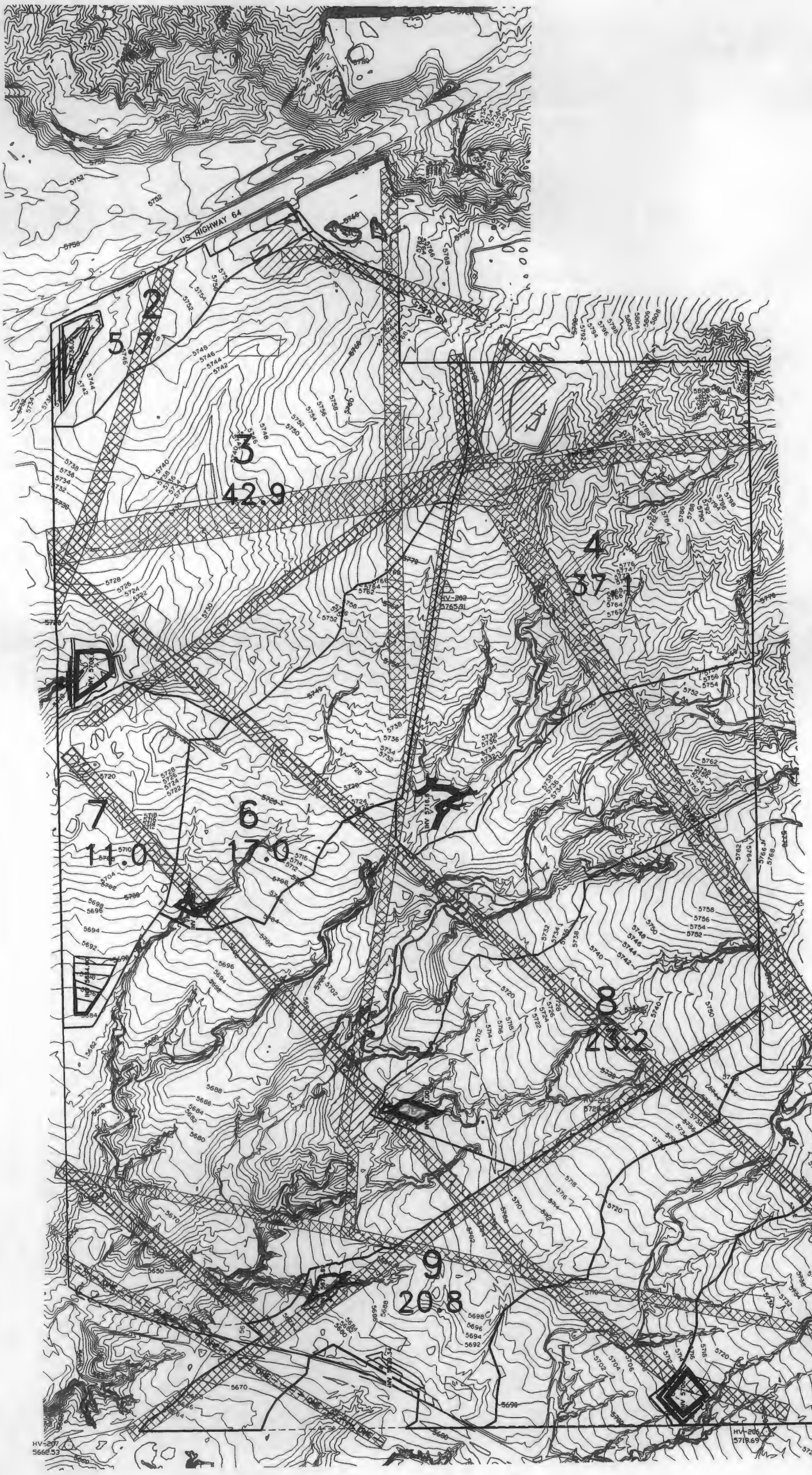
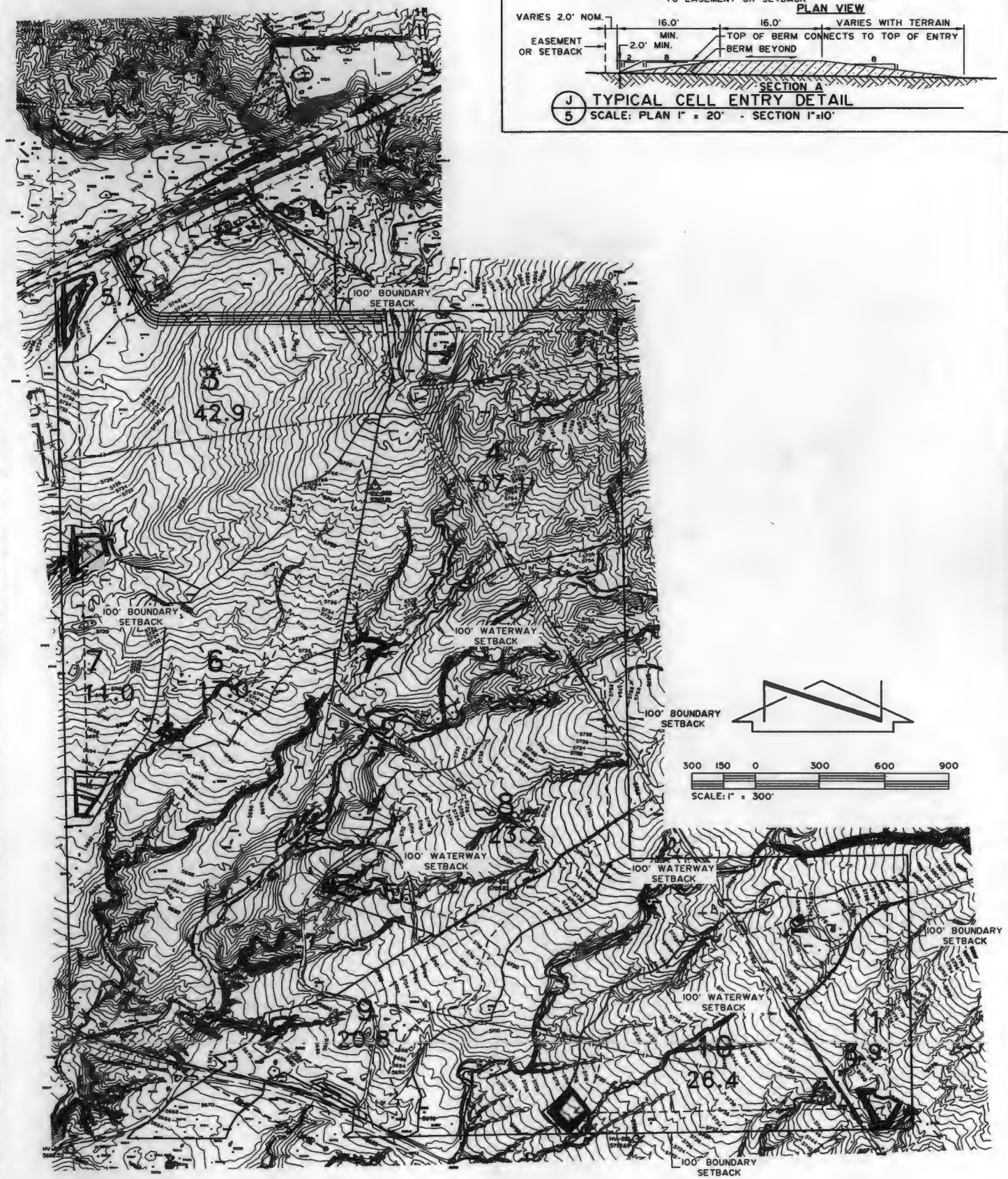


HYD. No.	BASIN	REQUIRED CAPACITY	MAXIMUM POND CAPACITY
1	2	13,445	28,424
2	3	99,945	115,936
3	4	86,432	105,415
4	6	39,155	16,044*
5	7	25,627	48,803
6	8	54,725	55,017
7	9	48,837	49,569
8	10	60,543	66,791
9	11	20,734	22,671

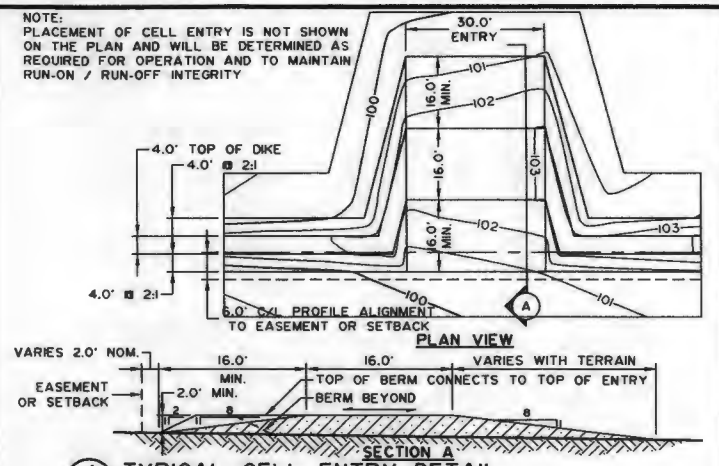
* BASIN 6 POND OVERFLOWS TO BASIN 7

NOTES:

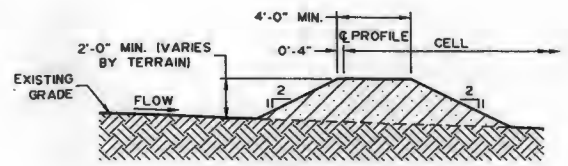
THE DIKES WERE DESIGNED TO RETAIN THE 25 YEAR 1 HOUR STORM.
EACH DIKE HAS 1 FOOT OF FREEBOARD AT THE SPILLWAY OVERFLOW SECTION.
BERMS AND V-DITCHES THAT PROTECT WATERWAYS WILL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR REMEDIATION OF SOILS.
DIKES WILL BE CONSTRUCTED WHEN THE CELLS THAT CONTRIBUTE STORMWATER RUNOFF TO THAT DIKE BECOME ACTIVE.
GATES WILL BE INSTALLED AS NEEDED.
EARTHWORK: PLACE AND COMPACT FILL IN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED DENSITIES THROUGHOUT THE LIFT.
FILL LIFTS SHALL NOT EXCEED 8 INCHES.
MATERIAL SHALL HAVE A MINIMUM OF 95% COMPACTION.



NOTE:
PLACEMENT OF CELL ENTRY IS NOT SHOWN ON THE PLAN AND WILL BE DETERMINED AS REQUIRED FOR OPERATION AND TO MAINTAIN RUN-ON / RUN-OFF INTEGRITY

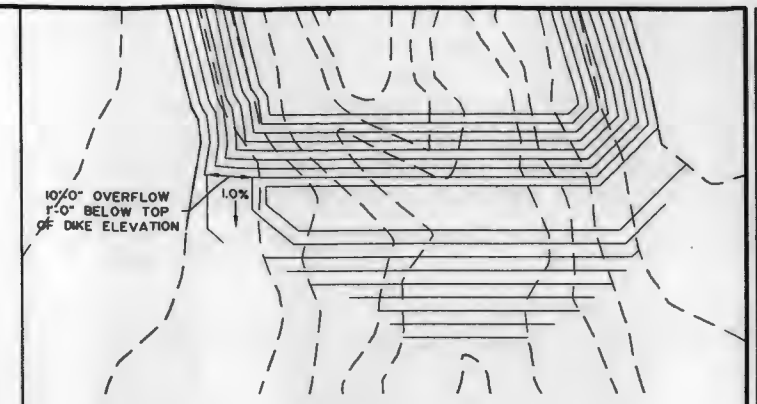


J / 5 TYPICAL CELL ENTRY DETAIL
SCALE: PLAN 1" = 20' - SECTION 1"=10'



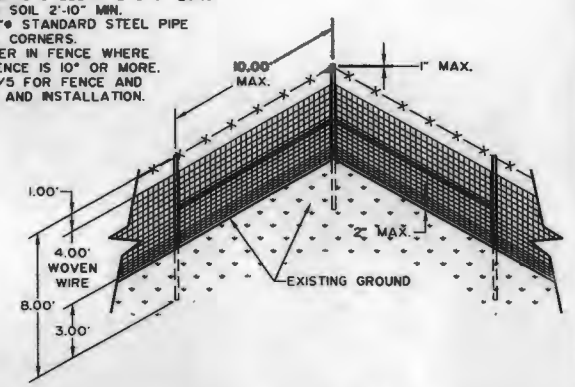
EARTH BERM WITHOUT DITCH
CREATE BERM BY DUMPING MATERIAL ON EXISTING SURFACE TO INTERCEPT RUNOFF WHEN NATURAL GRADES ARE PRESENT TO ENSURE DRAINAGE TO RETENTION AREA.

E / 5 DETAIL OF EARTH BERM FOR CELLS
SCALE 1" = 5'

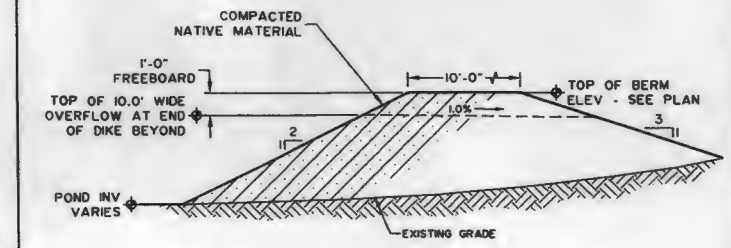


A / 5 TYPICAL OVERFLOW PLAN
SCALE: 1" = 20'

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL CORNERS.
3. INSTALL CORNER IN FENCE WHERE ANGULAR DIFFERENCE IS 10° OR MORE.
4. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.



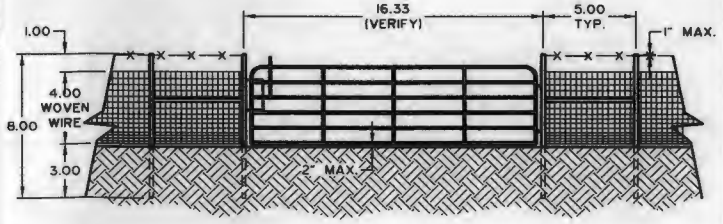
F / 5 FIELD FENCE CORNER POST DETAIL
SCALE 1" = 5'



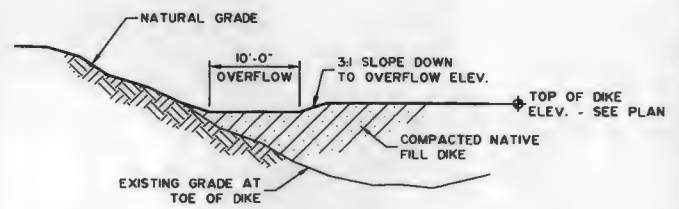
NOTES
1. DESIGN STORM FOR POND SIZING: 25 YEAR, 1 HOUR
2. MINIMUM DEPTH OF FREEBOARD: 1 FOOT

B / 5 TYPICAL RETENTION POND SLOPE DETAIL
SCALE: 1/4" = 1'-0"

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL GATE OPENINGS.
3. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.
4. GATE TO BE 52" POWDER RIVER CLASSIC GATE WITH HINGE AND LOCKABLE LEVER LATCH.
5. GATE AT ENTRY SHALL BE TWO (2) 16' GATES WITH HINGE AND CENTER LOCKABLE LEVER LATCH.



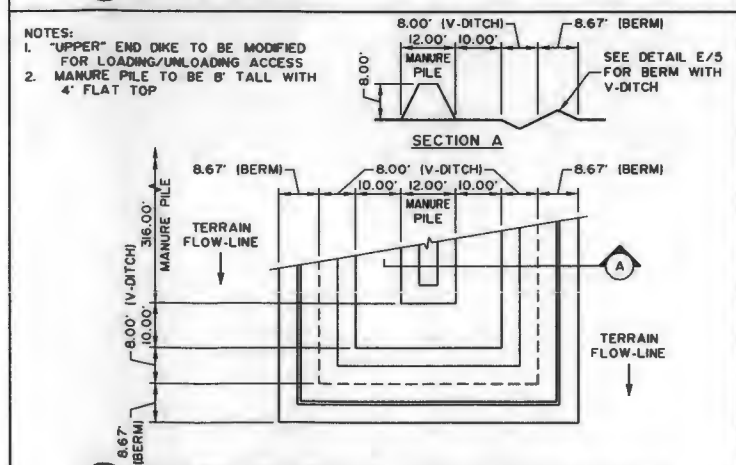
G / 5 FIELD FENCE GATE INSTALLATION DETAIL
SCALE 1" = 5'



NOTE:
OVERFLOW MAY BE PLACED AT EITHER END OF THE RETENTION DIKE - SEE PLAN FOR SUGGESTED LOCATION.

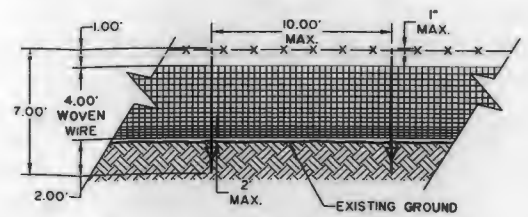
C / 5 DIKE OVERFLOW DETAIL
SCALE: 1" = 10'

NOTES:
1. "UPPER" END DIKE TO BE MODIFIED FOR LOADING/UNLOADING ACCESS
2. MANURE PILE TO BE 8' TALL WITH 4' FLAT TOP



H / 5 MANURE STOCKPILE CONTAINMENT DETAIL
SCALE : N.T.S.

NOTE:
1. USE 7.0' STEEL TEE POST DRIVE 18" TO 24" IN GROUND MAXIMUM 10' APART.
2. USE 4.0' HIGH WOVEN STEEL WIRE FIELD FENCE TIED TO TEE POST AT TOP, BOTTOM AND MIDDLE OF FENCE.
3. INSTALL 1 (ONE) STRAND TWISTED HEAVY GAGE BARBED WIRE TIED AT EACH TEE POST WITHIN 1" OF POST TOP.
4. INSTALL 1 (ONE) 4"ø STANDARD STEEL PIPE POST EVERY 100 (ONE HUNDRED) FEET OF STRAIGHT FENCE.



D / 5 FIELD FENCE AND TEE POST DETAIL
SCALE 1" = 5'

BY	REVISION	DATE

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FILE: D:\DRAWINGS-LEH\2009\09467\09467drn3.dwg

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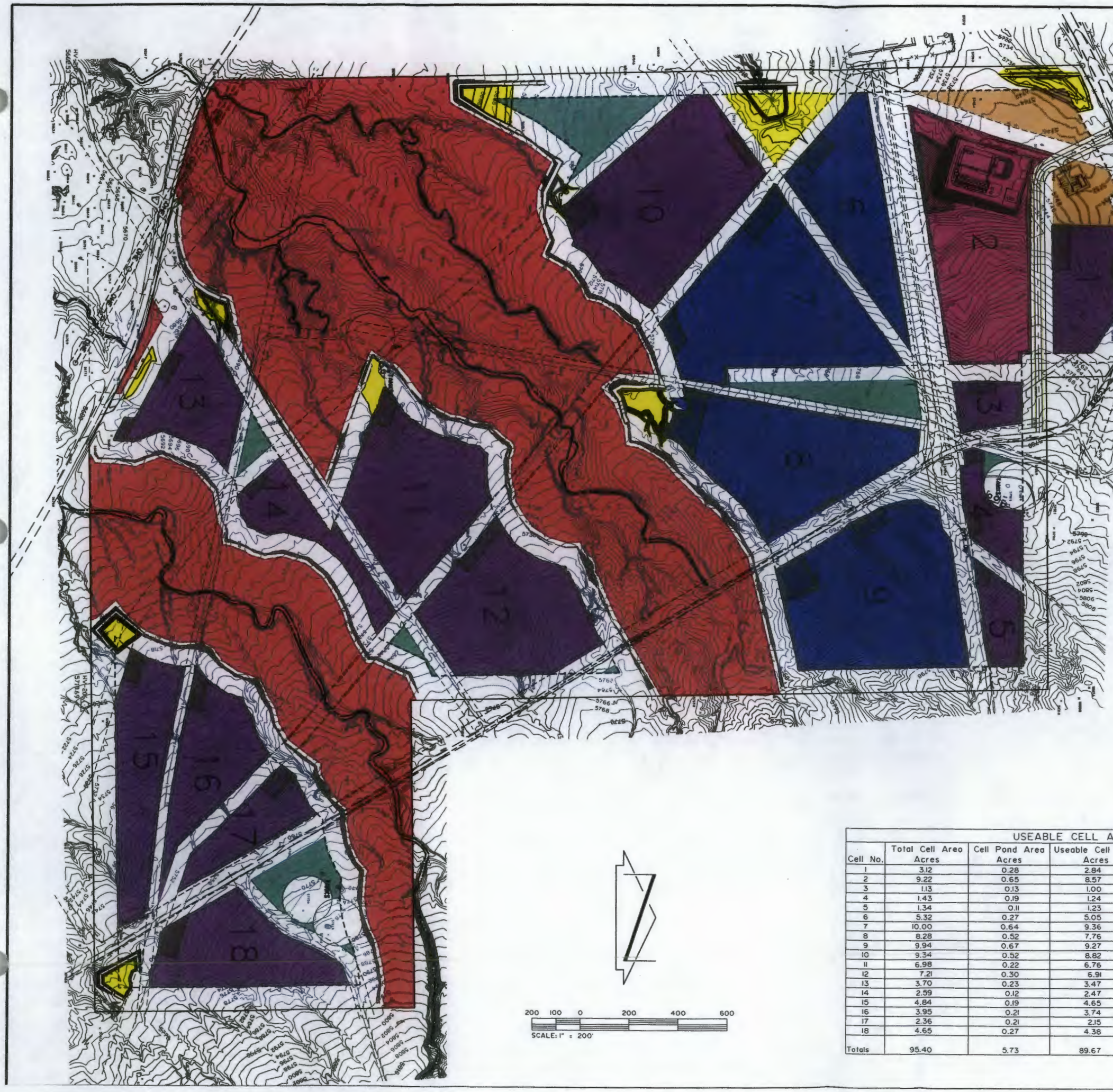
87401 · (505)327-3303

RETENTION DIKES AND DETAILS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1"=300'
FILE: 09467DRN3
SHEET 5 OF 15



USEABLE CELL AREAS

Cell No.	Total Cell Area Acres	Cell Pond Area Acres	Useable Cell Area Acres	Minimum Cell Pond Volume	Comments
1	3.12	0.28	2.84	7269	Final Disposition
2	9.22	0.65	8.57	21765	Processing Area
3	1.13	0.13	1.00	2468	Final Disposition
4	1.43	0.19	1.24	3331	Final Disposition
5	1.34	0.11	1.23	3122	Final Disposition
6	5.32	0.27	5.05	12615	Final Disposition
7	10.00	0.64	9.36	23713	Active Treatment
8	8.28	0.52	7.76	19634	Active Treatment
9	9.94	0.67	9.27	22578	Active Treatment
10	9.34	0.52	8.82	22439	Active Treatment
11	6.98	0.22	6.76	16261	Final Disposition
12	7.21	0.30	6.91	16377	Final Disposition
13	3.70	0.23	3.47	8404	Final Disposition
14	2.59	0.12	2.47	6142	Final Disposition
15	4.84	0.19	4.65	11276	Final Disposition
16	3.95	0.21	3.74	9490	Final Disposition
17	2.36	0.21	2.15	5670	Final Disposition
18	4.65	0.27	4.38	10833	Final Disposition
Totals	95.40	5.73	89.67		

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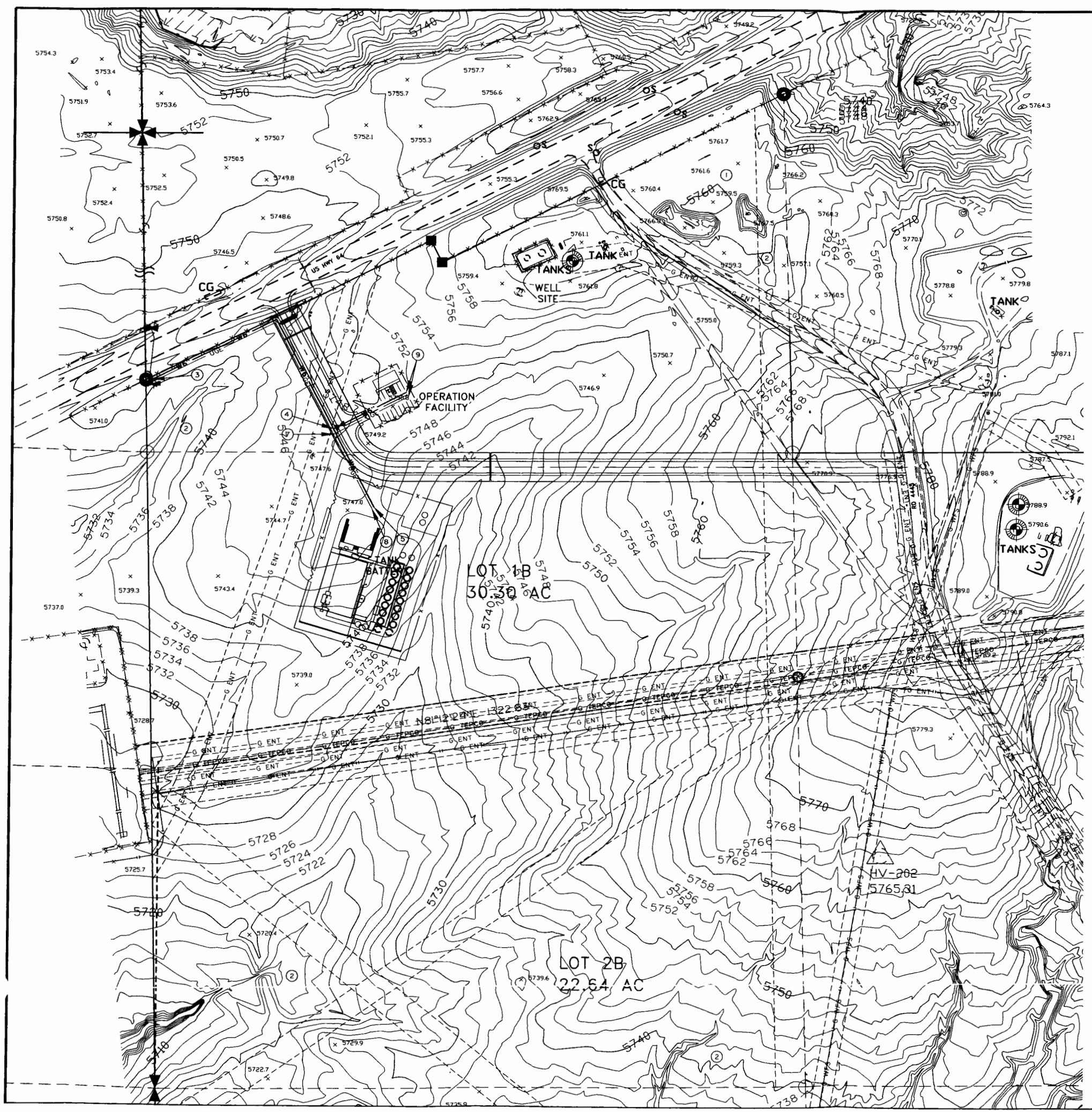
CELL MAP
CROWE BLANCO PROPERTY LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 200'
FILE: 09467DRN3
SHEET 6 OF 15



KEYED NOTES:

1. THE AREA SET ASIDE FOR WATER SHALL BE EXCLUDED FROM ANY CONSTRUCTION.
2. STORM WATER RETENTION POND DIKES TYPICAL. SEE SHEET 5 AND 6 FOR SPECIFICATIONS.
3. INSTALL 536.0'± 6"Ø CLASS 200 PVC WATER LINE. CONNECT TO EXISTING 6"Ø WATER LINE AT NORTHWEST CORNER OF PROPERTY.
4. INSTALL 6"x6"x6" TEE WITH 1 - 6" VALVE IN VALVE BOX.
5. EXTEND 186.0'± NEW 6"Ø TO FENCE LINE OF TANK BATTERY AREA FOR FUTURE USE.
6. INSTALL 536.0'± OF UNDERGROUND ELECTRICAL CONDUIT TO BE SIZED BY THE CITY OF FARMINGTON ELECTRICAL COMPANY.
7. INSTALL APPROVED UNDERGROUND ELECTRICAL JUNCTION BOX.
8. EXTEND 172.0'± NEW UNDERGROUND ELECTRICAL CONDUIT TO FENCE LINE OF TANK BATTERY AREA.
9. CONTRACTOR TO EXTEND BOTH WATER AND UNDERGROUND ELECTRICAL SERVICE TO PROPOSED BUILDING AREA AS DIRECTED BY THE OWNER.

NOTE:

1. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY CROSSINGS AND COORDINATE WITH EACH UTILITY OPERATOR PRIOR TO INSTALLATION OF NEW UTILITIES.

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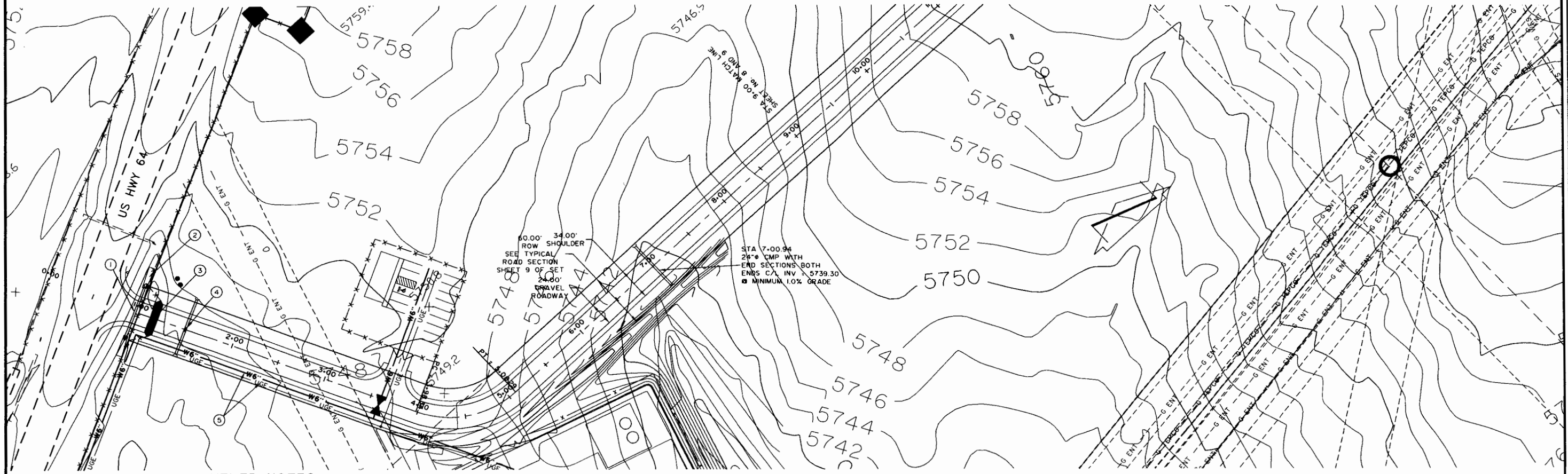
OPERATION FACILITY SITE PLAN
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 100'
FILE: 9467SET
SHEET 7 OF 15



KEYED NOTES:

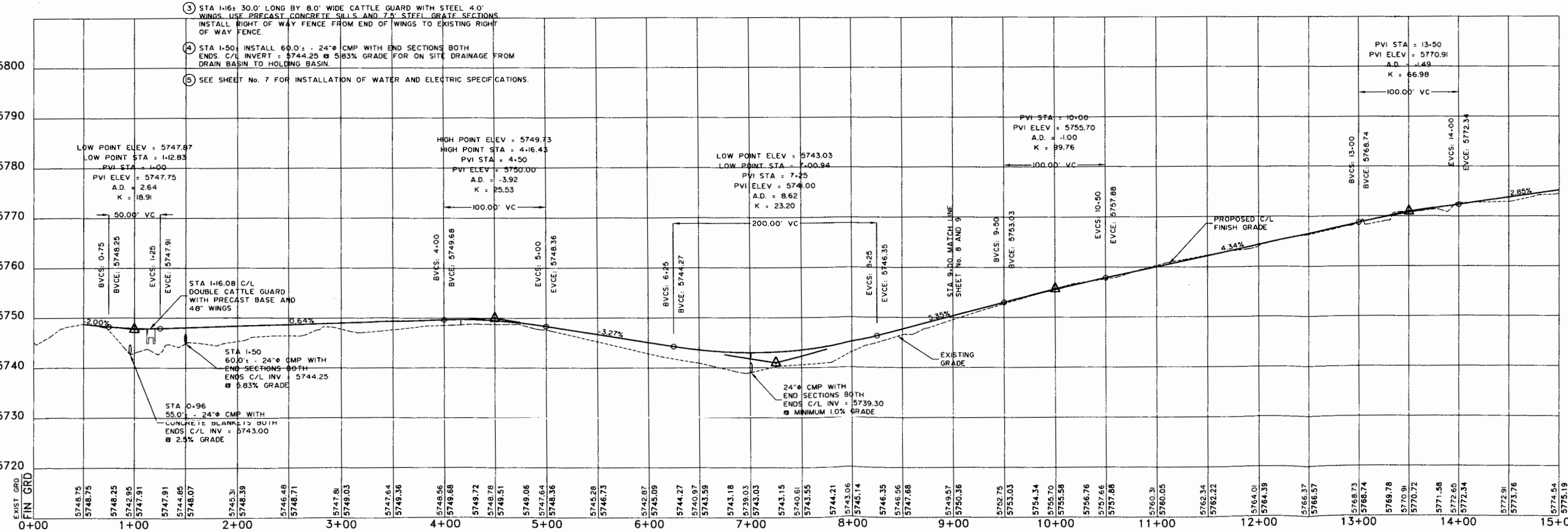
(1) STA 0+96 INSTALL 60.0'± - 24"ø CMP WITH CONCRETE BLANKETS BOTH ENDS C/L INV = 5743.00 @ MINIMUM 3.33% GRADE TO CONTINUE DRAINAGE IN RIGHT OF WAY AS PER NMDOT STANDARD 511-22-1/2. & 511-22-2/2.

(2) POURED IN PLACE CONCRETE PIPE CULVERT BLANKET AT MAXIMUM 8:1 SLOPE BOTH ENDS AS PER NMDOT STANDARD 511-22-1/2. & 511-22-2/2.

(3) STA 1+16± 30.0' LONG BY 8.0' WIDE CATTLE GUARD WITH STEEL 4.0' WINGS. USE PRECAST CONCRETE SILLS AND 7.5' STEEL GRATE SECTIONS. INSTALL RIGHT OF WAY FENCE FROM END OF WINGS TO EXISTING RIGHT OF WAY FENCE.

(4) STA 1+50± INSTALL 60.0'± - 24"ø CMP WITH END SECTIONS BOTH ENDS. C/L INVERT = 5744.25 @ 5.83% GRADE FOR ON SITE DRAINAGE FROM DRAIN BASIN TO HOLDING BASIN.

(5) SEE SHEET No. 7 FOR INSTALLATION OF WATER AND ELECTRIC SPECIFICATIONS.



BY	DATE	REVISION

PRINTED: October 28, 2013
FILE: D:\DRAWINGS\ENT\2009\09467\9467sel.dwg

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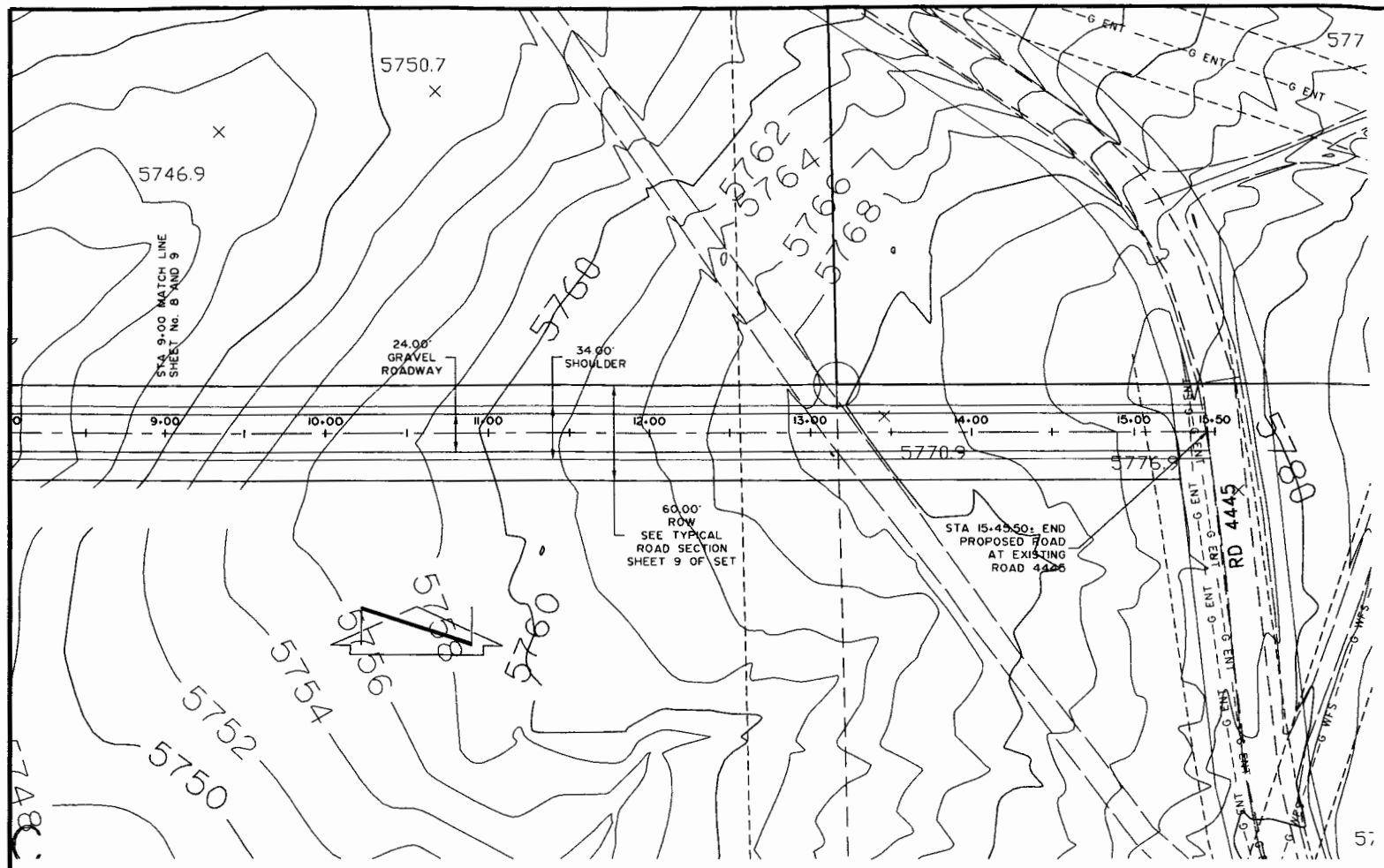
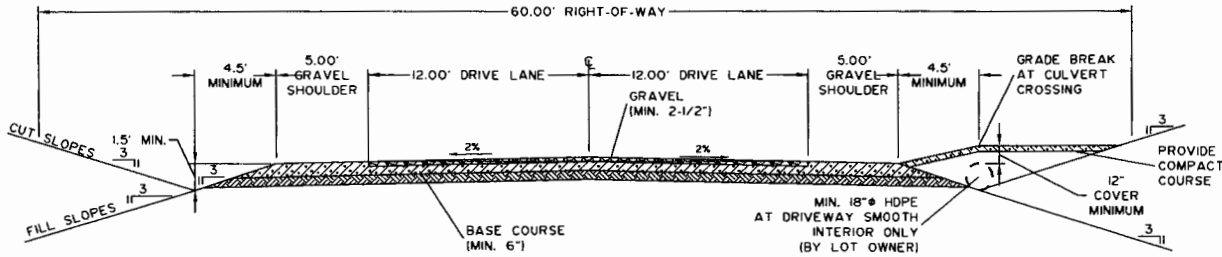
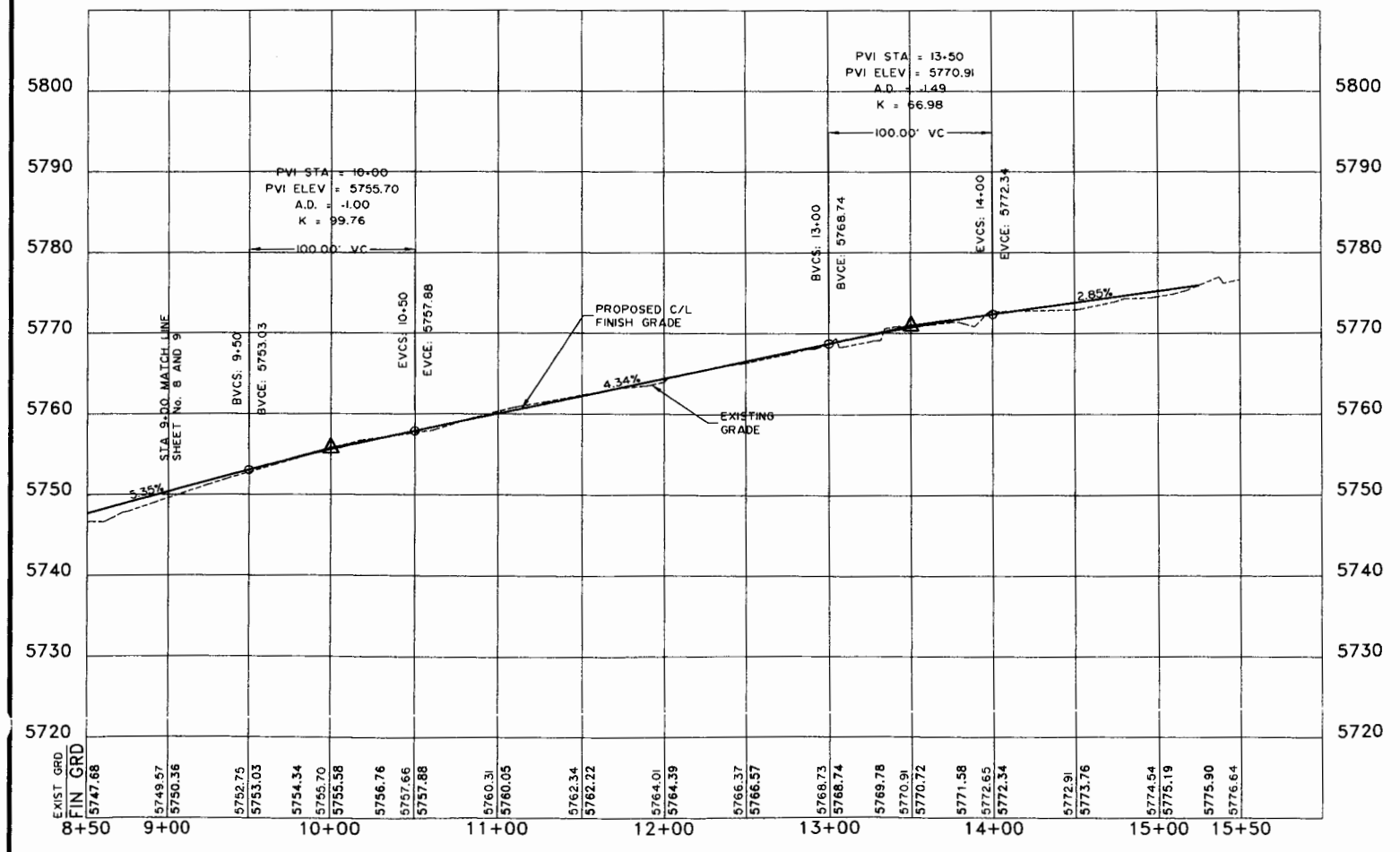
PLAN AND PROFILE ENTRANCE ROAD
CROWE BLANCO PROPERTIES LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 50'H
FILE: 09467SET
SHEET 8 OF 15





TYPICAL ENTRANCE ROAD SECTION 60' R/W
SCALE: 1" = 5'



BY
DATE
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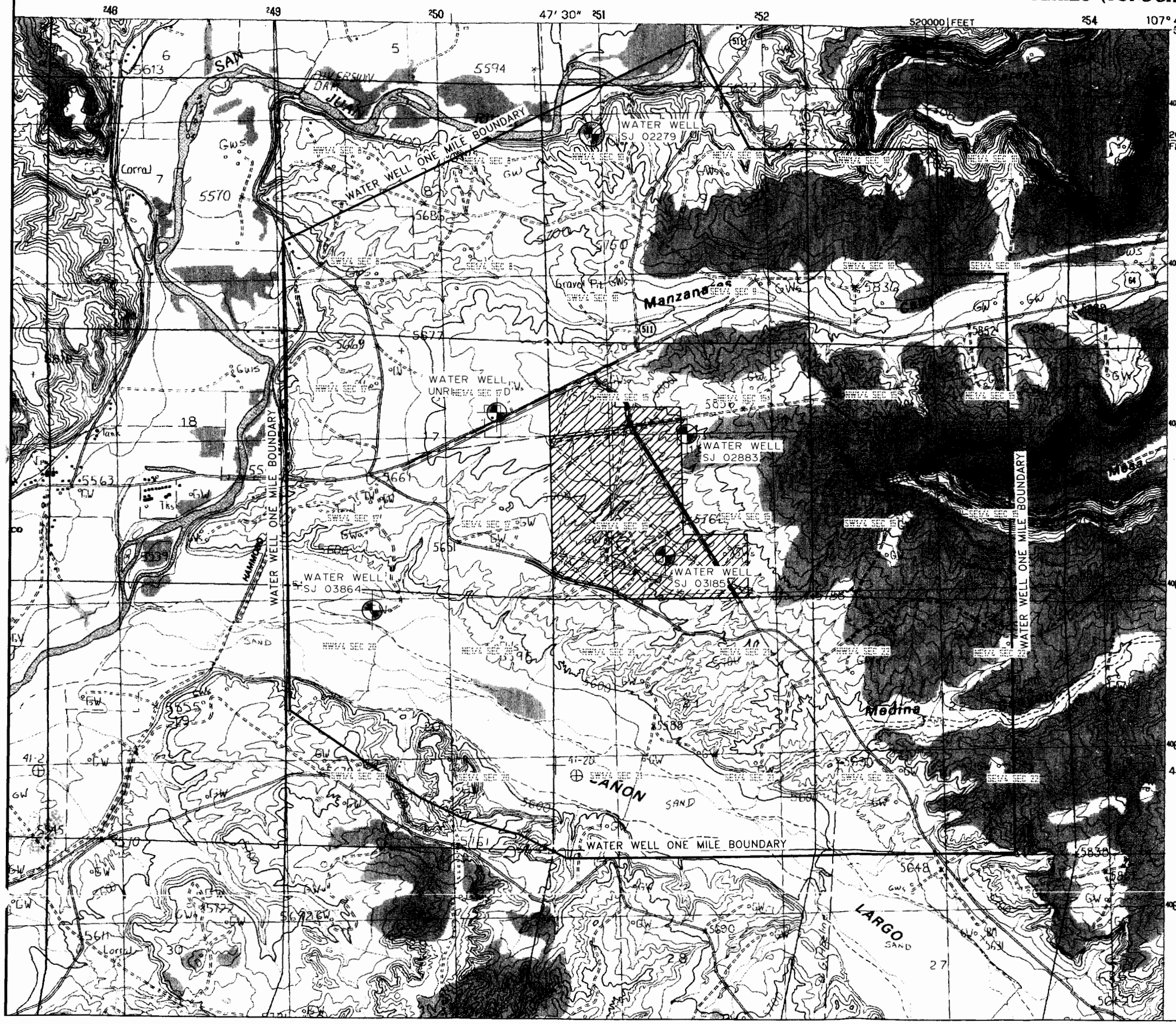
PLAN AND PROFILE ENTRANCE ROAD
CROWE BLANCO PROPERTIES LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 50'H
FILE: 09467SET
SHEET
9
OF
15

5.11

BLANCO QUADRANGLE
NEW MEXICO–SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



WATER WELL LOCATIONS
WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
LYING IN SECTION 16,
T29N R09W, N.M.P.M.,
SAN JUAN COUNTY,
NEW MEXICO

UTILIZING AVAILABLE AERIAL PHOTOGRAPHY, INDUSTRIAL ECOSYSTEMS PERSONNEL PERFORMED A PHYSICAL INSPECTION OF AREAS OF UNUSUAL PLANT GROWTH THAT MIGHT HAVE INDICATED FREE FLOWING SPRINGS. NO FREE FLOWING SPRINGS WERE ENCOUNTERED. A SEARCH OF AVAILABLE RESOURCES DID NOT INDICATE ANY RECORD OF FREE FLOWING SPRINGS.

1000 500 0 1000
SCALE: 1"=1000'

DATE	REVISION	BY

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FILE: D:\DRAWINGS\LEH\2009\09467\9467SETDDN.dwg

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SPRINGS AND WATER WELLS WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

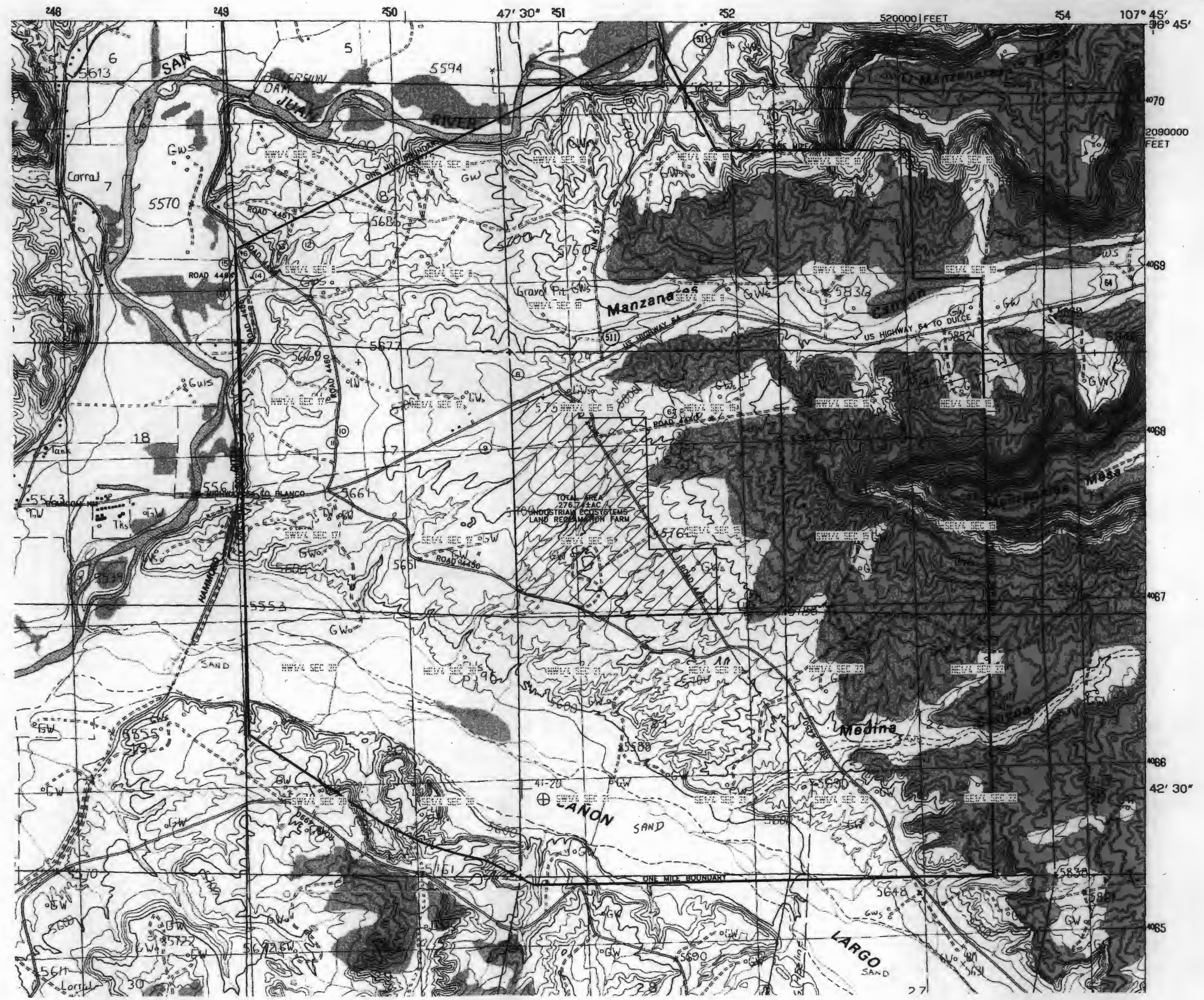
DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 1000'
FILE: 09467SETDDN
SHEET
10
OF
15

HOMES WITHIN ONE MILE
OF
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
LYING IN SECTION 16,
T29N R09W, N.M.P.M.,
SAN JUAN COUNTY,
BLANCO, NEW MEXICO

ADDRESS KEYED NOTES:

1. 103 ROAD 4445 - 507'
2. 105 ROAD 4445 - 648'
3. 46 ROAD 4440 - 630'
4. 44 ROAD 4440 - 651'
5. 42 ROAD 4440 - 801'
6. 41 ROAD 4440 - 522'
7. 43 ROAD 4440 - 609'
8. 7560 US HIGHWAY 64 - 591'
9. 7561 US HIGHWAY 64 - 90'-712' (MANZANERAS COMPRESSION STATION)
10. 36 ROAD 4460 - 3295'
11. 35 ROAD 4460 - 3501'
12. 18 ROAD 4461 - 5128'
13. 13 ROAD 4461 - 5508'
14. 91 A ROAD 4460 - 5582'
15. 91 ROAD 4460 - 5737'
16. 95 ROAD 4460 - 6043'
17. 18 ROAD 4464 - 5951'
18. 61 NM 511 - 5126'
19. 288 ROAD 4800 - 5913'

BLANCO QUADRANGLE
NEW MEXICO–SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



NOTE:

1. PHOTO IMAGE IS FROM GOOGLE EARTH MAPPING.
2. THE LOCATIONS OF THE KEYED NOTES ON THIS PLAN ARE PER SAN JUAN COUNTY ADDRESSING GPS LOCATIONS.

1000 500 0 1000 2000 3000

SCALE: 1" = 1000'

DATE	REVISION	BY

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FILE: D:\DRAWINGS-LEH\2009\09467\94670NEMILE.dwg

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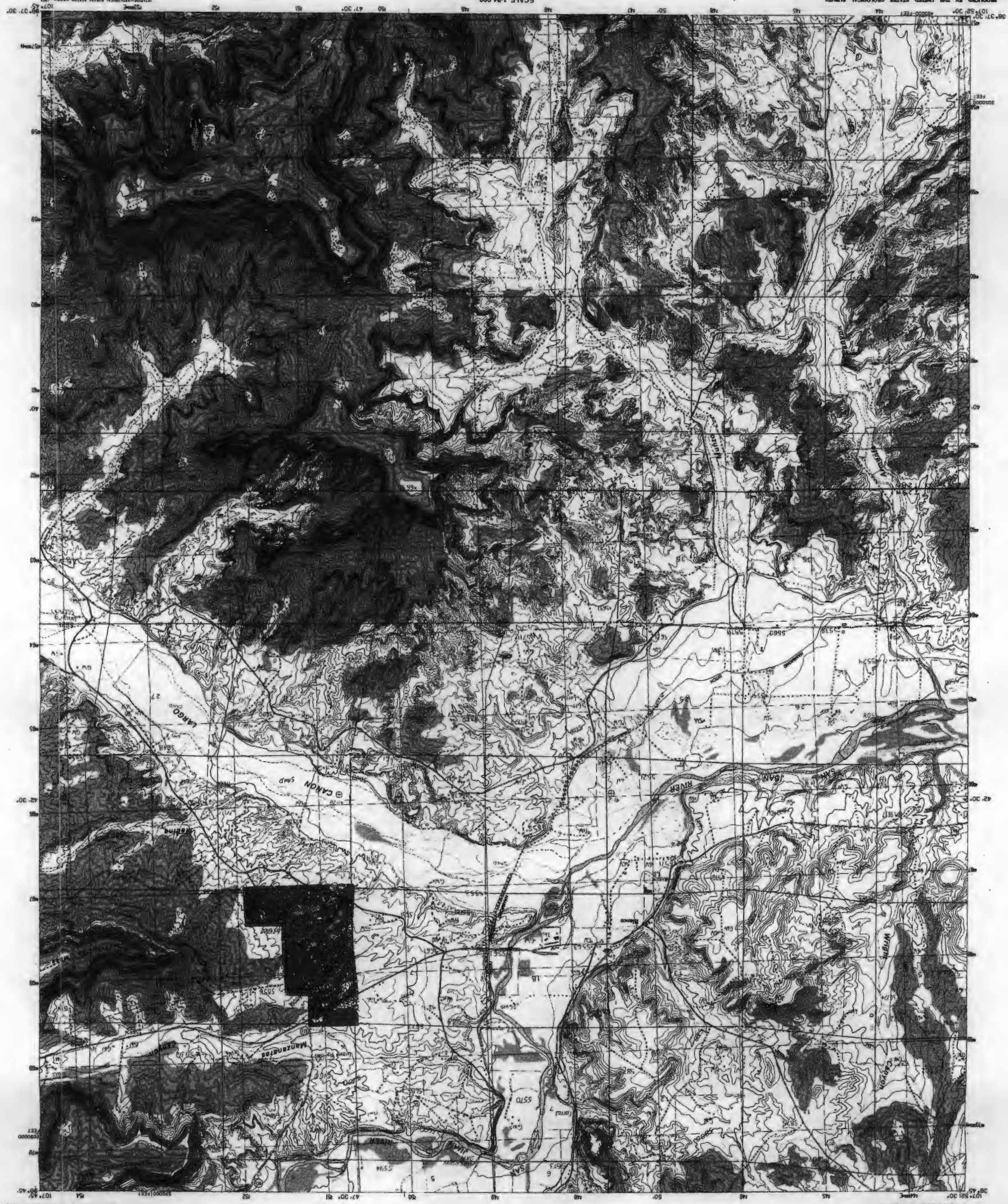
REGISTERED PROFESSIONAL ENGINEER & LAND SURVEYOR — NEW MEXICO — No. 3634 — RICHARD P. CHENEY 10/25/13

BUILDINGS WITHIN ONE MILE
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 1000'
FILE: 094670NEMILE
SHEET
11
OF
15



SCALE: 1" = 2000'

OFF-SITE TOPOGRAPHY
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1"= 2000'
FILE: 09467DRN3
SHEET 12 OF 15

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DATE	REVISION	BY

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West Assembly Point

North Assembly Point

NE Assembly Point

Caution Poison Gas Signs

Emergency Evacuation/ Designated Assembly Points

H2S Sensor

Windsocks

Potentially Affected Public Roads

Road Block Barricades for Emergency Evacuation

ADDENDUM "A" EMERGENCY EVACUATION ROUTES
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:N.T.S.
FILE:09467SET
SHEET 13 OF 15

NEW MEXICO 36541 REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR RICHARD P. CHENEY 10/25/13

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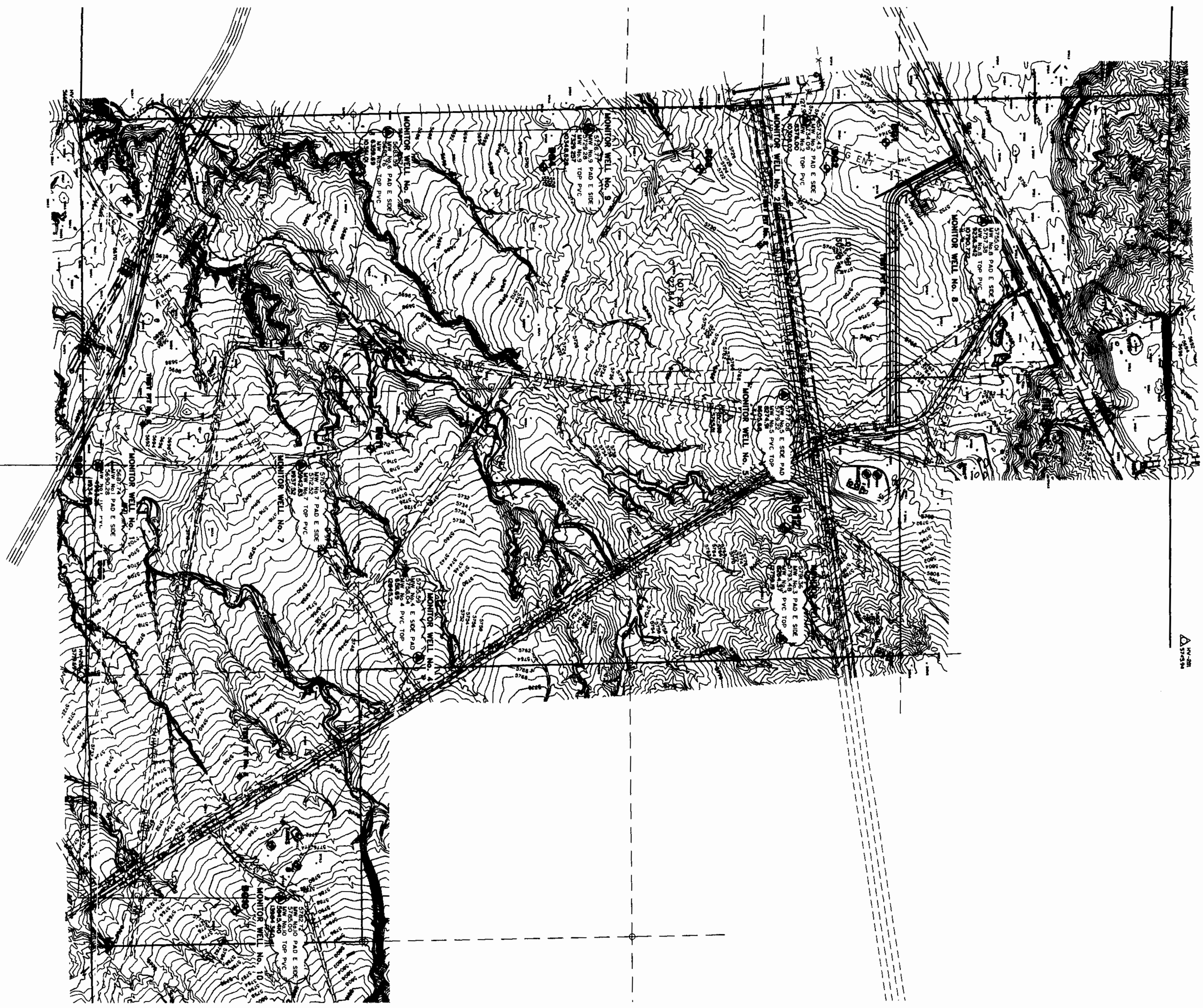
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467set.dwg

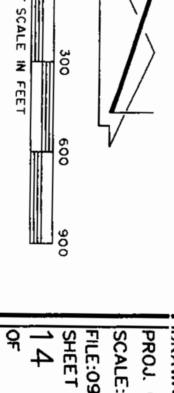


LEGEND

MONITOR WELL No. X — DESIGNATES MONITOR WELL LOCATION

TEST PIT No. X — DESIGNATES SOILS TEST PIT FOR DENSITY

BGX — DESIGNATES SOILS TEST PIT FOR BACKGROUND



DATE:10/25/2013	TEST PITS AND MONITOR WELLS LOCATIONS
DRAWN BY:LH	CROWE BLANCO PROPERTIES, LLC
PROJ. 09467	OPERATED BY INDUSTRIAL ECOSYSTEMS
SCALE:N.T.S.	BLANCO, NEW MEXICO
FILE:09467SET	
SHEET 14 OF 15	

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ENGINEERS · SURVEYORS
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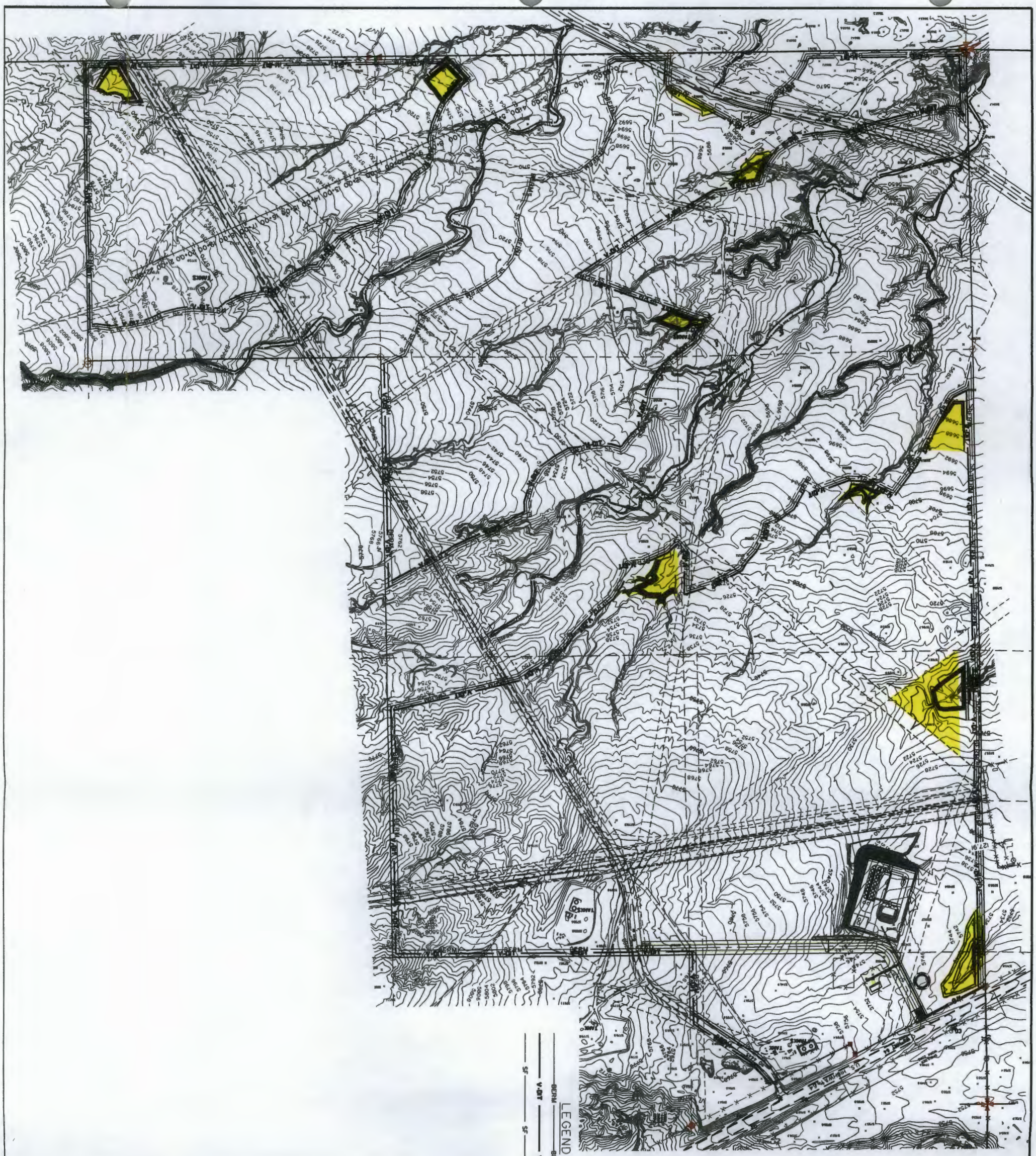
DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467set.dwg



RUN-ON/OFF CONTROL PLAN
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467SET
SHEET 15 OF 15

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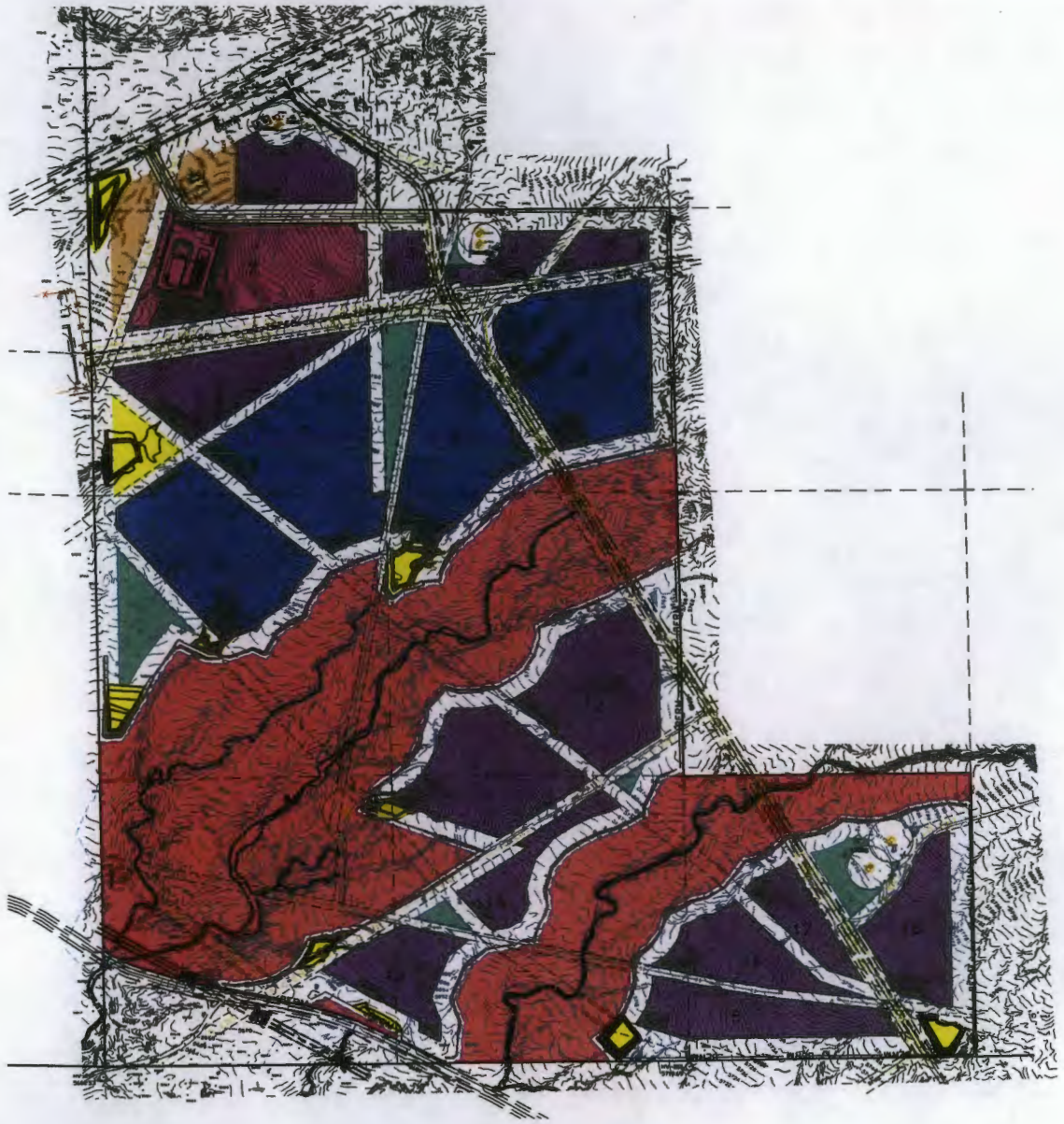
PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467set.dwg



CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS, INC.

BLANCO, SAN JUAN COUNTY, NEW MEXICO

CELL BERM PROFILES

SHEET INDEX

SCALE: 1" = 300'

300 150 0 300 600 900

SCALE IN FEET

- FACILITY OFFICE AREA
- RETENTION PONDS / DIKES
- PROCESSING AREA
- WATERWAYS SETBACK REQUIREMENTS / NOT PART OF PERMITTED AREA
- ACTIVE "TREATMENT" CELLS

FINAL DISPOSITION "RECEIVING" CELLS

- AREA NOT USED FOR TREATMENT OR FINAL DISPOSITION OF REMEDIATED SOILS; OCD WILL BE NOTIFIED PRIOR TO CHANGE OF USE
- CELL STORM WATER RETENTION POND
- ALL UN-HATCHED, UN-SHADED AREAS ARE SETBACKS AND/OR EASEMENTS AND ARE NOT INCLUDED IN TREATMENT CELLS

BERM CROSSING ON PUBLIC ACCESS NOTE:

ALL BERMS THAT CROSS PUBLIC ACCESS SHALL HAVE APPROACHES THAT DO NOT EXCEED 5.0% GRADE TO THE TOP OF BERMS. THE BERMS SHALL BE WIDENED IN PLACES THAT THE BERM HEIGHT EXCEEDS 3.0' ACROSS THE PUBLIC ACCESS TO ENSURE A SMOOTH TRANSITION OVER THE BERM WITHOUT CREATING A HIGH CENTER CONDITION. THE CONSTRUCTION OF THE APPROACHES SHALL VARY IN LENGTH DEPENDING ON THE HEIGHT OF EACH BERM CROSSING.

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ENGINEERS · SURVEYORS
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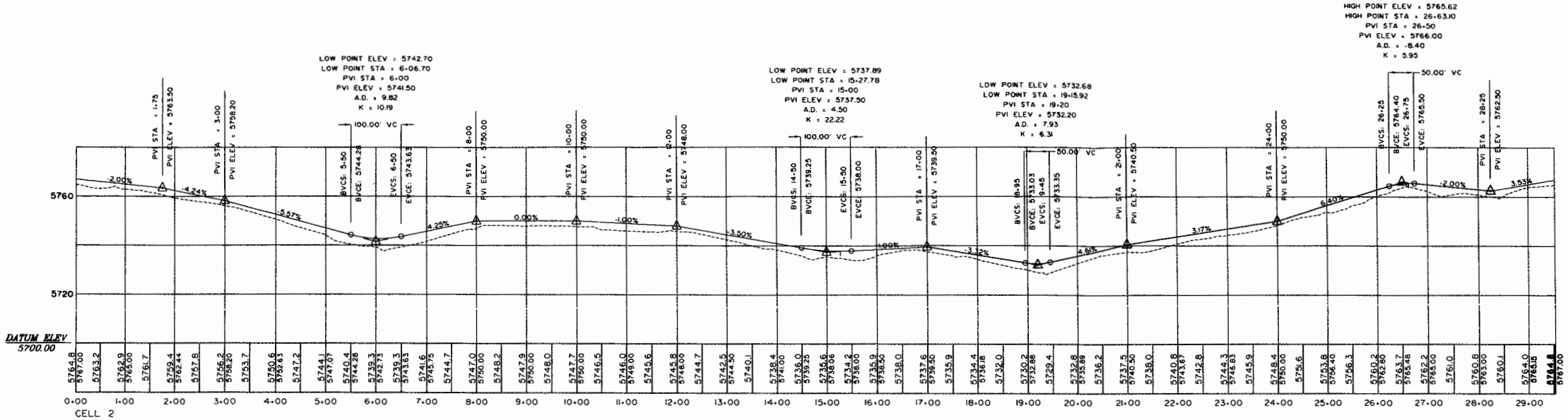
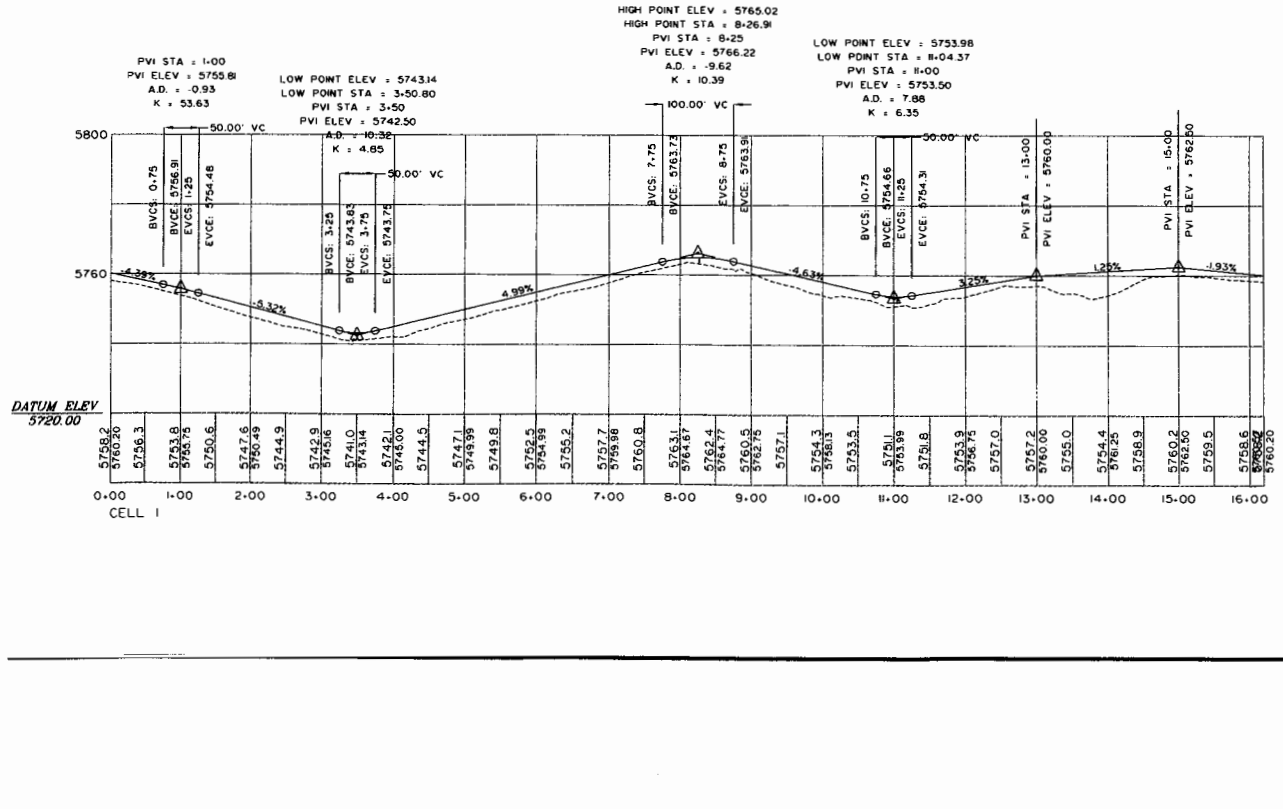
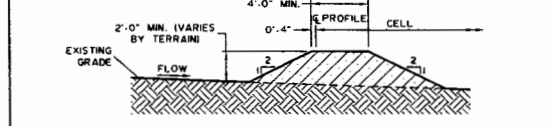
PRINTED: October 28, 2013
FILE: G:\DRAWINGS\2009\09457\09457TECHPHOTOFILES.dwg



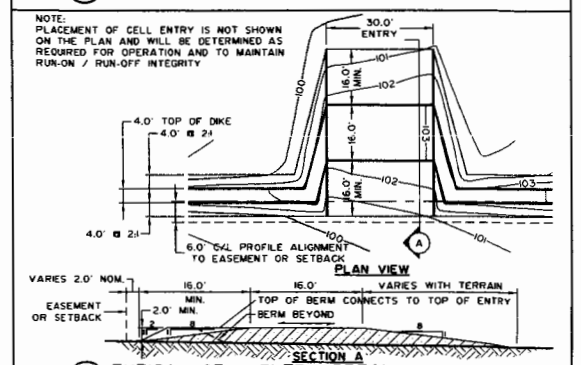




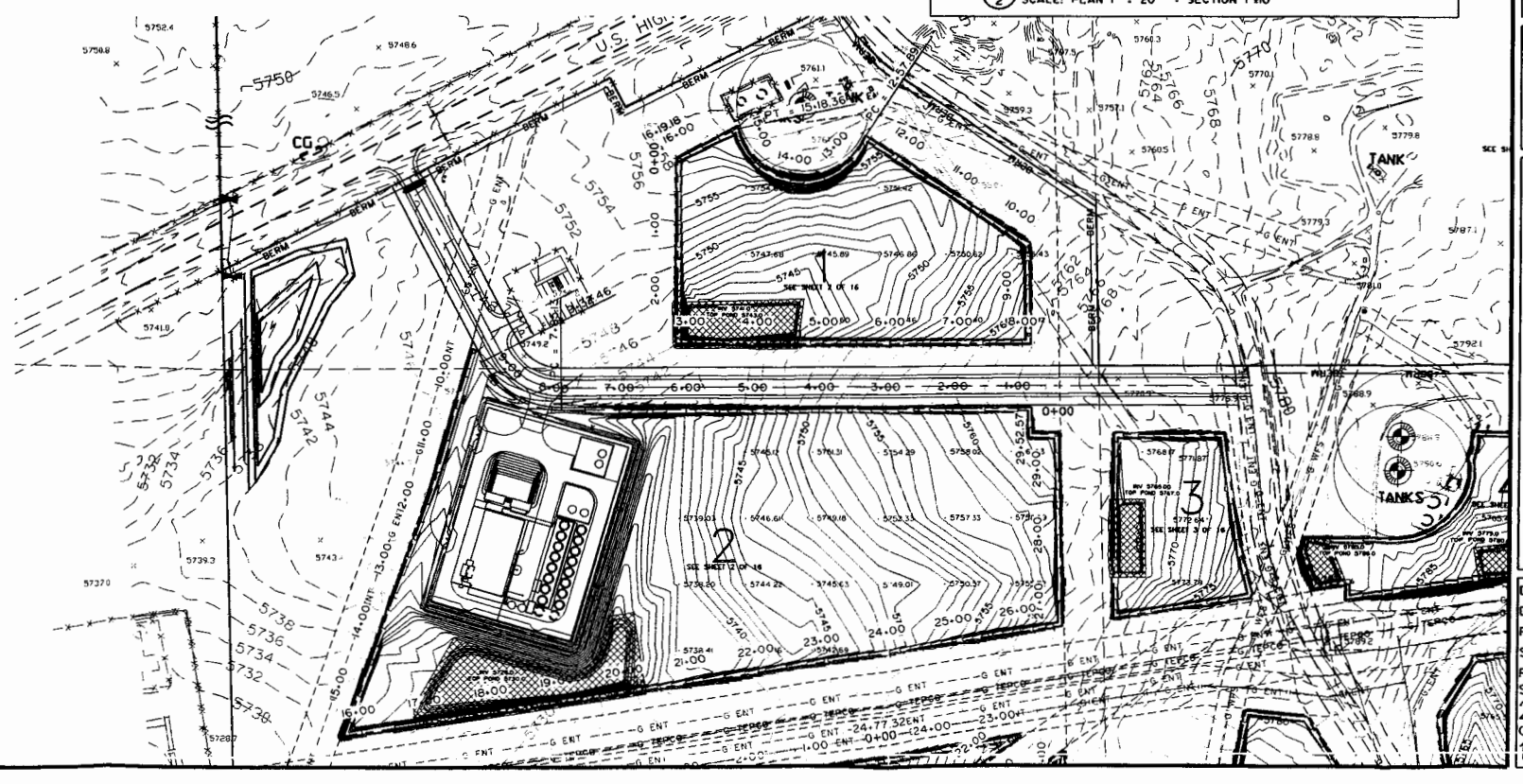
EARTH BERM WITHOUT DITCH

CREATE BERM BY DUMPING MATERIAL ON EXISTING SURFACE TO INTERCEPT RUNOFF WHEN NATURAL GRADES ARE PRESENT TO ENSURE DRAINAGE TO RETENTION AREA.

1/2 DETAIL OF EARTH BERM FOR CELLS
SCALE 1" = 5'



2/2 TYPICAL CELL ENTRY DETAIL
SCALE: PLAN 1" = 20' - SECTION 1"=10'

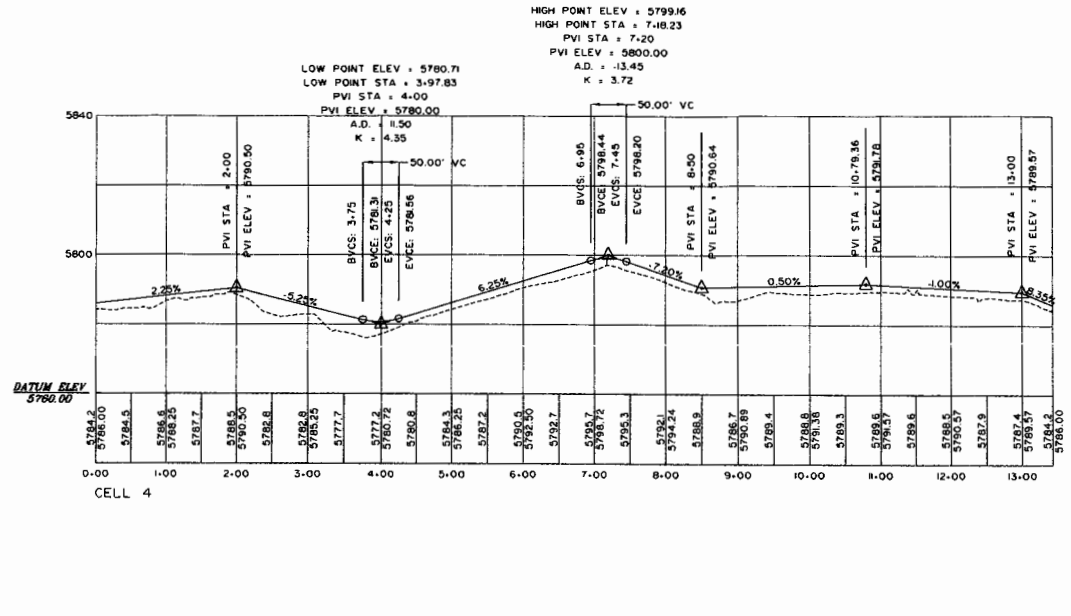


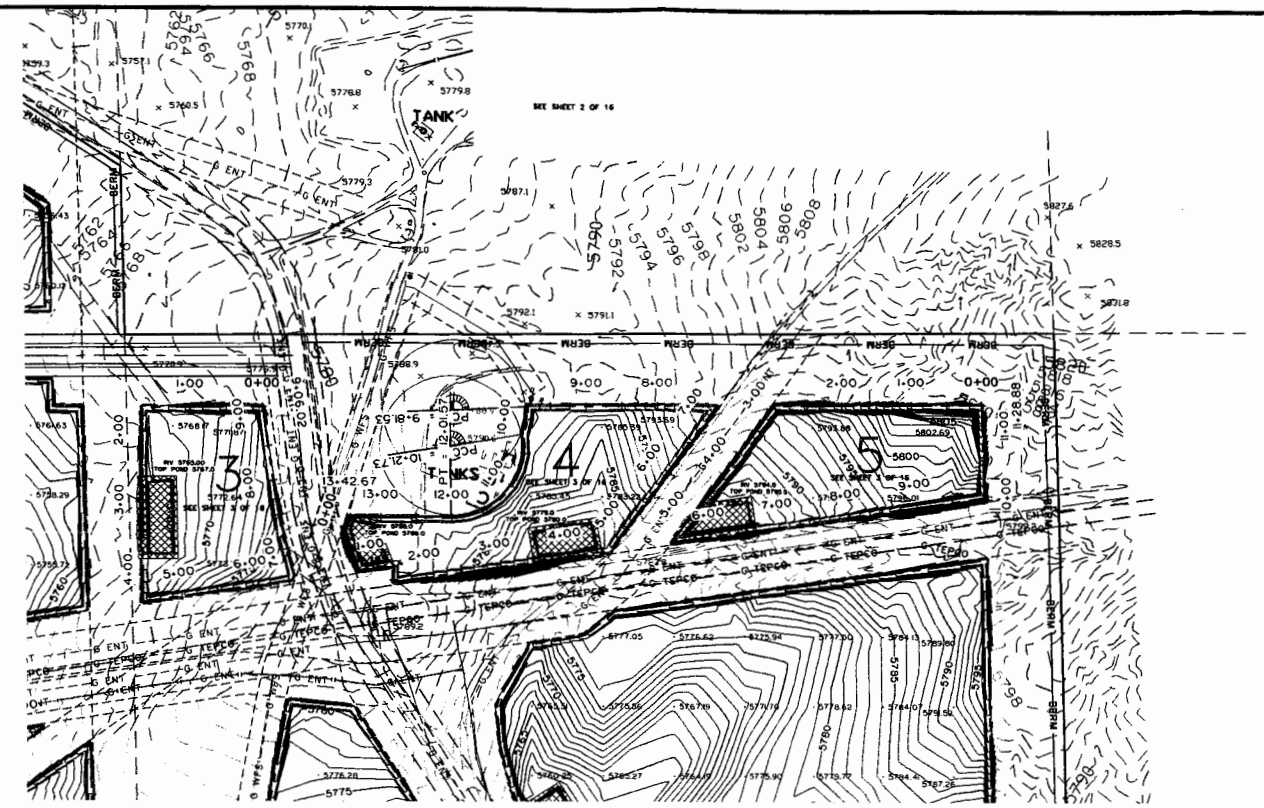
CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

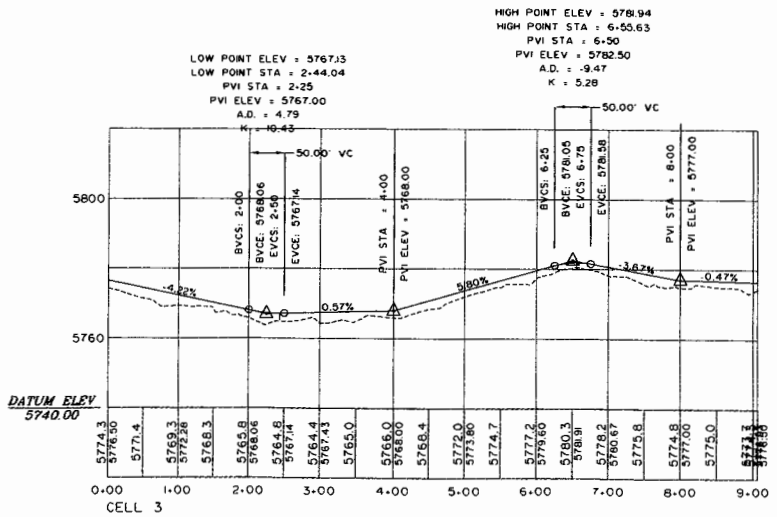
BY	REVISION	DATE

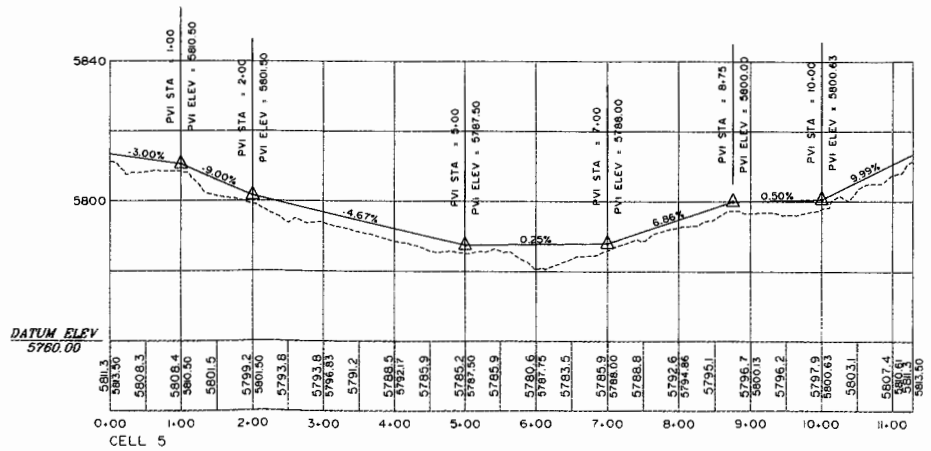
BERM MINUS ONE - BERM ZERO - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC.

DATE: 10/25/
DRAWN BY: LH
PROJ. 09467
SCALE: 1"=100' 1"=20'
FILE: 09567BRMP
SHEET 2 OF 16









BY
REVISION
DATE

CHENEY·WALTERS·ECHOLS

BERM ONE BERM TWO – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE:10/2
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PROJ. 094
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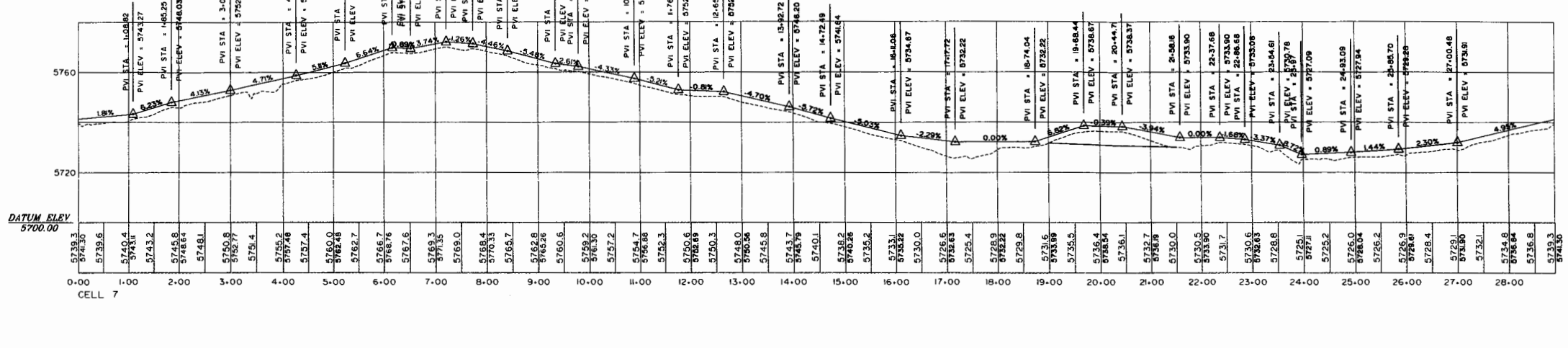
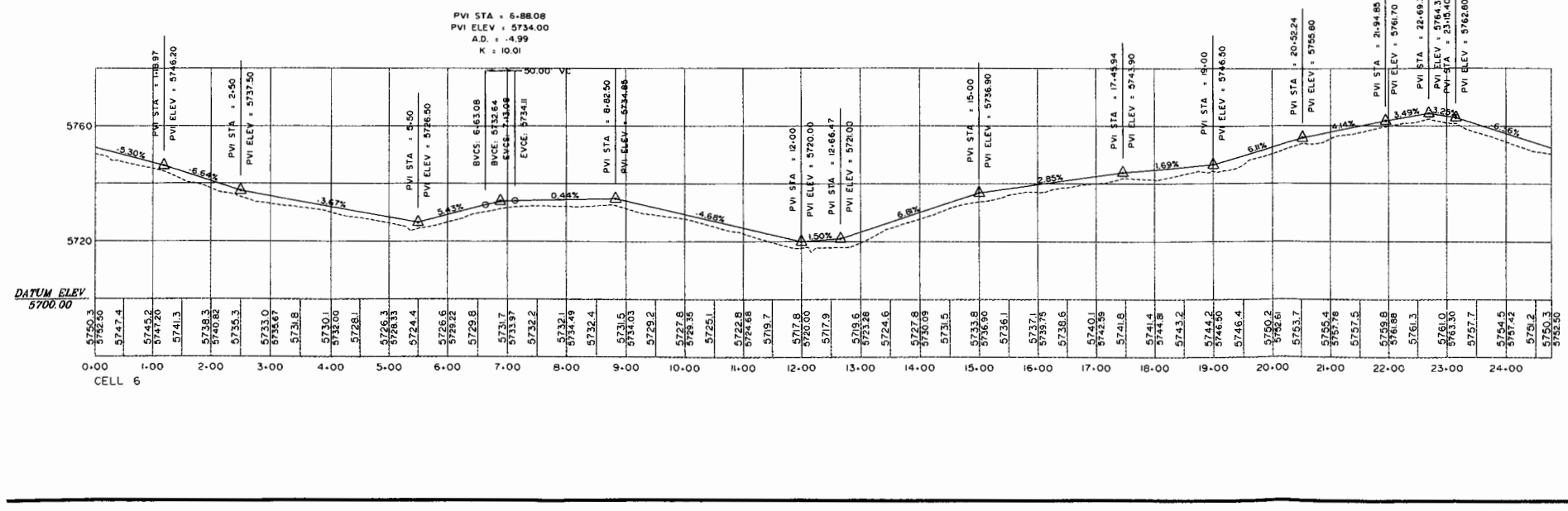
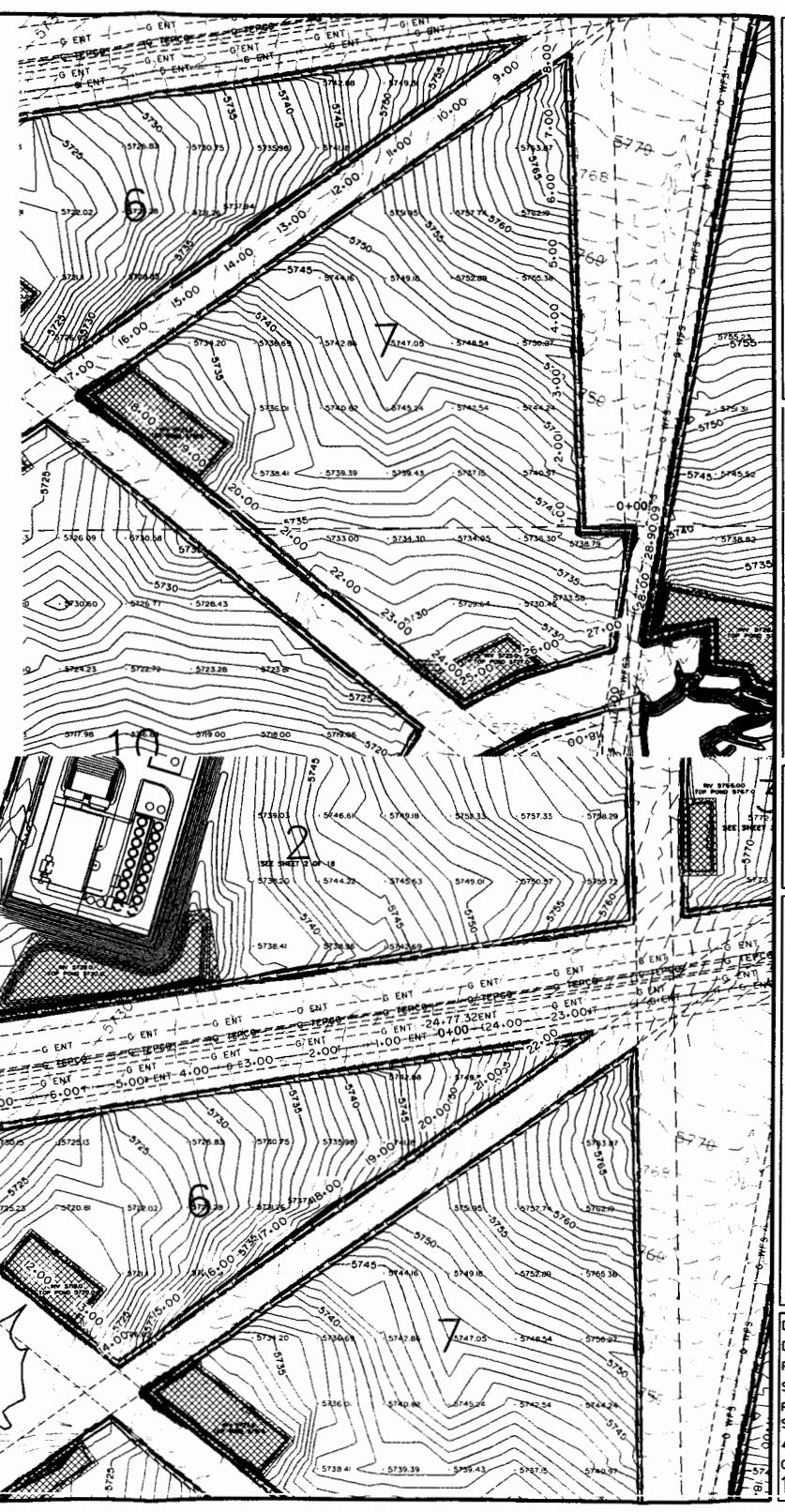
SHEET
3
OF
16







CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

BY	REVISION	DATE

BERM THREE BERM FOUR – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE:10/25/
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PROJ. 09467
SCALE: 1"=10
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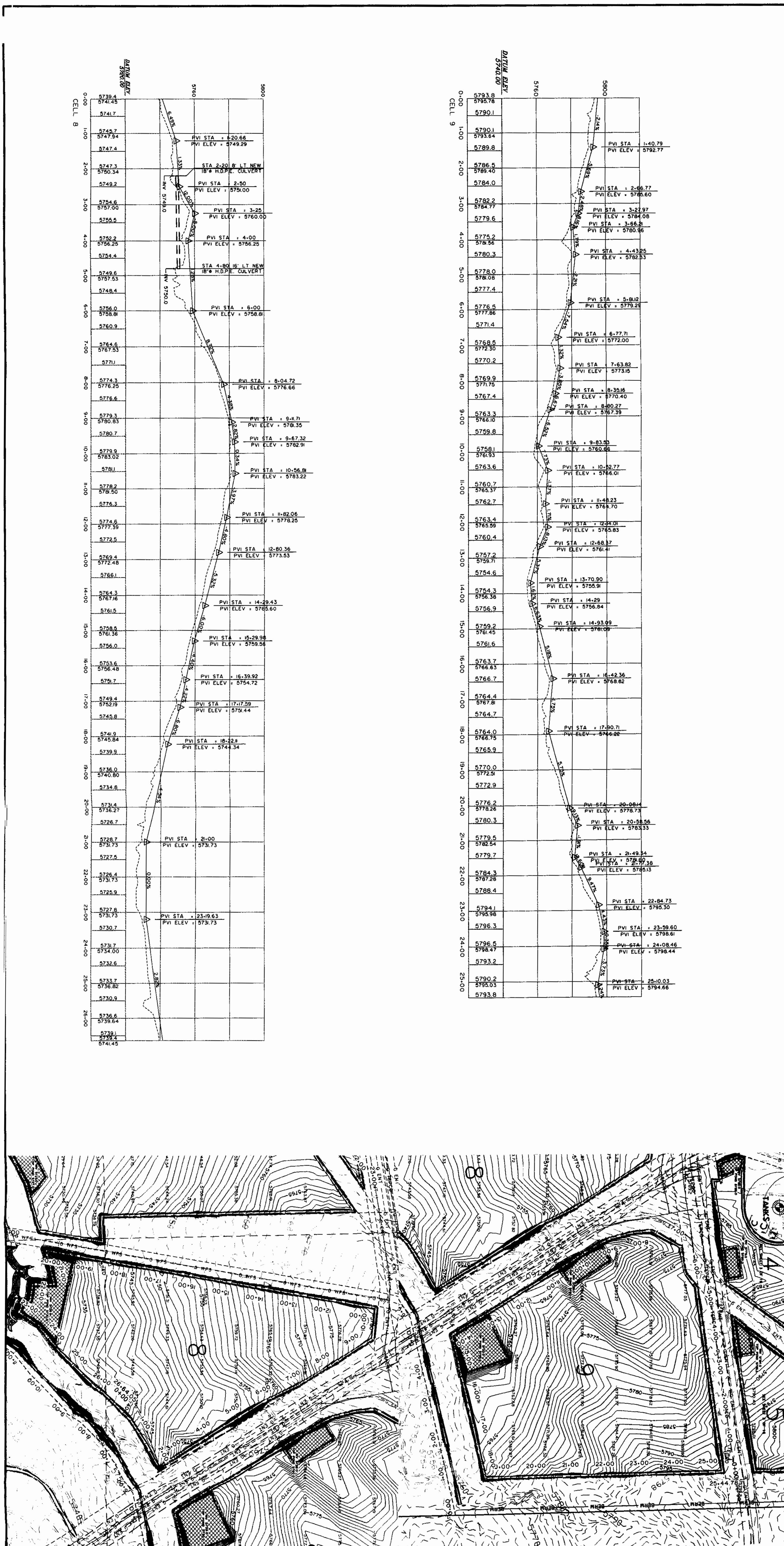
FILE:09467BERM
SHEET
4
OF
16



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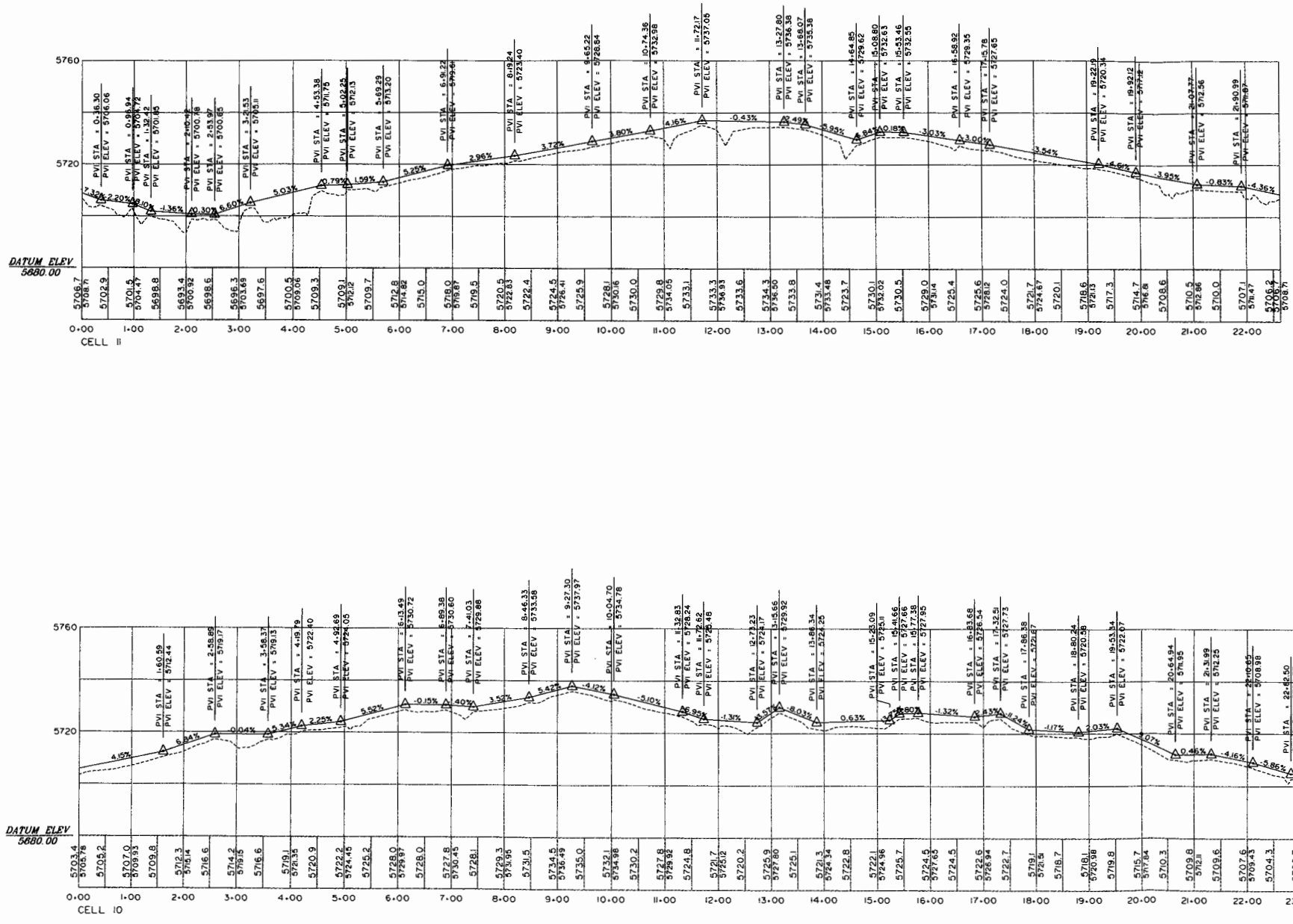
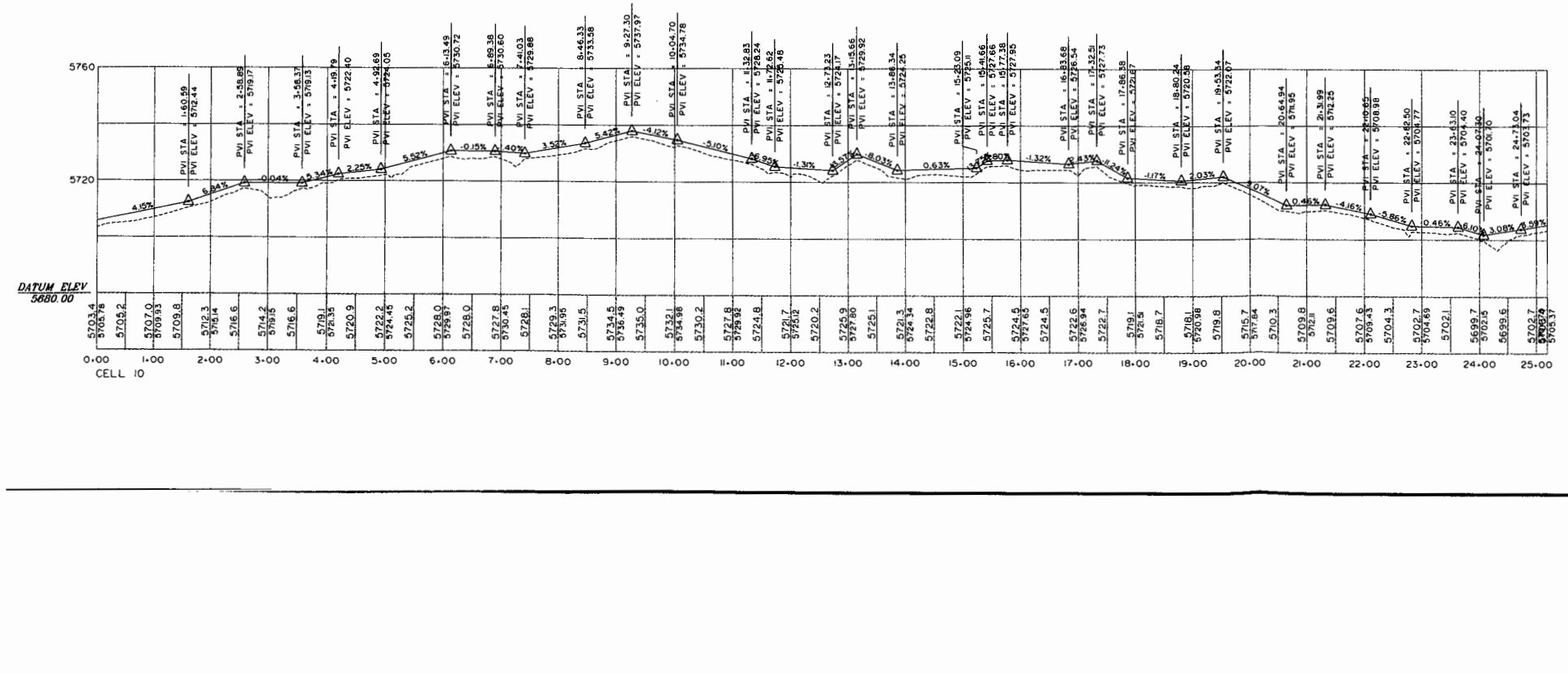
FILE:0956
SHEET 5 OF 16

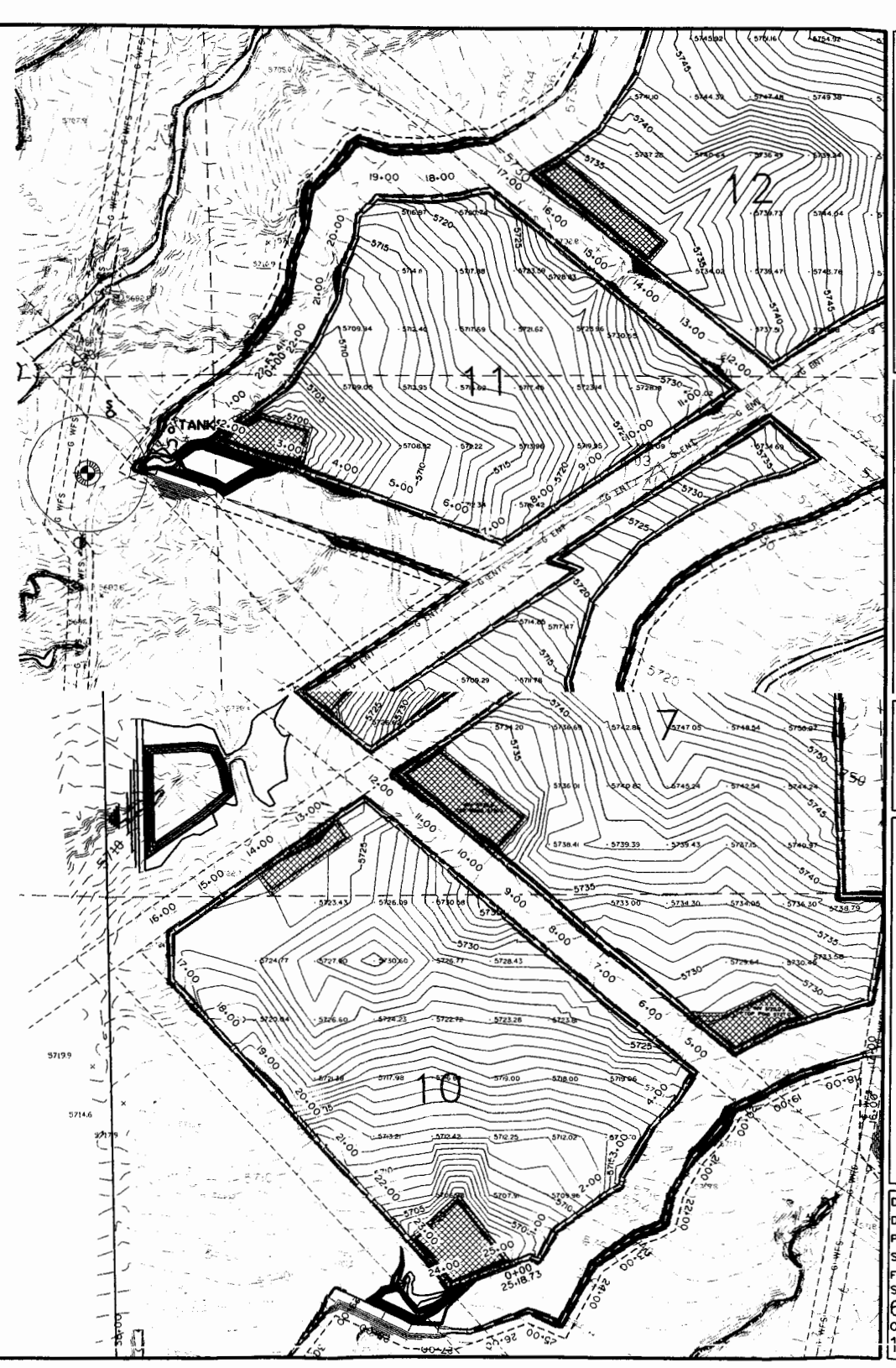
BERM FIVE – C.R.4450 BERM – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS

DATE	REVISION	BY







CHEREY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

BY	REVISION	DATE

BERM A – BERM B – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE: 10/25/
DRAWN BY:
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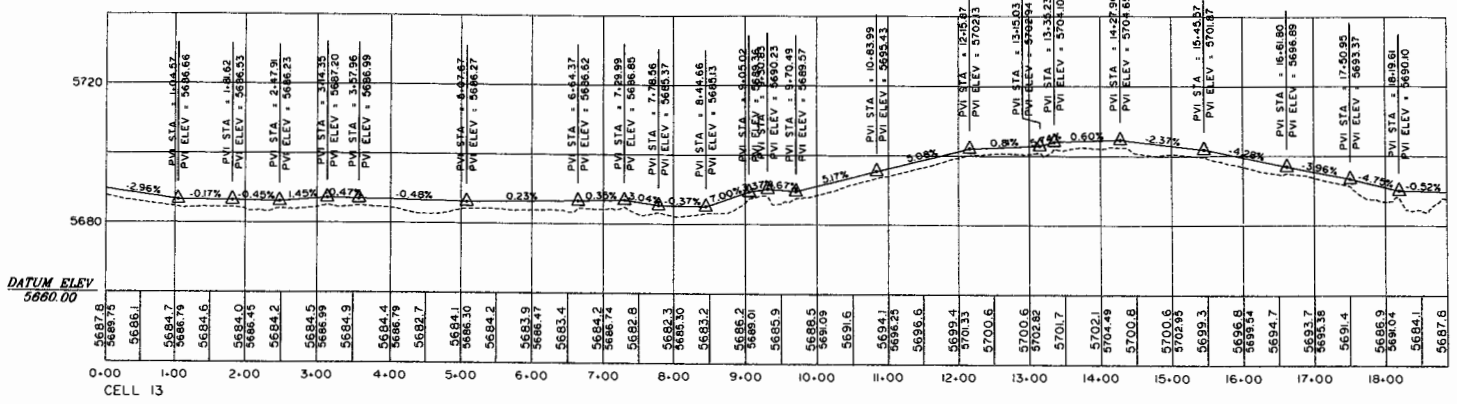

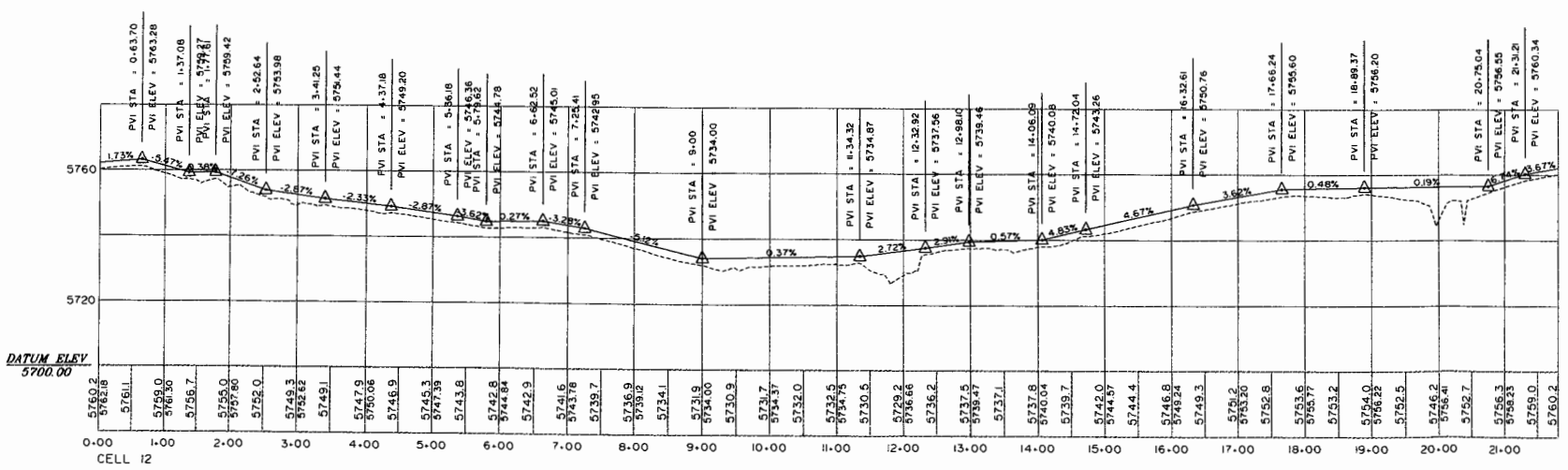

CHENEY-WALTERS
ENGINEERS, INC.

BY	REVISION	DATE

BERM C – BERM D – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE:10/25
DRAWN BY:
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7
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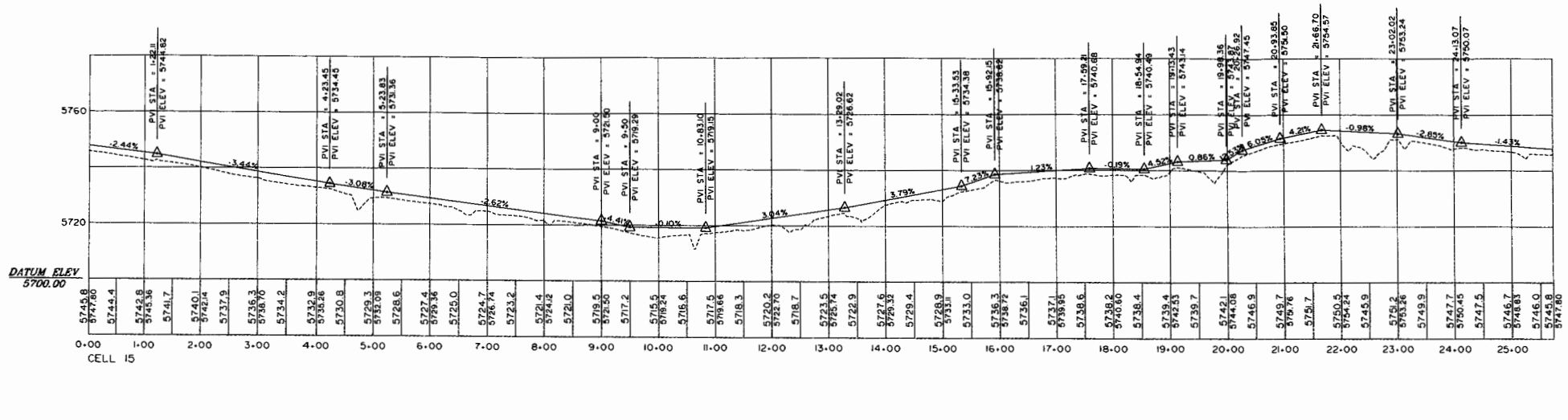
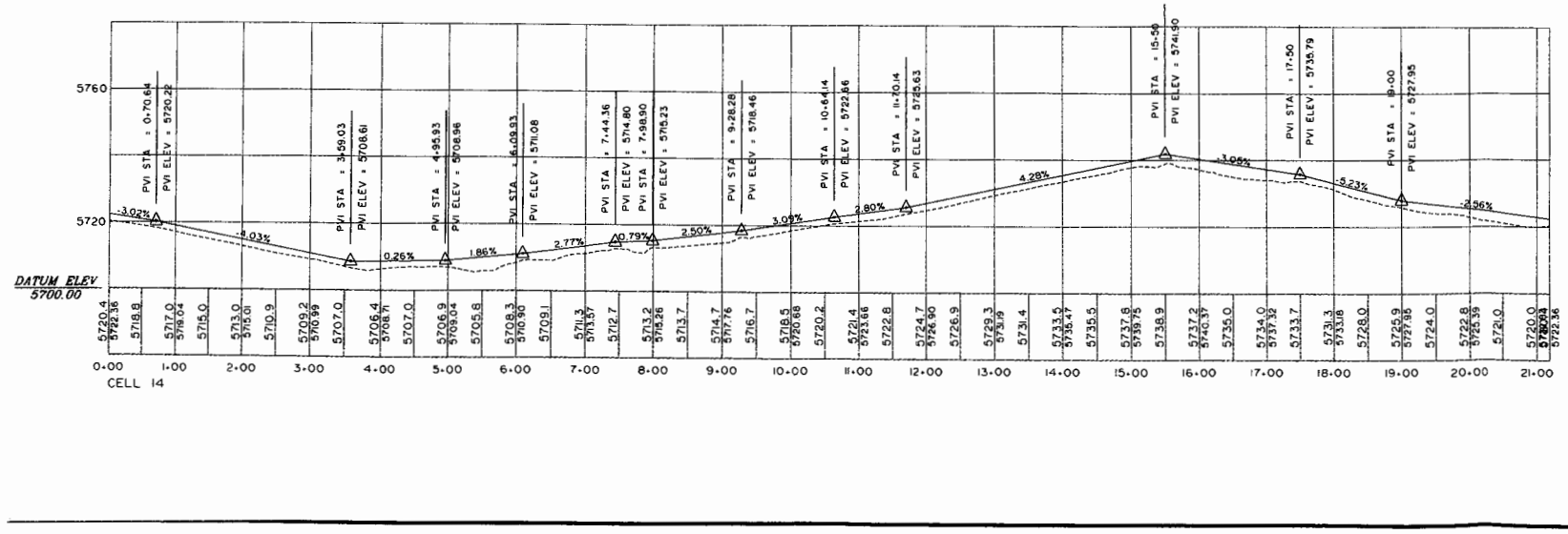
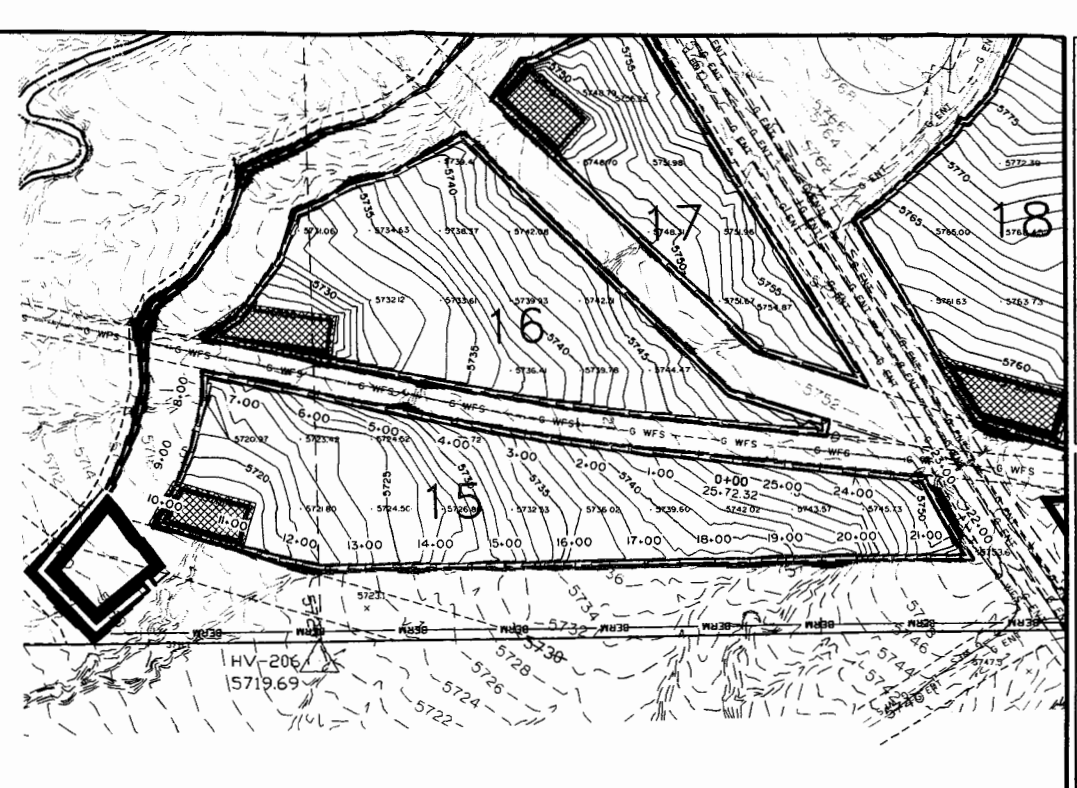
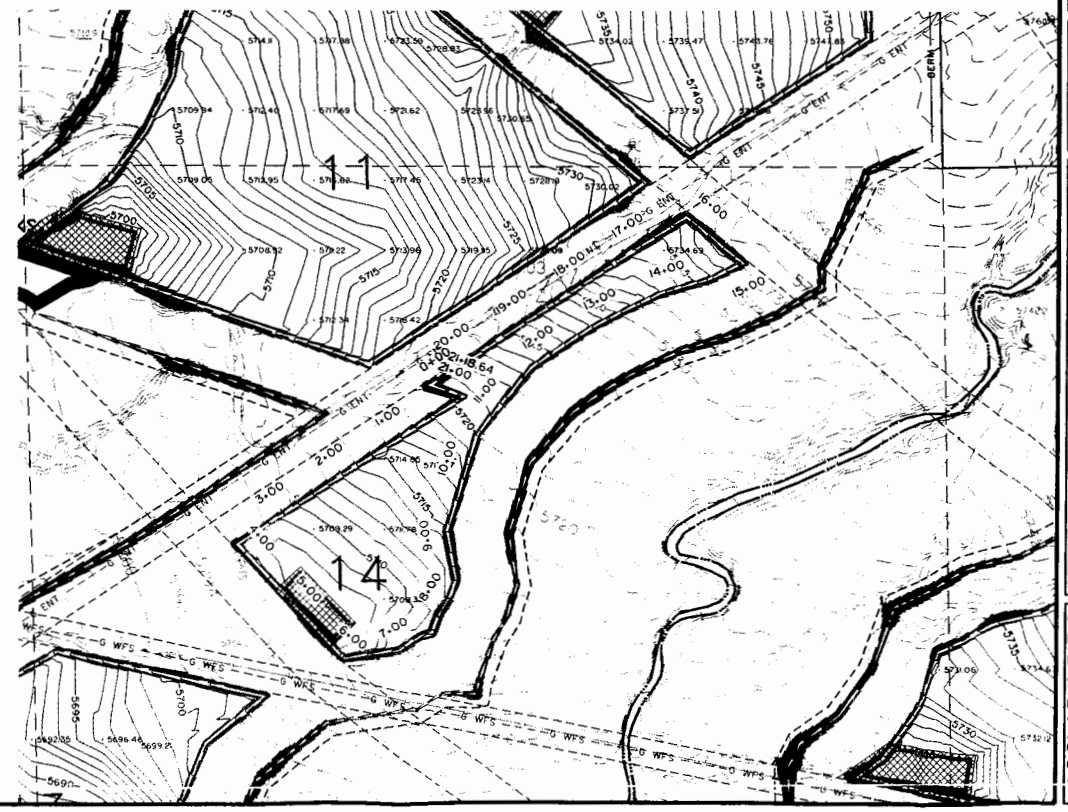






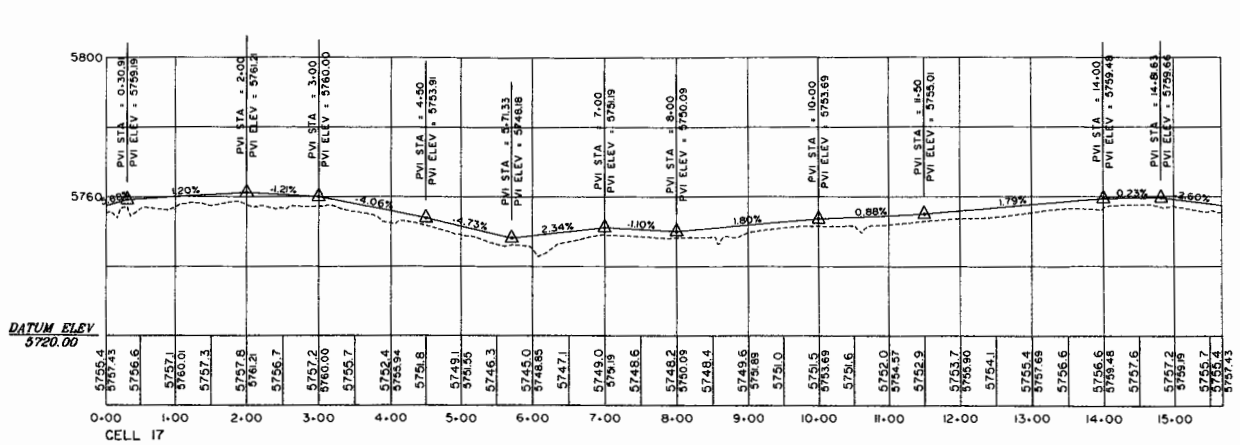


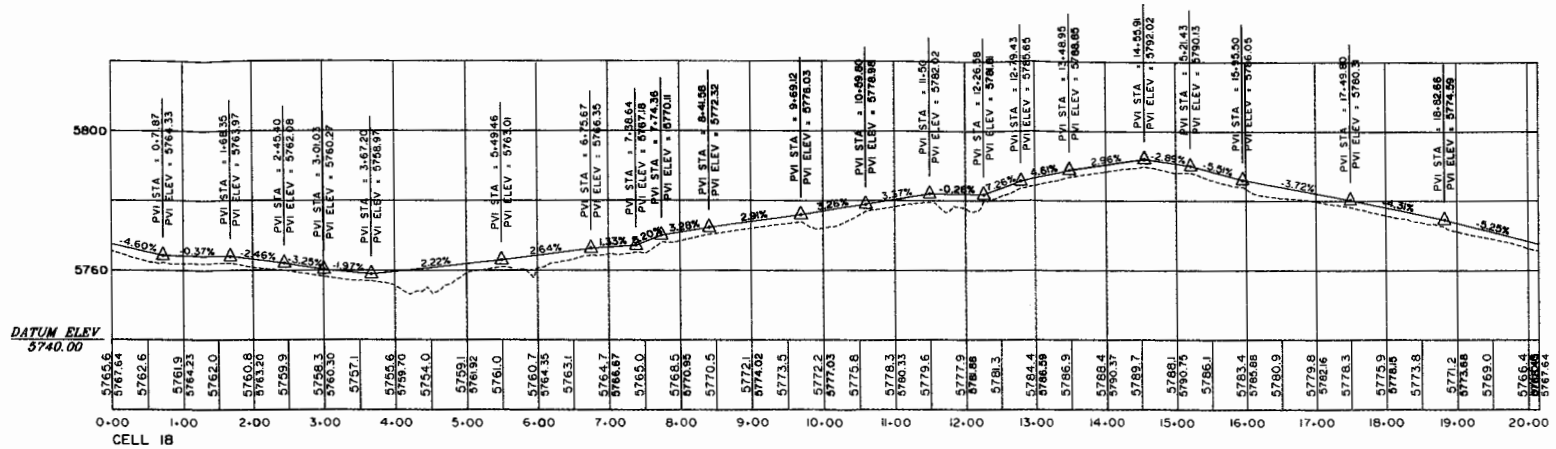
CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

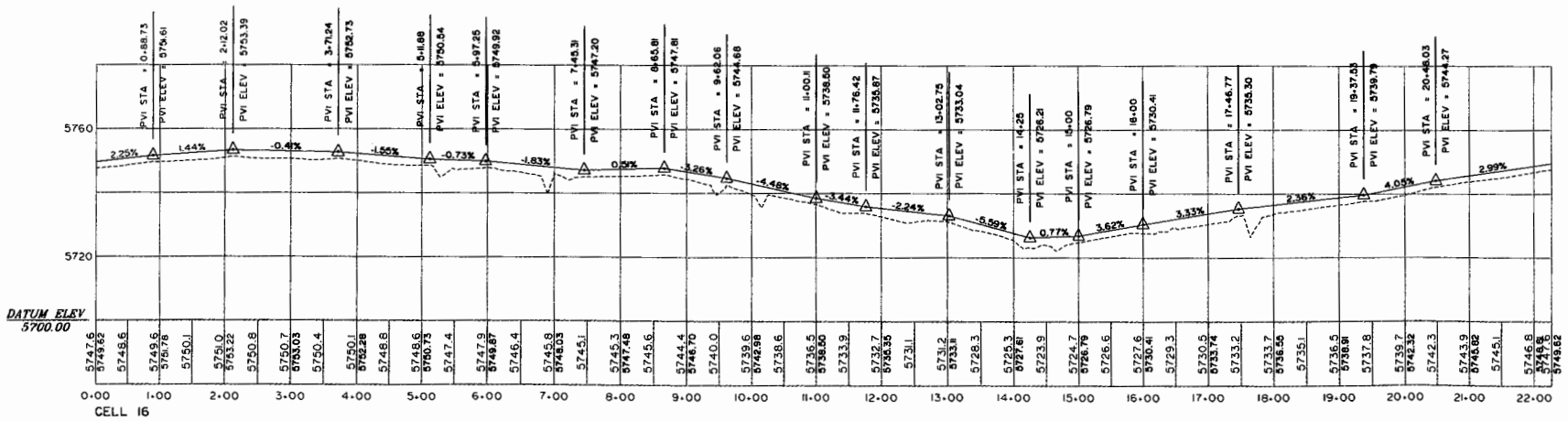
BY	REVISION	DATE

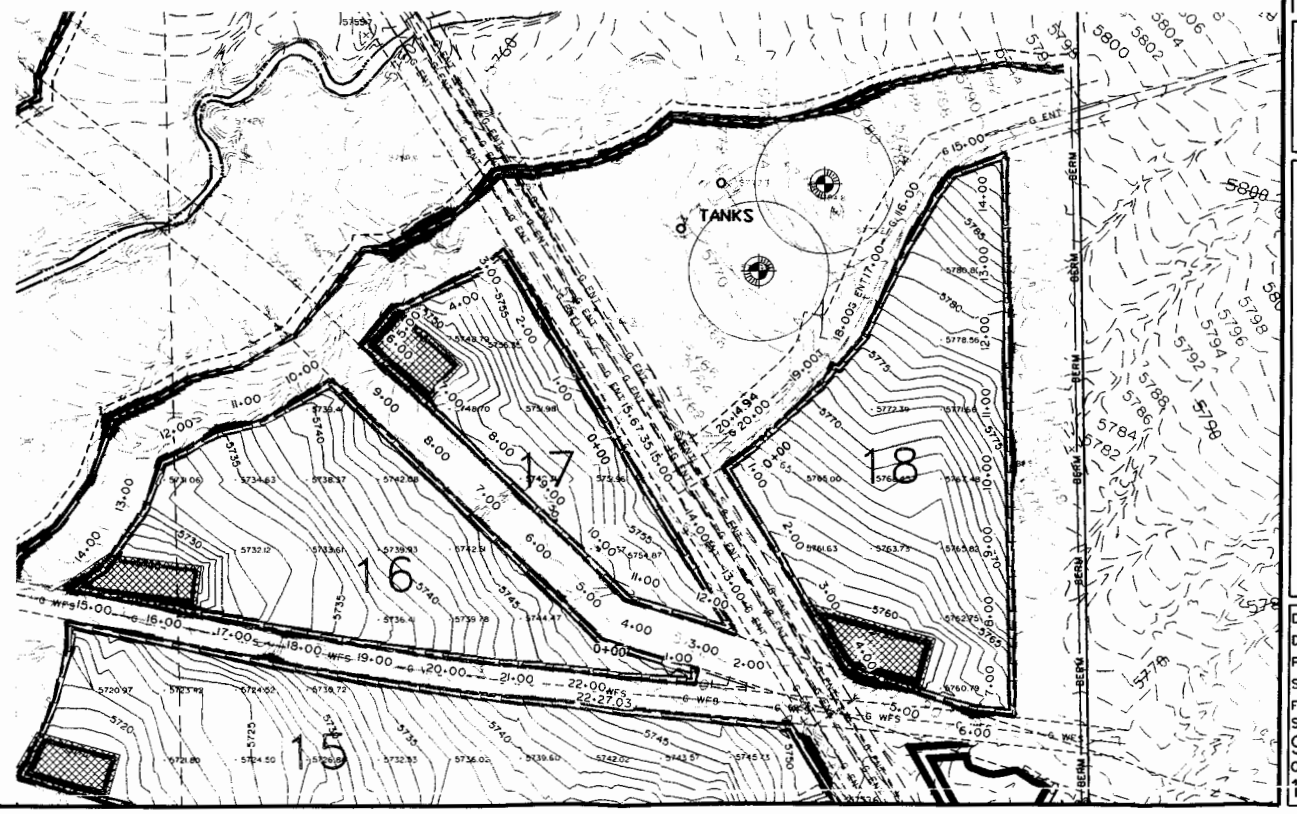
BERM E - BERM F - BERM G - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
PREPARED BY INDUSTRIAL ECOSYSTEMS, INC.

DATE: 10/25/
DRAWN BY: L
PROJ. 09467
SCALE: 1"=10
1"=20
FILE: 09467E
SHEET
8
OF
16









BY	REVISION	DATE

CHEREY, WALTERS-ECWD, LTD.

BERM E - BERM G - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE: 10/2
DRAWN BY:
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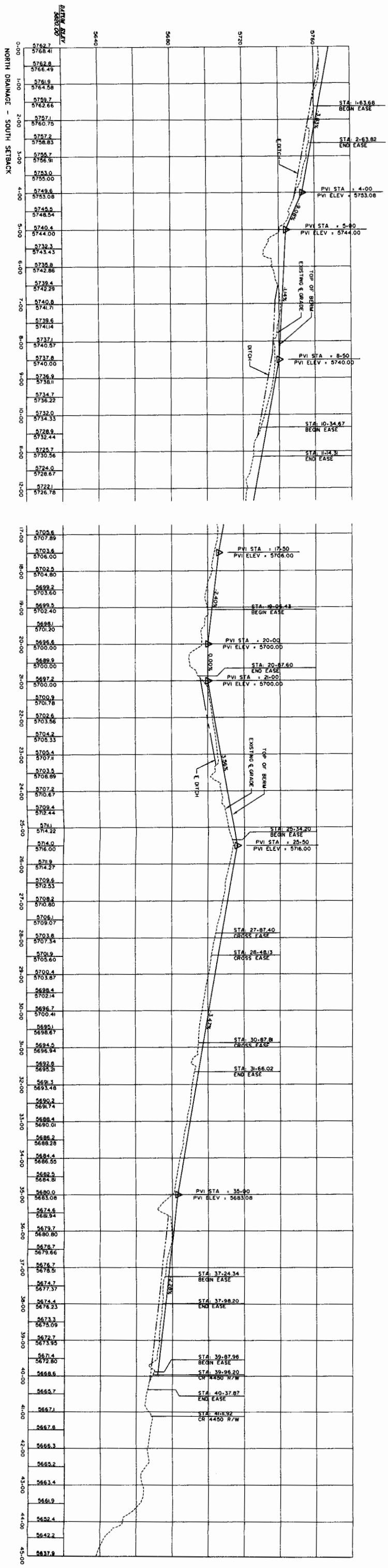
SCALE:
FILE: 0946782
SHEET
OF
16

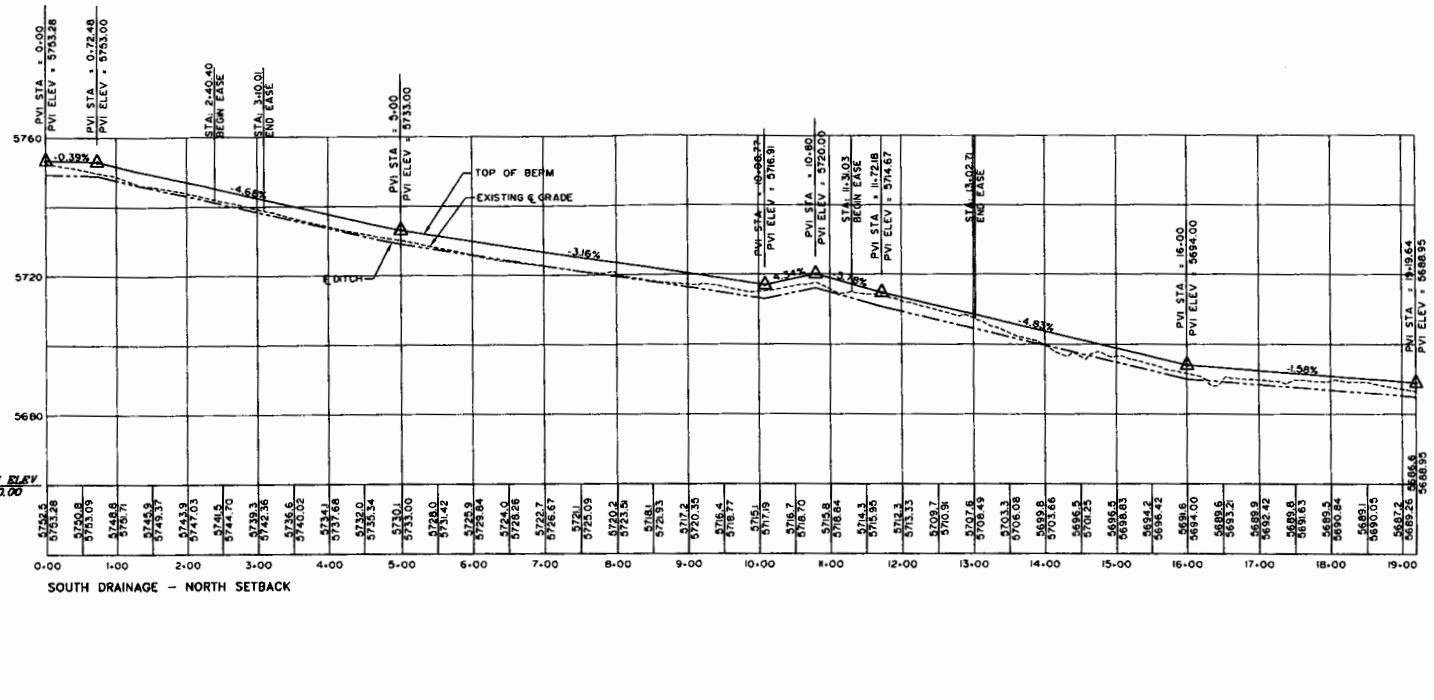


NORTH DRAINAGE SETBACK BERM PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

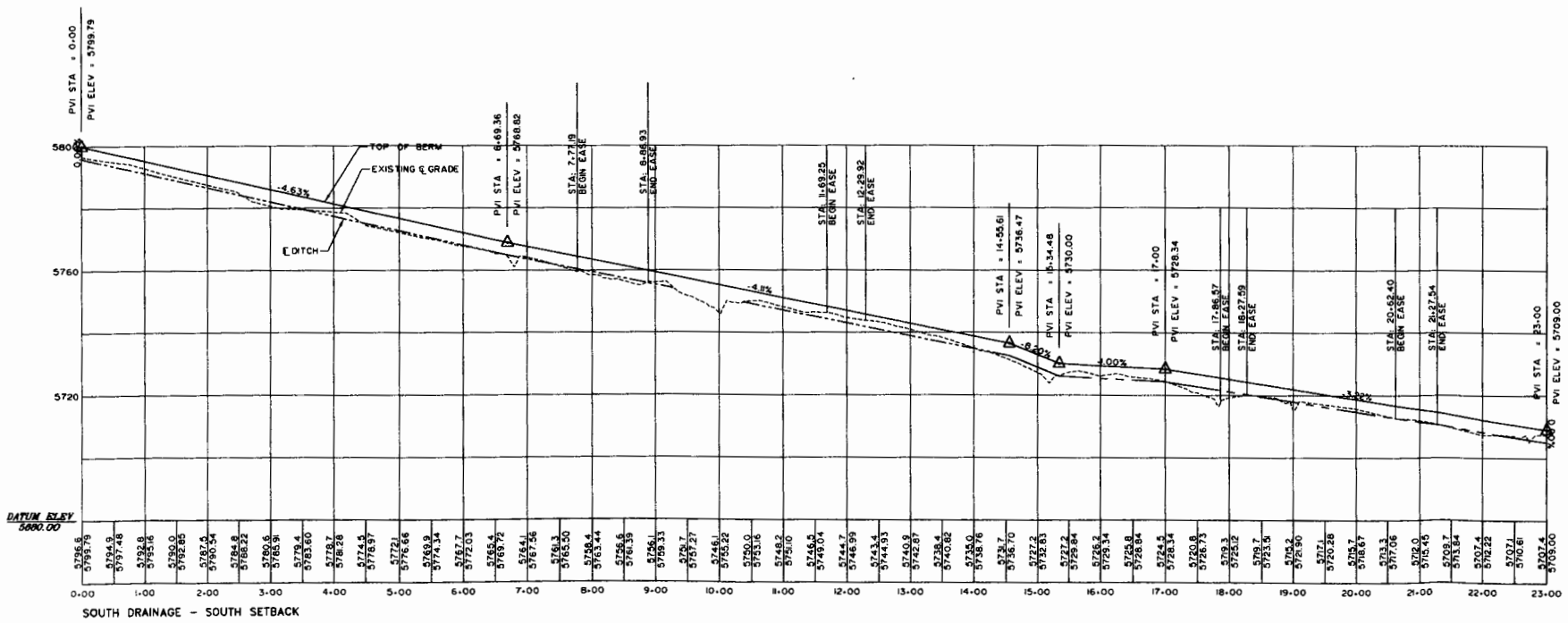
CHENEY·WALTERS·ECHOLS, INC.
ENGINEERS · SURVEYORS

DATE	REVISION	BY

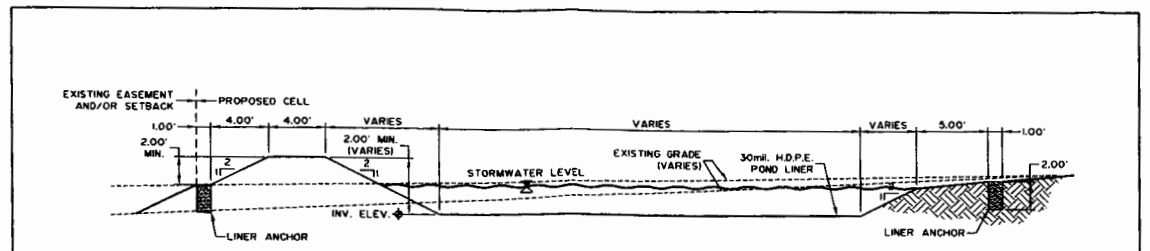
DATE: 10/25/...
DRAWN BY: L...
PROJ. 0946...
SCALE: 1"=10... 1"=2...
FILE: ...
SHEET 10 OF 16



SOUTH DRAINAGE – NORTH SETBACK



SOUTH DRAINAGE – SOUTH SETBACK



I/II TYPICAL CELL POND SECTION
SCALE: 1"=5'

BY	DATE	REVISION

CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

SOUTH DRAINAGE SETBACK BERM PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE: 10/2
DRAWN BY:
PROJ. 0944
SCALE: 1"=1
FILE: 0944BER
SHEET 11 OF 16

KEY MAP
SCALE: 1" = 1000'

SEE SHEET 2 OF 16

SEE SHEET 3 OF 16

INSET

MATCH LINE INSET

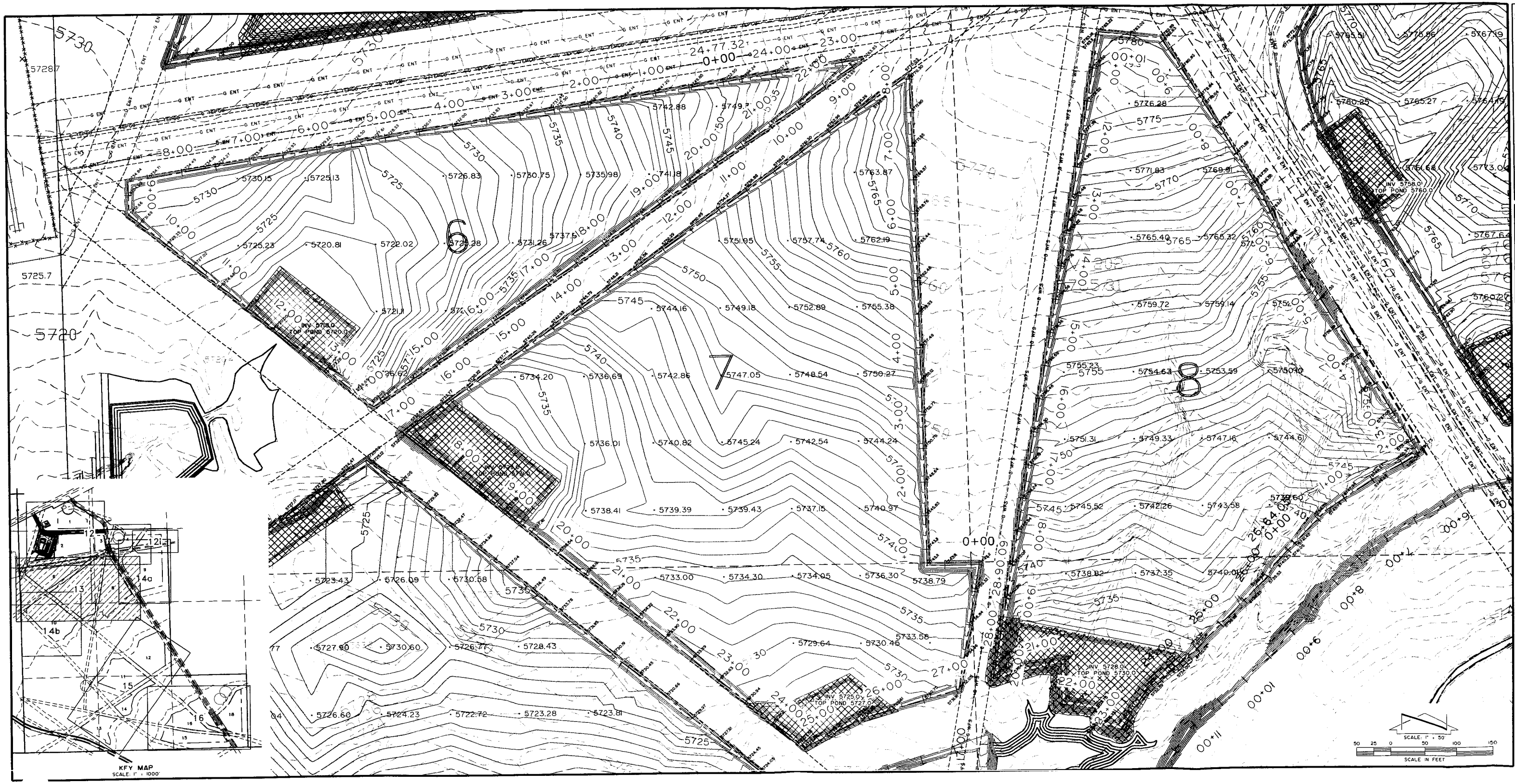
SCALE: 1" = 50'
50 25 0 50 100 150
SCALE IN FEET

BY	
REVISION	
DATE	

CHENEY-WALTERS-ECHOLS
ENGINEERS · SURVEYORS

LARGE SCALE CELL MAP – CELLS 1-5
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE: 10/25/
DRAWN BY: L
PROJ. 09467
SCALE: 1"=50
FILE: 09467
SHEET
12
OF
16

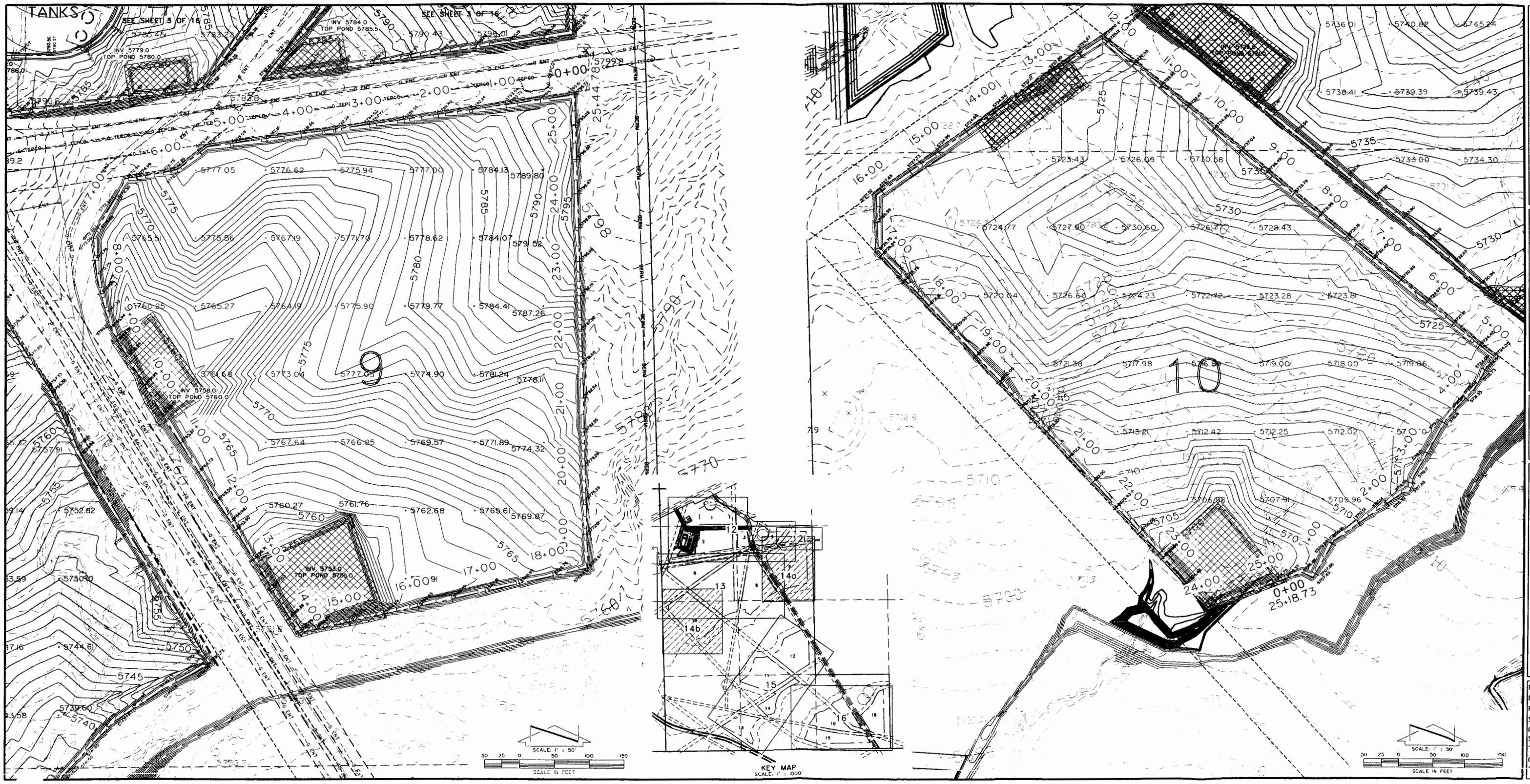


BY
REVISION
DATE

CROWE BLANCO PROPERTIES, LLC

LARGE SCALE CELL MAP - CELLS 6-8

DATE: 10/2
DRAWN BY
PROJ. 094
SCALE: 1" =
FILE: 0946
SHEET
13
OF
16

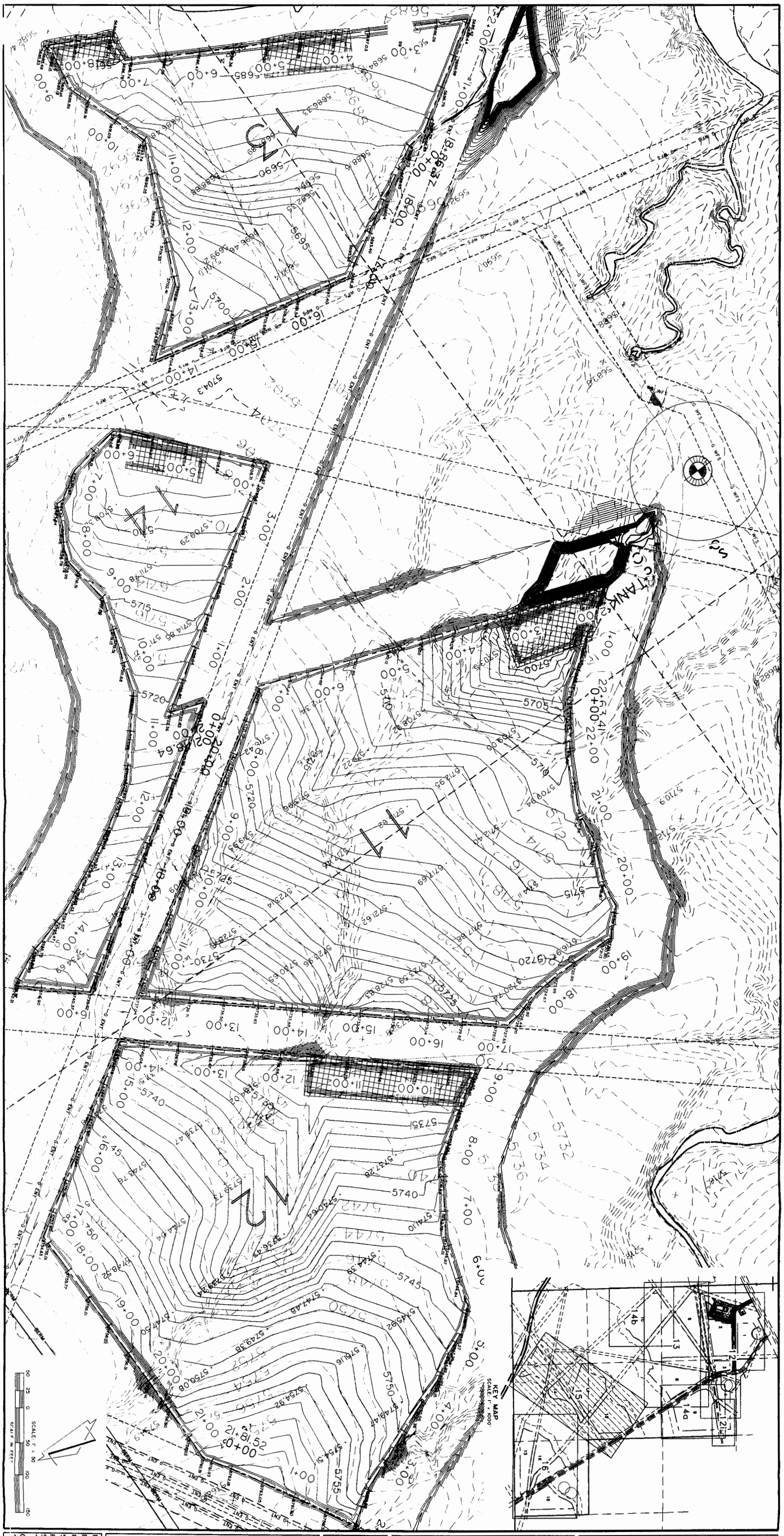


LARGE SCALE CELL MAP - CELLS 9-10
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC.

CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

BY | REVISION | DATE

DATE: 10/25/
DRAWN BY: L
PROJ. 09467
SCALE: 1"=50'
FILE: 09467BASE
SHEET 14 OF 16


KEY MAP
SCALE: 1" = 1000'
SCALE: 1" = 50'
SCALE IN FEET
LARGE SCALE CELL MAP - CELLS 11-14
CROWE BLANCO PROPERTIES, LLC
CHENEY·WALTERS·ECHOLS INC
ENGINEERS · SURVEYORS
DATE
REVISION
BY
DATE:10/25
DRAWN BY:
PROJ. 0946
SCALE: 1"=
SHEET
15
OF
16

LARGE SCALE CELL MAP - CELLS 15-18
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS, INC.

CHENEY·WALTERS·ECHOLS, INC.
ENGINEERS · SURVEYORS

DATE	REVISION	BY

DATE:10/25/2
DRAWN BY: LH
PROJ. 09467
SCALE: 1"=50'
FILE:

SHEET 16 OF 16

5.33

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS, INC.
BLANCO FACILITY PROCESS AREA ENGINEERING DESIGN
BLANCO, SAN JUAN COUNTY, NEW MEXICO

AUGUST, 2011

REVISED FEBRUARY, 2013

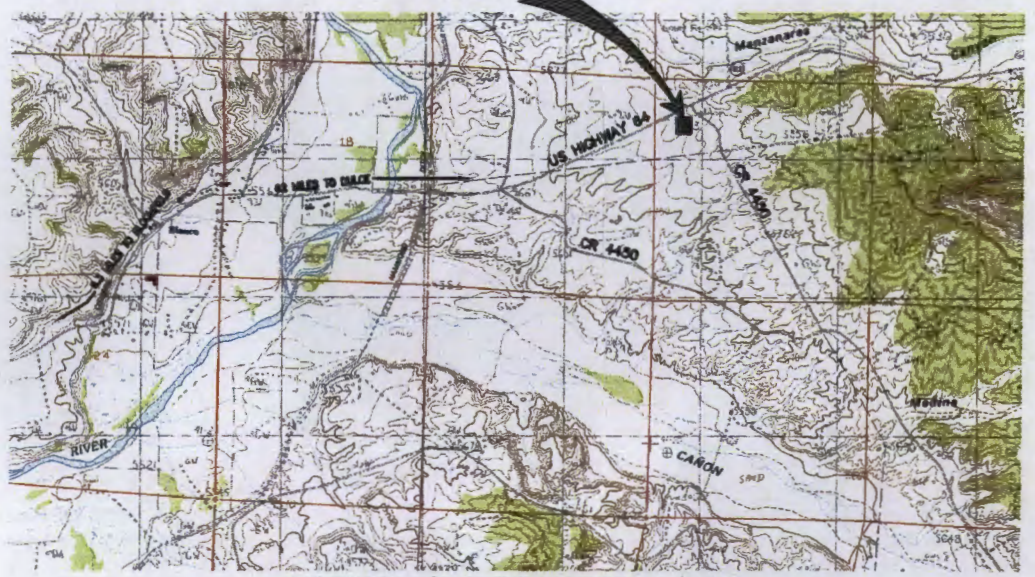
PROJECT SITE
BLANCO, NEW MEXICO

VICINITY MAP
NOT TO SCALE

SHEET INDEX

SHEET NO.	DRAWING
C101	COVER SHEET
C102	GENERAL NOTES AND LEGEND
C103	IMPROVEMENT PLAN
C104	PROPOSED SITE PLAN
C105	LINER GRADING AND DRAINAGE PLAN
C106	SURFACE GRADING AND DRAINAGE PLAN
C107	FOUNDATION PLAN
C108	HORIZONTAL CONTROL PLAN
C109	PIPING PLAN
C110	PROCESS PLAN AND ENGINEER DESIGN PLAN

PROJECT SITE



SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF
SECTION 16, TOWNSHIP 29 WEST, RANGE 9 WEST,
SAN JUAN COUNTY, NEW MEXICO

LOCATION MAP
NOT TO SCALE

PREPARED BY:

SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BLVD.
FARMINGTON, NM 87401
ATTN: DOUGLAS W. MIZE, PE
PHONE: 505-325-7535

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION ON BEHALF OF SOUDER, MILLER & ASSOCIATES.

DOUGLAS W. MIZE, PE 13678
SENIOR PROJECT ENGINEER

11.4.2013
DATE

DOUGLAS W. MIZE
NEW MEXICO
13678
PROFESSIONAL ENGINEER
11.4.2013

Revision	Date	Description	By	Chkd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

SAN JUAN COUNTY, NM
INDUSTRIAL ECOSYSTEMS INC.

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
COVER SHEET

SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BLVD
FARMINGTON, NM 87401
Phone (505) 325-7535 Toll-Free (800) 519-6096 Fax (505) 326-6845
www.soudermiller.com
Serving the Southwest & Rocky Mountains
Albuquerque, Farmington, Durango, Grand Junction, Montrose, CO / Bedford, MA / Austin, Fort Worth, Corpus Christi, TX

SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Date: AUGUST, 2011
Scale: Horiz: NTS
Vert: N/A
Project No: 5119829
Sheet: C101

5.34

P:\5-HEI Engr Ponds (5119829)\CAD\C3d\process plan design\REVISIONS 9-30-2012\5119829COVER NOTES SITE LAYOUTS.dwg , 11/4/2013 12:05 PM

GENERAL NOTES

1) THE SITE WORK SHALL BE IN ACCORDANCE WITH ALL SAN JUAN COUNTY, NEW MEXICO AND STATE OF NEW MEXICO CODES FOR CONSTRUCTION.

2) EXISTING UTILITIES ARE SHOWN BASED UPON INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY UTILITY LOCATIONS AND ELEVATIONS TO AVOID POTENTIAL CONFLICTS. ANY CONFLICTS SHALL BE DIRECTED TO THE UTILITY PROVIDER, THE OWNER AND THE ENGINEER.

3) THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH ALL UTILITY COMPANIES WITH REGARD TO RELOCATING, ADJUSTING, REPLACING, AND/OR REPAIRING UTILITIES DURING CONSTRUCTION.

4) THE CONTRACTOR SHALL NOTIFY LOCAL FIRE DEPARTMENT 24 HOURS BEFORE CONSTRUCTION ACTIVITIES BEGIN.

5) THE CONTRACTOR SHALL SLOPE ALL TRENCHES AND SLOPES AS REQUIRED TO COMPLY WITH STATE AND FEDERAL CODES TO PROTECT LIFE AND SAFETY OF WORKMEN DURING CONSTRUCTION.

6) THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION ACTIVITY SAFETY INCLUDING, BUT NOT LIMITED TO, TRENCH EXCAVATION AND SHORING, TRAFFIC CONTROL AND SITE SECURITY.

7) THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STREETS FREE AND CLEAR OF ANY DEBRIS THAT IS TRACKED FROM THE SITE.

8) THE CONTRACTOR SHALL KEEP, AND UPDATE, AN AS-BUILT SET OF DRAWINGS DURING THE CONSTRUCTION OF THE PROJECT. AS-BUILT DRAWINGS SHALL BE DELIVERED TO THE OWNER AFTER CONSTRUCTION.

9) PRIOR TO AND DURING CONSTRUCTION, ALL ACCESS ROADS SHALL BE SERVICEABLE AND MAINTAINED FOR FIRE PROTECTION AND EMERGENCY VEHICLE ACCESS.

10) ITEMS DESIGNATED FOR REMOVAL WITHOUT SALVAGE SHALL BE PLACED IN AN ENVIRONMENTALLY SUITABLE DISPOSAL SITE.

11) THE CONTRACTOR SHALL BE RESTRICTED TO A 35 TON (MAXIMUM) NON-VIBRATORY ROLLER FOR COMPACTION IN AREAS WHERE THE USE OF HEAVIER EQUIPMENT COULD DAMAGE UNDERGROUND UTILITIES OR PERMANENTLY DAMAGE ADJACENT STRUCTURES.

12) THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEAN-UP OF SPILLS ASSOCIATED WITH THE CONSTRUCTION OF THE PROJECT AND SHALL RESPOND TO SPILLS OF HAZARDOUS MATERIALS (SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS THAT MAY THREATEN THE PUBLIC OR THE ENVIRONMENT, TO THE PROJECT MANAGER. ANY SPILLS ASSOCIATED WITH THE PROJECT SHALL BE CLEANED-UP BY THE CONTRACTOR. THE CONTRACTOR SHALL BEAR ALL EXPENSES OF THE COST OF CLEAN UP OF SUCH SPILLS.

13) THE CONTRACTOR SHALL REPLACE ALL DESTROYED OR DAMAGED SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL TO THOSE REMOVED OR DAMAGED.

14) TOPOGRAPHY INFORMATION, INCLUDING HORIZONTAL AND VERTICAL DATA, SHOWN ON THESE PLANS IS SHOWN ACCORDING TO INFORMATION PROVIDED BY OWNER. SOUDER, MILLER & ASSOCIATES HAS RELIED ON THIS DATA TO BE ACCURATE FOR THIS DESIGN.

15) THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS, AND APPURTENANCES NECESSARY TO COMPLETE THE WORK INTENDED AND SHOWN ON THE DRAWINGS.

16) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS ASSOCIATED WITH THE PROJECT.

17) ALL WORK IN THE VICINITY OF LIVE STREAMS, WATER IMPROVEMENTS, WETLANDS, OR IRRIGATION SUPPLIES SHALL BE COMPLETED IN SUCH A MANNER AS TO MINIMIZE VEGETATION REMOVAL, SOIL DISTURBANCE AND EROSION.

18) ALL DESIGN SLOPES ON THE SITE ARE SHOWN AS 3:1 (H:V) UNLESS OTHERWISE SPECIFIED.

19) THE CONTRACTOR SHALL REQUEST A LINE SPOT, CALL 811, BEFORE DIGGING.

20) SITE COMPACTION WORK SHALL BE COMPLETED AND IN ACCORDING TO GEOTECHNICAL REPORT PREPARED BY GEOMAT, INC. (PROJECT No. 102-1039)

21) ALL ELECTRICAL DRAWINGS AND ASSOCIATED SPECIFICATIONS ARE TO BE PROVIDED BY OWNER.

PIPING NOTES:

1) ALL PIPING SHALL BE PLACED 3' BELOW FINISH GRADE.
2) ALL PIPING SHALL BE 4" HDPE DR17 EXCEPT WHERE STEEL PIPING IS USED TO TIE INTO TANKS AND AT PENETRATIONS.
3) BOND BREAKER SHALL BE USED ON ALL PENETRATIONS THROUGH CONCRETE FLOORS AND WALLS.
4) ISOLATION VALVES SHOWN, SHALL CONSIST OF THE ISOLATION VALVE AND VALVE BOX COVERS.
5) CONTRACTOR SHALL INSTALL 4"X3" REDUCER @ T3 PUMPS.
6) ALL PUMPS HALL BE MOUNTED ON A CONCRETE PAD PER MANUFACTURERS RECOMMENDATIONS
7) ALL PUMP SHALL BE COVERED WITH AN INSULATION BOX TO PROTECT PUMP AND PIPING FROM FREEZING. ALL PIPING SHALL BE CONTAINED WITHIN BOX ENCLOSURE @ THE POINT IT IS BURIED 3' BELOW GRADE.

LEGEND

— · — · —	SWALE
——6995——	EXISTING MAJOR CONTOUR
——6994——	EXISTING MINOR CONTOUR
——6995——	FINISH MAJOR CONTOURS
——6994——	FINISH MINOR CONTOURS
— — — —	PROPERTY LINE
x 6999.00 FG	FINISH GRADE ELEVATION
→	SLOPE
——x——	CHAINLINK FENCE
⟹	DIRECTION OF FLOW
———	4"ø HDPE PIPING OR STEEL & DIRECTION OF FLOW

ABBREVIATIONS

FG	FINISH GRADE
INV	INVERT
TOE	TOE OF POND
TOP	TOP OF POND/LINER
FL	FLOWLINE
ME	MATCH EXISTING

EARTHWORK VOLUMES

CUT -4622.57 CY

FILL -8792.26 CY

EARTHWORK VOLUMES BASED UPON A ZERO SHRINK/SWELL FACTOR. CONTRACTOR TO BASE BID UPON CONTRACTOR'S TAKE OFF.

EMERGENCY CONTACT NUMBERS

FIRE AND POLICE EMERGENCIES	911
TERRY LATTIN, INDUSTRIAL ECOSYSTEMS, INC., MANAGER	505-632-1782

ENGINEER

DOUGLAS W. MIZE, P.E.
SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BOULEVARD
FARMINGTON, NEW MEXICO
(505) 325-7535

OPERATOR

TERRY LATTIN, MANAGER
INDUSTRIAL ECOSYSTEMS, INC.,
505-632-1782
49 CR 3150
Aztec, NM 87410

OWNER

CROWE BLANCO PROPERTY LLC.

PROJECT INTENT

THE INTENT OF THESE DRAWINGS ARE TO PROVIDE A DESIGN FOR THE PROCESS ENGINEERING AND GRADING AND DRAINAGE CONSTRUCTION PLAN SET THAT REPRESENTS THE CONSTRUCTION AROUND THE PROCESS PLAN.

DOUGLAS W. MIZE NEW MEXICO 13678 11.4.2013 PROFESSIONAL ENGINEER

New Mexico One Call, Inc. NMOC Call Two Working Days Before You Dig!

To Request a Line Locate Dial 811

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

Revision	Date	Description	By	Chkd
1	4/2012	OCD REVIEW COMMENTS	LMM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	LMM	

INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
GENERAL NOTES AND LEGEND

5.35

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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

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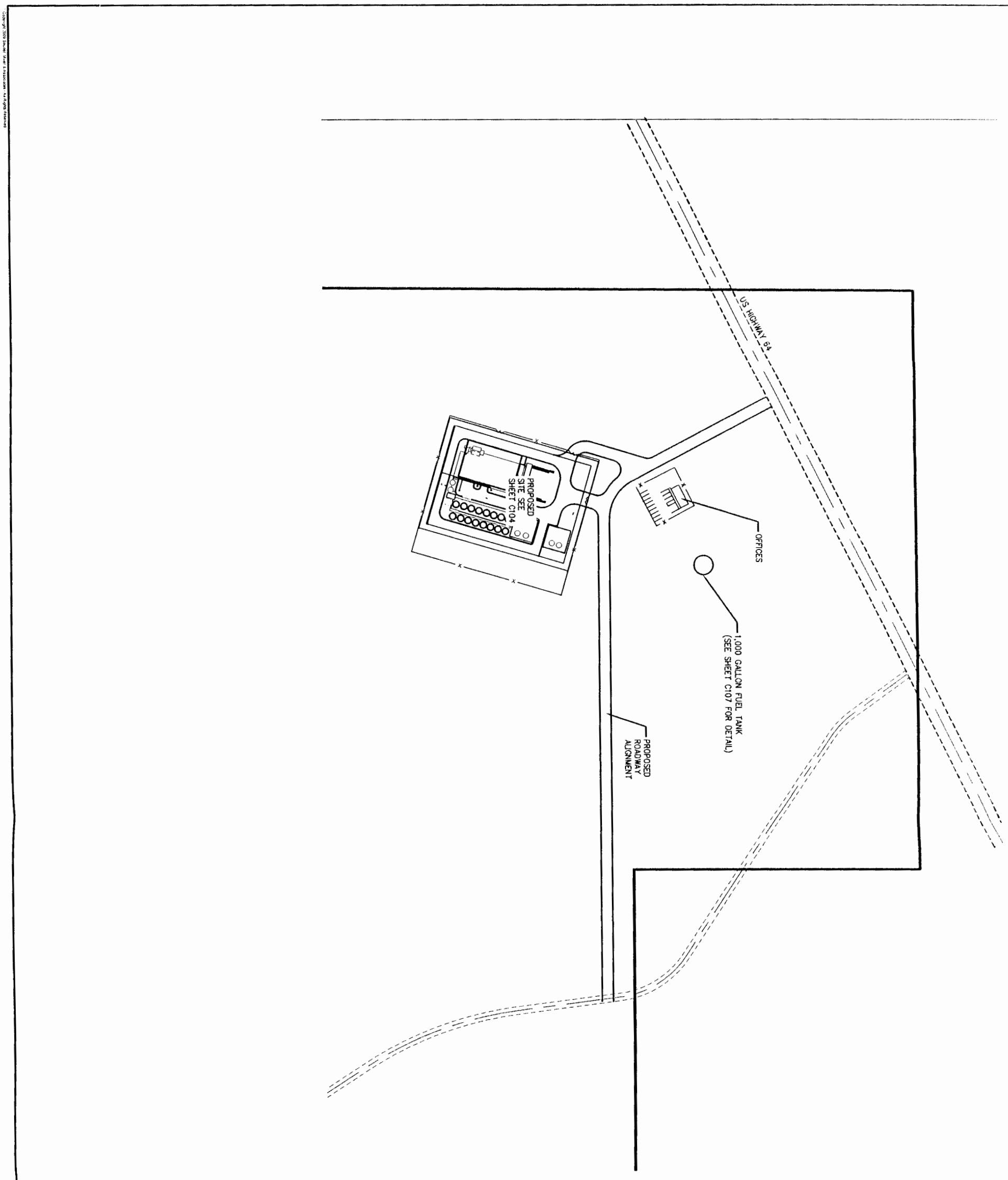
Date: AUGUST, 2011

Scale: Horiz N/A
Vert N/A

Project No. 5119829

Sheet C102

P:\5119829\CAD\Drawings\Plan Design\REVISIONS 8-30-2013\5119829COVER NOTES SITE LAYOUTS.dwg 11/4/2013 12:15:29 PM



PROFESSIONAL ENGINEER
DOUGLAS W. MAZE
NEW MEXICO
13689
11.7.12

SCALE: 1"=100'

Sheet C103	Designed DWM	SOUDER, MILLER & ASSOCIATES	INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM
Project No 5119829	Drawn DJB	2101 SAN JUAN BLVD FARMINGTON, NM 87401	CROWE BLANCO PROPERTIES, LLC. OPERATED BY: INDUSTRIAL ECOSYSTEMS INC.
Scale horz 1"=100' Vert N/A	Checked DWM	Phone (505) 325-7535 Toll-Free (800) 519-0098 Fax (505) 326-0045 www.soudermiller.com	BLANCO FACILITY PROCESS ENGINEERING DESIGN IMPROVEMENT PLAN
Date AUGUST, 2011		Serving the Southwest & Rocky Mountains	
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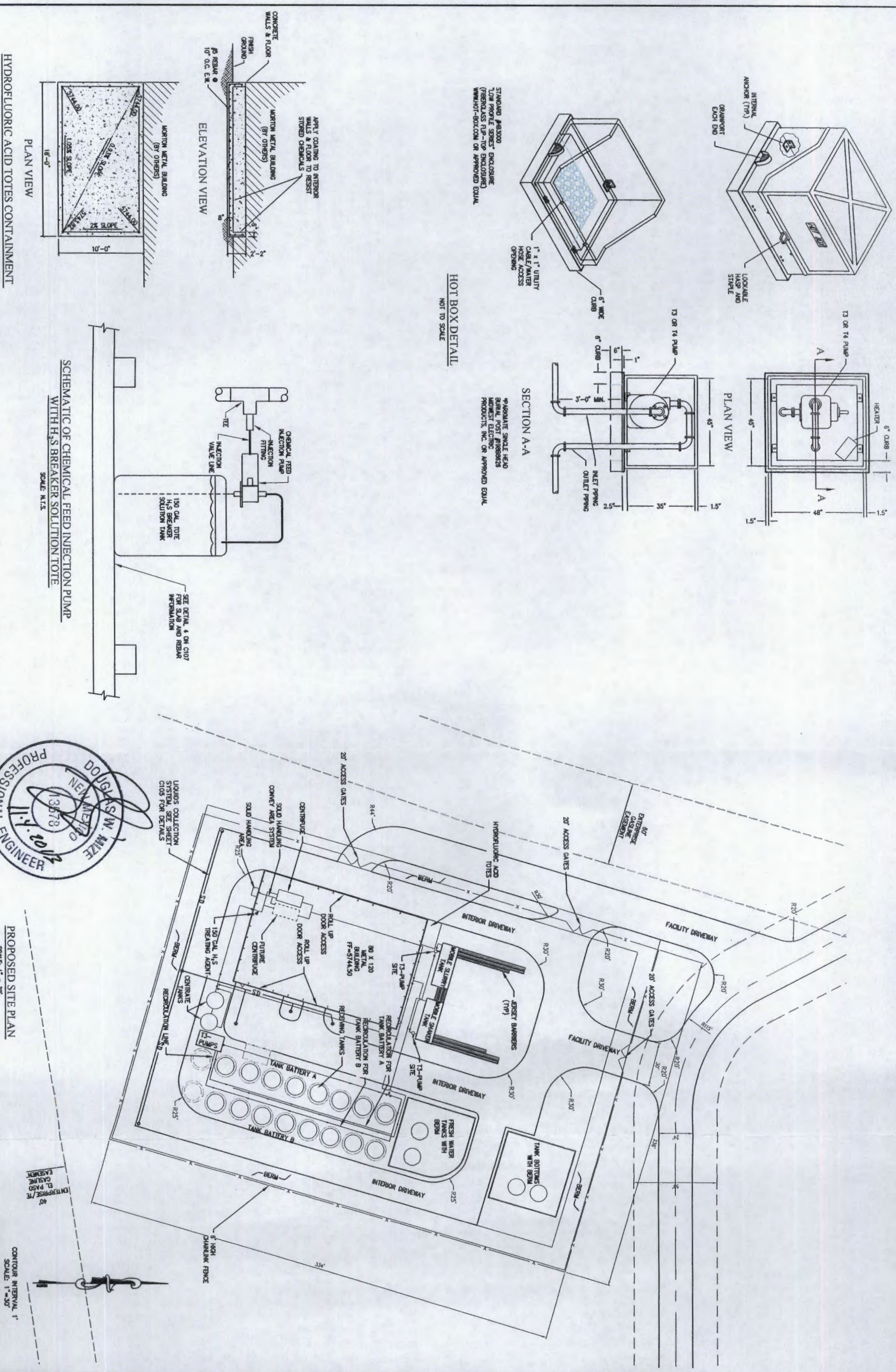
Revision	Date	Description	By	Check
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	



PROFESSIONAL ENGINEER
DOUGLAS W. MAZE
NEW MEXICO
13678
11.9.2012

Designed	DWM
Drawn	DJB
Checked	DWM

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Date: AUGUST, 2011
Scale: Horiz. 1" = 30' Vert. N/A
Project No: 51119829
Sheet: C104

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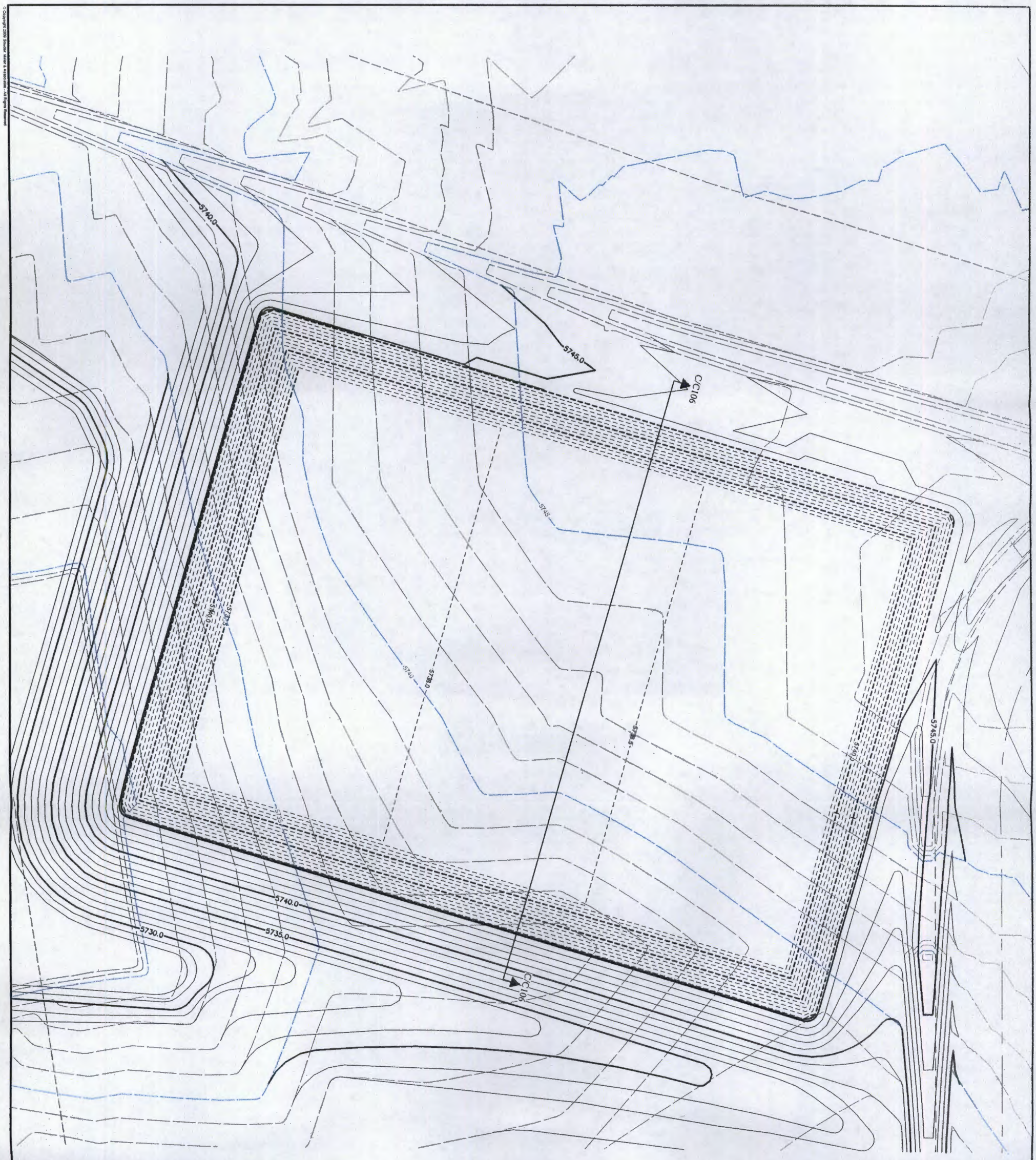
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROPOSED SITE PLAN

Revision	Date	Description	By	Ck'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	



CONTOUR INTERVAL 1'
SCALE: 1"=20'

NOTE: THE 12' SAND LAYER IS LOCATED TO WARN CONTRACTORS AND THE OPERATOR THAT WHEN DIGGING, THEY ARE CLOSE TO THE HDPE LINER. ALL PERSONNEL SHOULD BE NOTIFIED OF THIS PARAMETER.

PROFESSIONAL ENGINEER
DOUGLAS W. MILZE
NEW MEXICO
13608
11.4.2013

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Sheet: C105
Project No: 5119829
Scale: Horiz: 1"=20' Vert: N/A
Date: AUGUST, 2011
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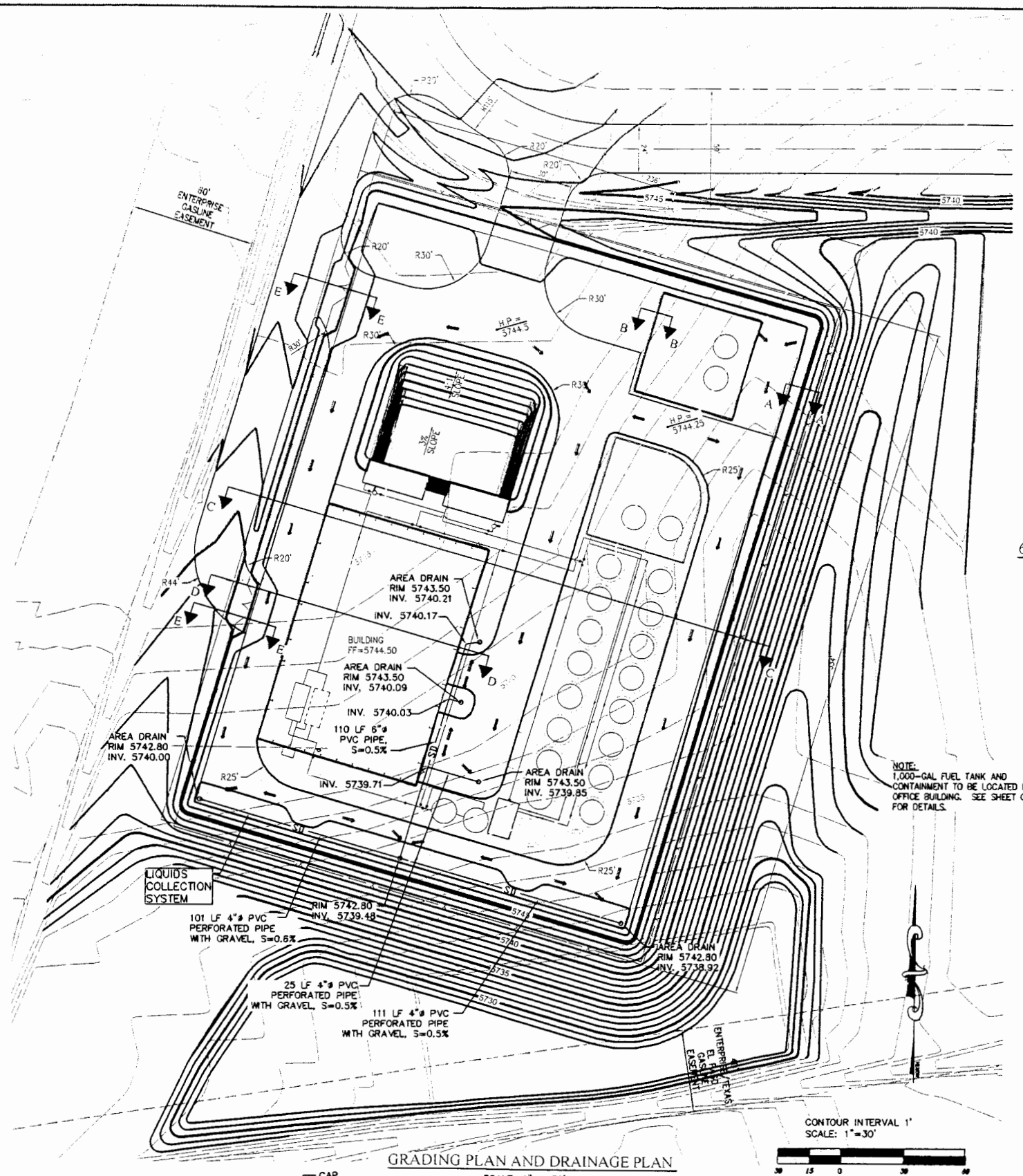
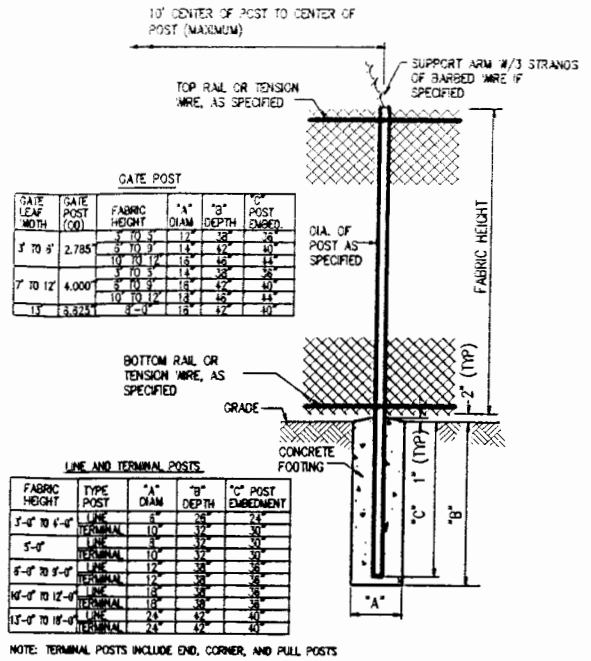
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
LINER GRADING AND DRAINAGE

Revision	Date	Description	By	Ck'd



GRADING PLAN AND DRAINAGE PLAN
SCALE: 1" = 30'



GATE POST

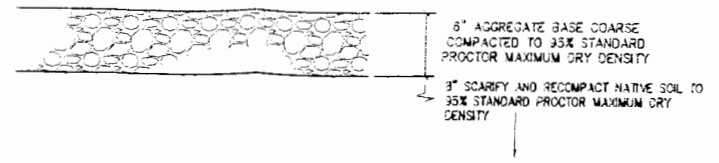
GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED
3' TO 6'	2.785"	5' TO 7'	12"	36"	60"
		8' TO 12'	14"	42"	60"
		10' TO 12'	16"	46"	60"
7' TO 12'	4.000"	5' TO 7'	14"	36"	60"
		8' TO 12'	16"	42"	60"
		10' TO 12'	18"	46"	60"
13'	6.625"	8'-0"	18"	42"	60"

LINE AND TERMINAL POSTS

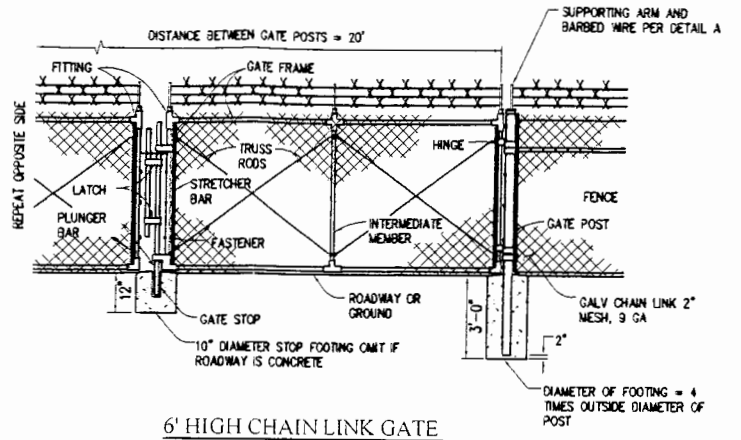
FABRIC HEIGHT	TYPE POST	"A" DIAM	"B" DEPTH	"C" POST EMBEDMENT
5'-0" TO 6'-0"	LINE	8"	36"	24"
	TERMINAL	8"	42"	30"
5'-0"	LINE	8"	42"	30"
	TERMINAL	10"	42"	30"
6'-0" TO 8'-0"	LINE	12"	36"	36"
	TERMINAL	12"	36"	36"
10'-0" TO 12'-0"	LINE	16"	36"	36"
	TERMINAL	16"	36"	36"
13'-0" TO 18'-0"	LINE	24"	42"	40"
	TERMINAL	24"	42"	40"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS

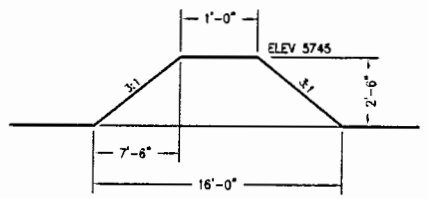
6' HIGH CHAIN LINK FENCE FOUNDATION
NOT TO SCALE



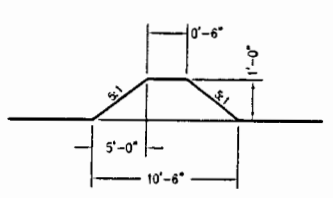
INTERIOR ACCESS ROAD AND FACILITY DRIVEWAY SECTION
NOT TO SCALE



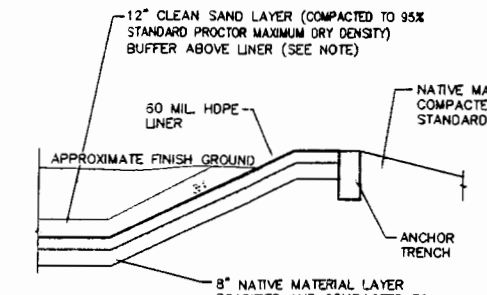
6' HIGH CHAIN LINK GATE
NOT TO SCALE



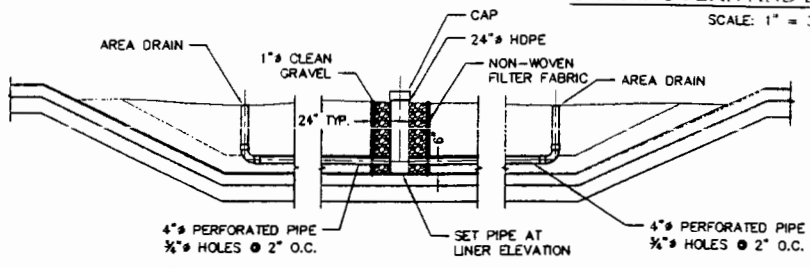
PROCESS BOUNDARY BERM
SECTION A-A
NOT TO SCALE



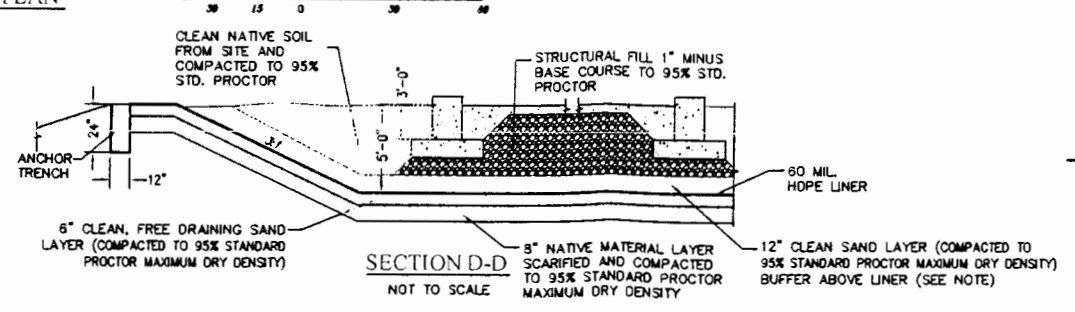
TYPICAL PROCESS INTERIOR BERM
SECTION B-B
NOT TO SCALE



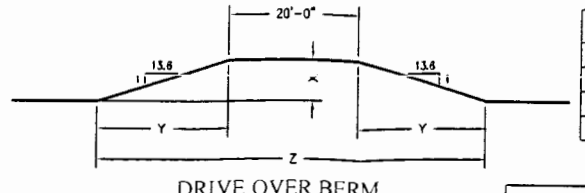
TYPICAL SITE CROSS SECTION
SECTION C-C
NOT TO SCALE



LIQUIDS COLLECTION SYSTEM
NOT TO SCALE



SECTION D-D
NOT TO SCALE



DRIVE OVER BERM
SECTION E-E
NOT TO SCALE

DRIVE OVER BERM SCHEDULE

BERM HEIGHT("X")	"Y" DIM.	"Z" DIM.
1'-0"	13.6'	47.2'
2'-0"	27.2'	74.4'
3'-0"	40.8'	101.6'
4'-0"	54.4'	128.8'

NOTE: THE 12" SAND LAYER IS LOCATED TO WARN CONTRACTORS AND THE OPERATOR THAT WHEN DIGGING, THEY ARE CLOSE TO THE HDPE LINER. ALL PERSONNEL SHOULD BE NOTIFIED OF THIS PARAMETER.

DOUGLAS W. MIZE
NEW MEXICO
13078
PROFESSIONAL ENGINEER
11-4-2013

Revision	Date	Description	By
1	4/2012	OCD REVIEW COMMENTS	DWM
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC.

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
SURFACE GRADING AND DRAINAGE PLAN

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Designed	Drawn	Checked
DWM	DJB	DWM

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Date: AUGUST, 2011
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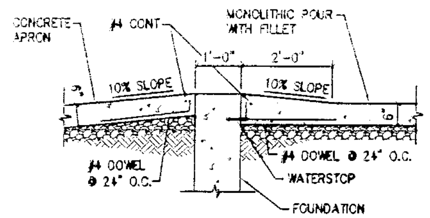
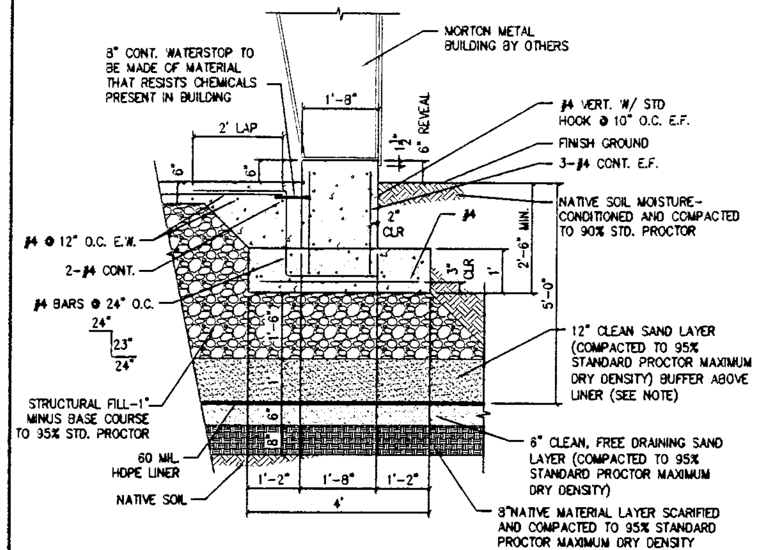
Project No: 5119829
Sheet: C106

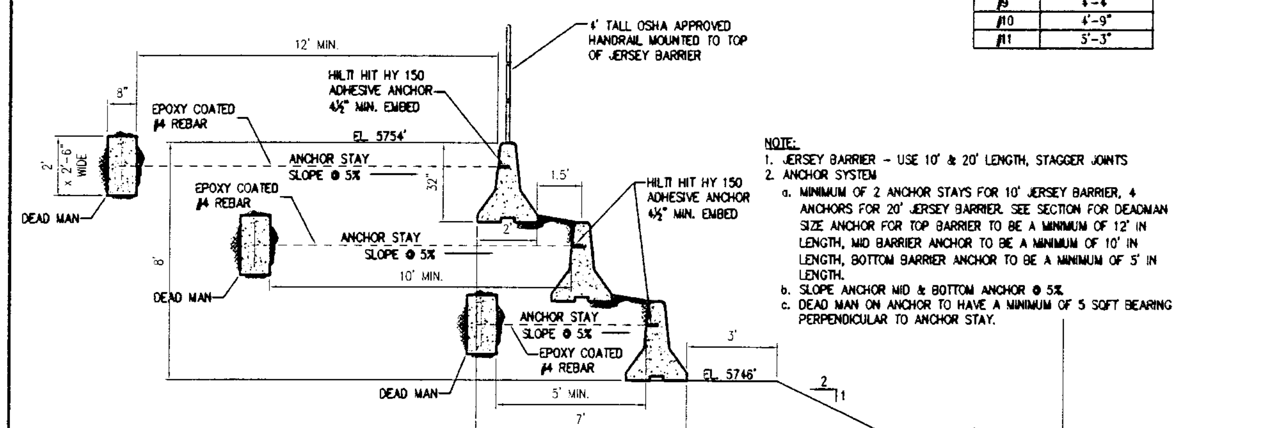
5.39



1 / C107 RAMP DETAIL
SCALE: 1/2"=1'-0"

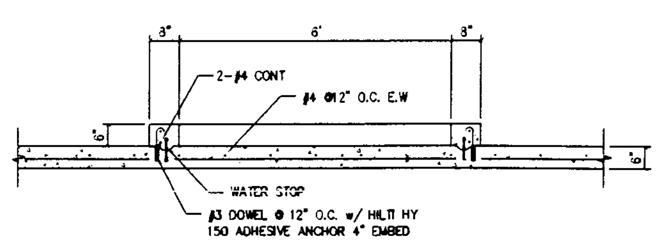


2 / C107 PERIMETER FOOTING DETAIL
SCALE: 1/2"=1'-0"



NOTE:
1. JERSEY BARRIER - USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%
c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SQFT BEARING PERPENDICULAR TO ANCHOR STAY.

3 / C107 JERSEY BARRIER DETAIL
NOT TO SCALE



4 / C107 SECONDARY CONTAINMENT DETAIL
SCALE: 1/2"=1'-0"

GENERAL STRUCTURAL NOTES

1. CODES AND MANUALS:
INTERNATIONAL BUILDING CODE, 2009 EDITION
ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 313

2. DESIGN CRITERIA:
A. VERTICAL:
ROOF SNOW 25 PSF
B. HORIZONTAL:
(1) WIND*
BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
EXPOSURE "C"
(2) SEISMIC*
SITE CLASS "D"

3. GENERAL:
A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.

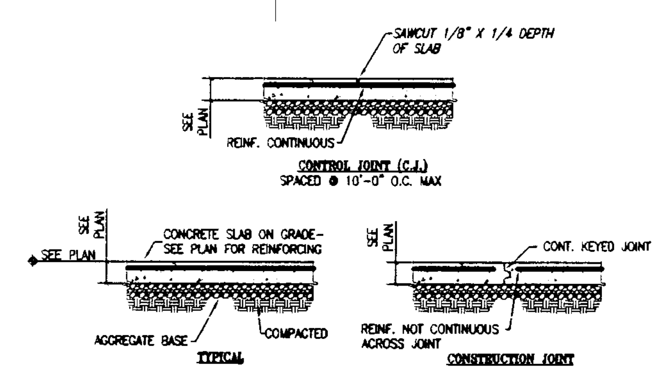
4. MATERIALS:
A. CAST-IN-PLACE CONCRETE:
(1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
(2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
(3) NORMALWEIGHT CONCRETE:
A. F'C = 3000 PSI @ 28 DAYS
(4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
B. REINFORCING STEEL:
(1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
(2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
(3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

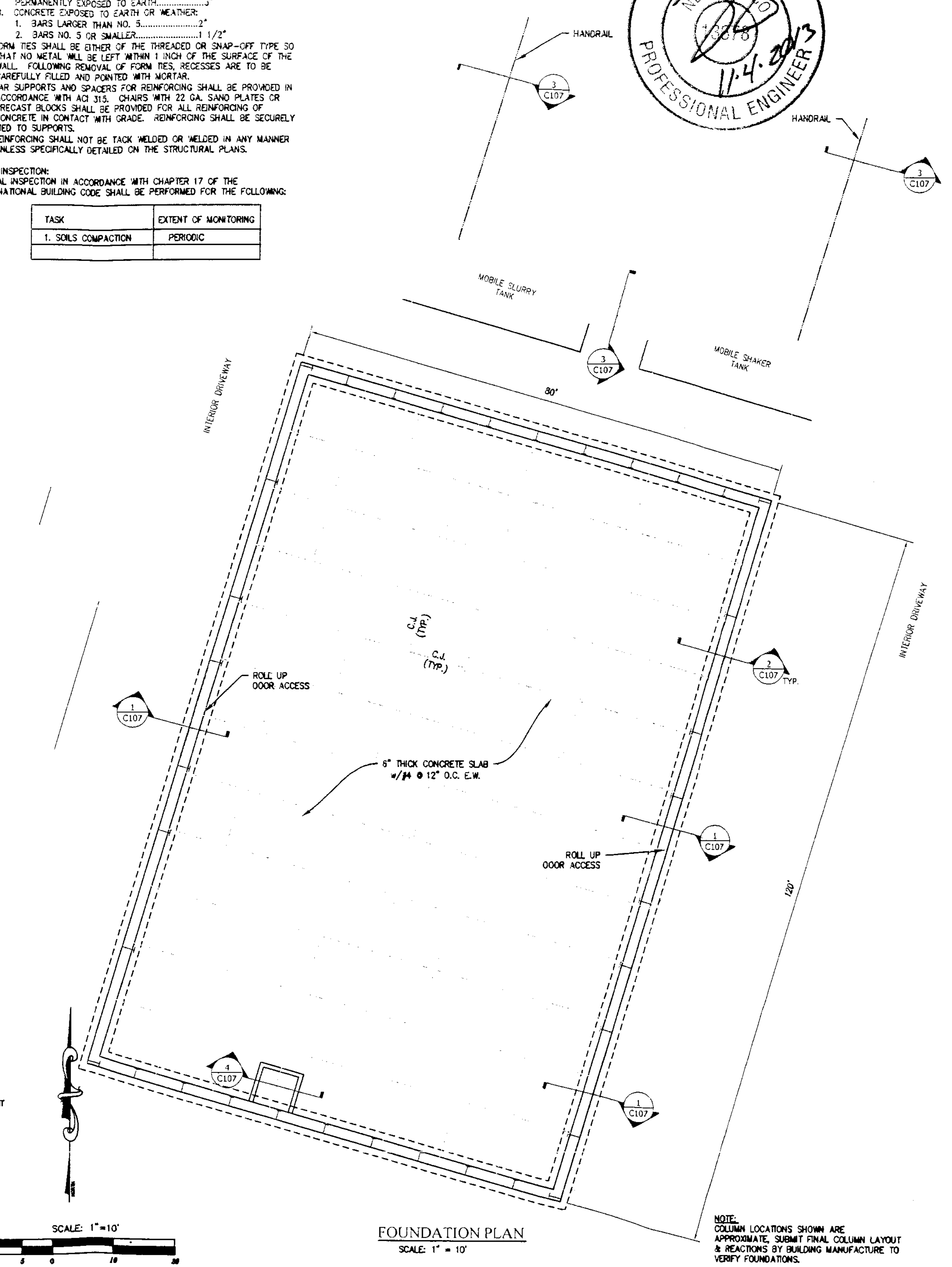
(4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
(5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH..................3"
B. CONCRETE EXPOSED TO EARTH OR WEATHER:
1. BARS LARGER THAN NO. 5......................2"
2. BARS NO. 5 OR SMALLER......................1 1/2"
(6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
(7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
(8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.

5. SPECIAL INSPECTION:
A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC



5 / C107 SLAB JOINTS
NOT TO SCALE



FOUNDATION PLAN
SCALE: 1" = 10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE. SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

DOUGLAS W. MIZE NEW MEXICO 13878 PROFESSIONAL ENGINEER 11.4.2013

Revision	Date	Description	by	Chk'd

INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
FOUNDATION PLAN

SMA Engineering Environmental Surveying
SOUDER, MILLER & ASSOCIATES
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FARMINGTON, NM 87401
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Designed	Drawn	Checked
GYQ	DJB	DWM

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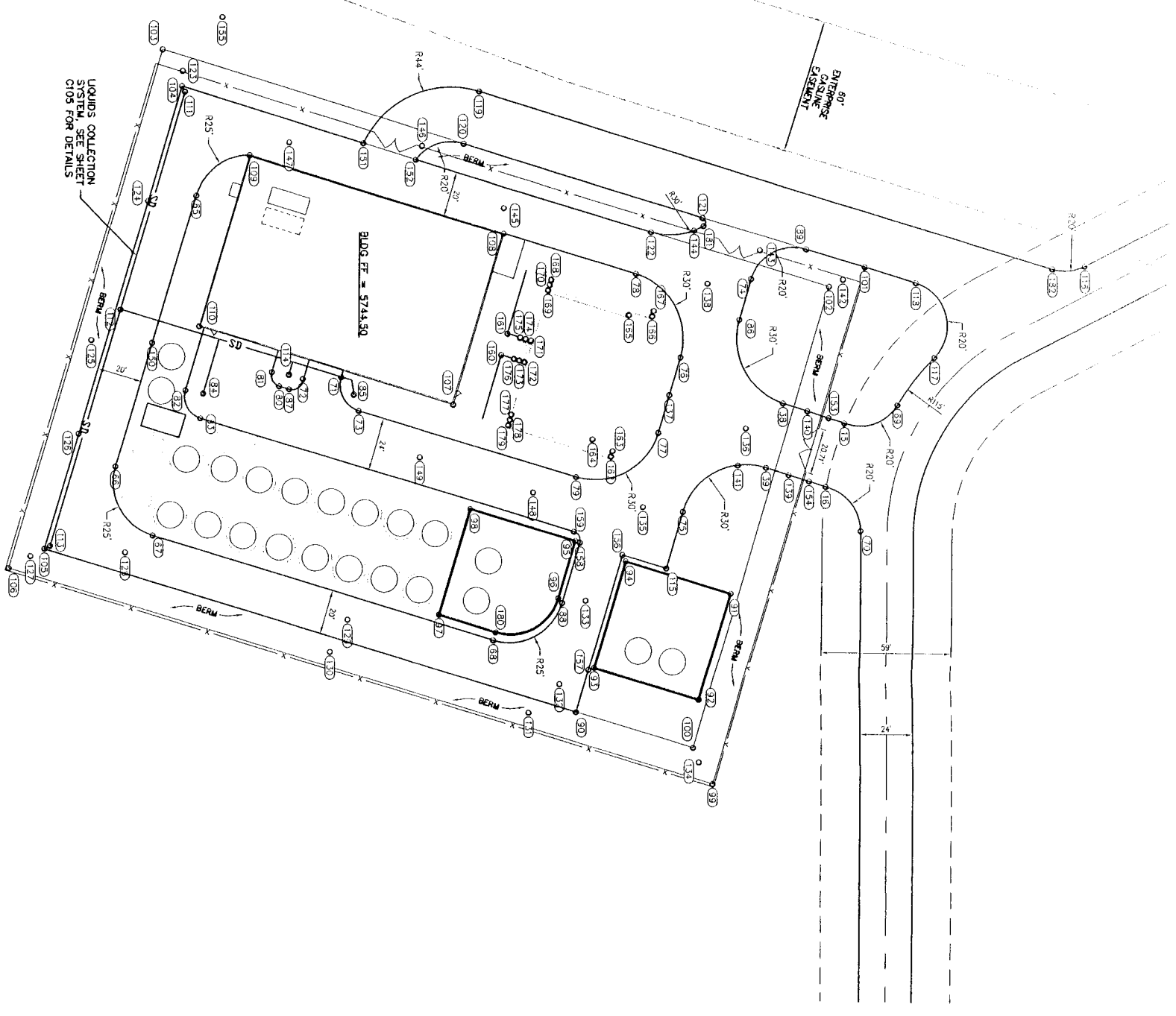
Scale Horiz: AS NOTED Vert: N/A
Project No 5119829
Sheet C107



HORIZONTAL CONTROL PLAN

SCALE: 1" = 30'

CONTOUR INTERVAL 1'

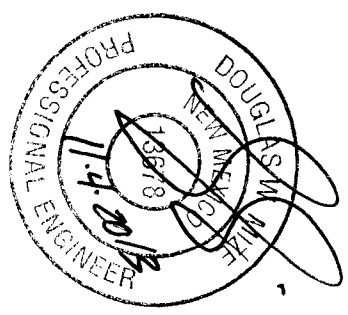
SCALE: 1" = 30'

30 15 0 30 60

Point Table

Point #	Northing	Easting	Elevation	Description
15	33193.83	1356314.00	5745.53	EDGE OF ROAD
16	33178.38	1356352.79	5745.59	EDGE OF ROAD
18	33155.79	1356315.38	5744.20	EDGE OF ROAD
23	33144.21	1356344.42	5744.21	EDGE OF ROAD
65	34499.58	1356225.01	5743.99	EDGE OF ROAD
66	34453.92	1356348.83	5744.00	EDGE OF ROAD
67	34470.89	1356377.87	5744.00	EDGE OF ROAD
68	35025.11	1356423.00	5744.00	EDGE OF ROAD
69	35207.96	1356315.62	5747.32	EDGE OF ROAD
70	35131.25	1356372.43	5745.71	EDGE OF ROAD
71	34935.91	1356303.87	5744.00	EDGE OF ROAD
72	34938.29	1356308.85	5743.97	EDGE OF ROAD
73	34993.77	1356320.75	5744.00	EDGE OF ROAD
74	35141.18	1356260.00	5744.00	EDGE OF ROAD
75	35110.58	1356356.68	5743.97	EDGE OF ROAD
76	35109.22	1356235.49	5744.00	EDGE OF ROAD
77	35099.39	1356328.12	5744.00	EDGE OF ROAD
78	35088.85	1356258.28	5744.00	EDGE OF ROAD
79	35082.18	1356349.50	5744.00	EDGE OF ROAD
80	34927.59	1356310.18	5744.00	EDGE OF ROAD
81	34924.19	1356303.98	5744.00	EDGE OF ROAD
82	34885.23	1356312.44	5744.00	EDGE OF ROAD
83	34902.04	1356324.86	5744.00	EDGE OF ROAD
84	34883.19	1356313.74	5743.50	EDGE OF ROAD
85	34901.42	1356313.59	5744.00	STORM DRAIN
86	35115.82	1356278.28	5743.99	EDGE OF ROAD
87	34932.09	1356311.50	5744.00	EDGE OF ROAD
88	35058.12	1356406.03	5744.00	EDGE OF ROAD
89	35163.97	1356248.41	5747.00	EDGE OF ROAD
90	35098.70	1356454.85	5743.99	EDGE OF ROAD
91	35132.33	1356401.03	5744.00	TOP OF BERM
92	35118.44	1356448.54	5744.00	TOP OF BERM
93	35070.94	1356434.64	5744.00	TOP OF BERM
94	35094.84	1356387.13	5744.00	TOP OF BERM
95	35081.92	1356378.23	5744.00	TOP OF BERM
96	35054.41	1356403.90	5744.00	TOP OF BERM
97	35000.51	1356411.83	5744.00	TOP OF BERM
98	35014.41	1356394.33	5744.00	TOP OF BERM
99	35124.59	1356486.50	5741.38	BERM
100	35115.76	1356470.37	5744.00	BERM
101	35192.56	1356254.24	5747.08	BERM
102	35178.44	1356283.07	5744.00	BERM
103	34873.93	1356160.99	5741.87	BERM
104	34852.76	1356177.12	5743.00	BERM
105	34822.08	1356394.42	5743.00	BERM
106	34805.96	1356393.23	5741.36	BERM
107	35008.38	1356317.52	5744.00	BLDG
108	35028.85	1356240.74	5744.00	BLDG
109	34913.68	1356207.04	5744.00	BLDG
110	34891.21	1356283.81	5744.00	BLDG
111	34884.11	1356179.80	5742.80	STORM DRAIN
112	34853.74	1356276.58	5742.80	STORM DRAIN
113	34824.37	1356383.07	5742.80	STORM DRAIN
114	34931.97	1356304.98	5743.50	STORM DRAIN
115	35103.15	1356390.14	5743.99	EDGE OF ROAD
116	35202.93	1356232.75	5748.00	EDGE OF ROAD
117	35224.51	1356234.12	5748.00	EDGE OF ROAD
118	35216.02	1356281.04	5747.46	EDGE OF ROAD
119	35017.10	1356177.92	5745.42	EDGE OF ROAD
120	35010.37	1356200.96	5745.25	EDGE OF ROAD
121	35118.35	1356232.69	5748.15	EDGE OF ROAD

Point #	Northing	Easting	Elevation	Description
122	35094.54	1356239.39	5745.39	EDGE OF ROAD
123	34883.03	1356170.40	5745.50	TOP OF BERM
124	34887.31	1356227.69	5743.05	TOP OF BERM
125	34842.72	1356290.54	5745.00	TOP OF BERM
126	34837.20	1356332.33	5743.04	FG
127	34815.91	1356307.77	5745.00	TOP OF BERM
128	34859.40	1356385.99	5743.27	FG
129	34958.04	1356414.71	5743.58	FG
130	34951.03	1356429.39	5745.00	TOP OF BERM
131	35041.19	1356455.43	5745.00	TOP OF BERM
132	35055.23	1356442.24	5743.83	FG
133	35068.89	1356404.93	5744.00	FG
134	35118.36	1356476.88	5745.00	TOP OF BERM
135	35092.51	1356362.92	5743.93	FG
136	35136.99	1356328.74	5744.00	FG
137	35104.31	1356312.30	5744.00	FG
139	35121.36	1356282.43	5743.95	FG
139	35158.53	1356347.85	5745.03	TOP OF BERM
140	35166.90	1356318.80	5745.11	TOP OF BERM
141	35135.44	1356343.48	5744.00	FG
142	35182.70	1356359.97	5745.11	TOP OF BERM
143	35145.03	1356247.10	5745.50	TOP OF BERM
144	35115.18	1356238.40	5745.54	TOP OF BERM
145	35028.78	1356229.23	5743.91	FG
146	34991.52	1356302.17	5745.00	TOP OF BERM
147	34931.48	1356201.28	5743.62	FG
148	35042.87	1356356.75	5743.93	FG
149	34991.39	1356341.32	5743.89	FG
150	34870.08	1356291.48	5744.00	EDGE OF ROAD
151	34985.02	1356201.28	5744.81	EDGE OF ROAD
152	34988.73	1356208.19	5744.81	EDGE OF ROAD
153	35176.58	1356321.77	5745.13	SWALE
154	35187.75	1356350.44	5744.01	SWALE
155	34900.69	1356146.32	5742.00	SWALE
156	35008.33	1356434.54	5743.99	EDGE OF ROAD
157	35008.03	1356379.04	5744.00	EDGE OF ROAD
158	35006.30	1356374.07	5744.00	EDGE OF ROAD
159	35061.30	1356374.07	5744.00	EDGE OF ROAD
160	35028.03	1356285.23	5744.07	TOP OF TANK
161	35030.84	1356285.83	5744.07	TOP OF TANK
162	35077.96	1356340.06	5747.39	TOP OF WALL
163	35078.89	1356337.58	5748.35	TOP OF WALL
164	35068.54	1356332.34	5750.94	TOP OF WALL
165	35085.80	1356278.70	5750.94	TOP OF WALL
166	35098.33	1356277.18	5748.34	TOP OF WALL
167	35097.04	1356274.75	5747.40	TOP OF WALL
168	35050.45	1356281.28	5747.41	TOP OF WALL
169	35048.08	1356285.98	5753.51	TOP OF WALL
170	35048.79	1356283.55	5750.38	TOP OF WALL
171	35041.42	1356288.72	5752.63	TOP OF WALL
172	35038.58	1356298.31	5752.57	TOP OF WALL
173	35038.20	1356297.61	5749.08	TOP OF WALL
174	35039.01	1356286.01	5749.08	TOP OF WALL
175	35038.60	1356287.31	5745.55	TOP OF WALL
176	35033.80	1356294.91	5745.55	TOP OF WALL
177	35032.82	1356321.63	5753.48	TOP OF WALL
178	35032.12	1356324.03	5750.37	TOP OF WALL
179	35031.42	1356326.44	5747.24	TOP OF WALL
180	35028.13	1356419.39	5744.00	TOP OF BERM
181	35119.42	1356236.31	5745.82	EDGE OF ROAD
182	35278.14	1356254.18	5748.00	EDGE OF ROAD



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Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

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Date: AUGUST, 2011

Scale: Horiz 1" = 30'
Vert N/A

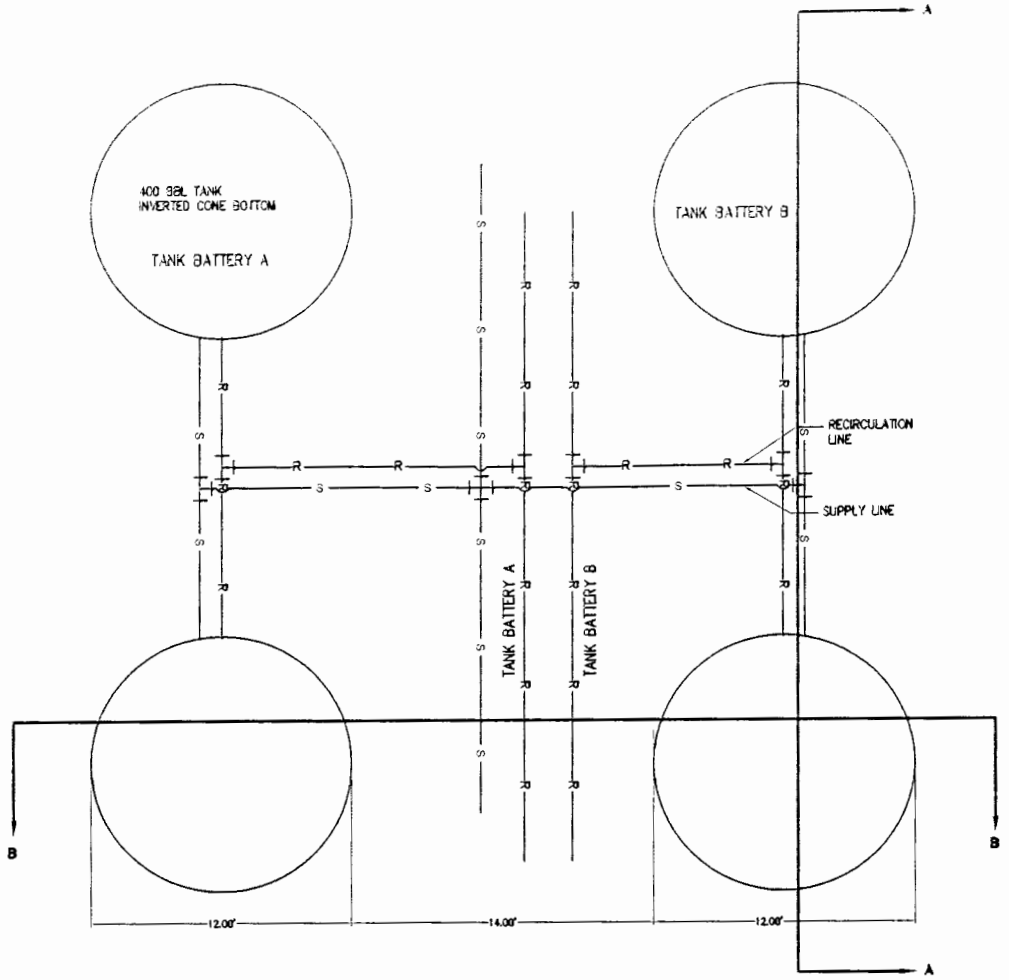
Project No. 5119829

Sheet C108

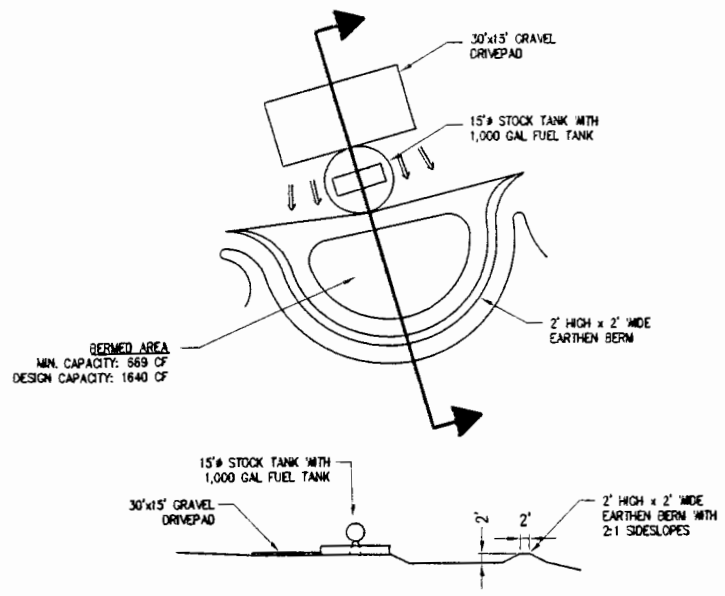
INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
HORIZONTAL CONTROL PLAN

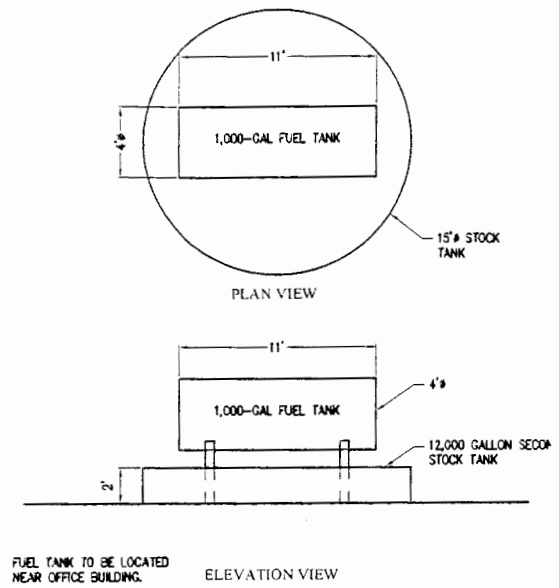
Revision	Date	Description	By	Chkd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	



RECEIVING TANK TYPICAL PIPING
NOT TO SCALE



FUELING TANK & CONTAINMENT DRAINAGE
NOT TO SCALE



FUELING TANK & CONTAINMENT
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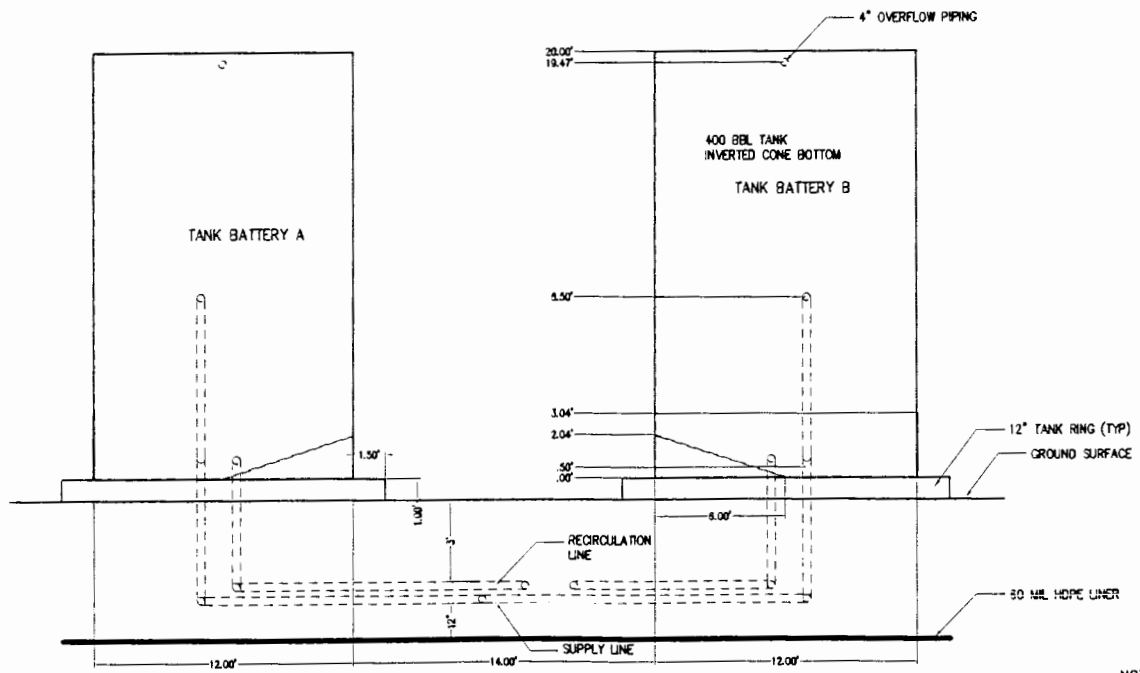
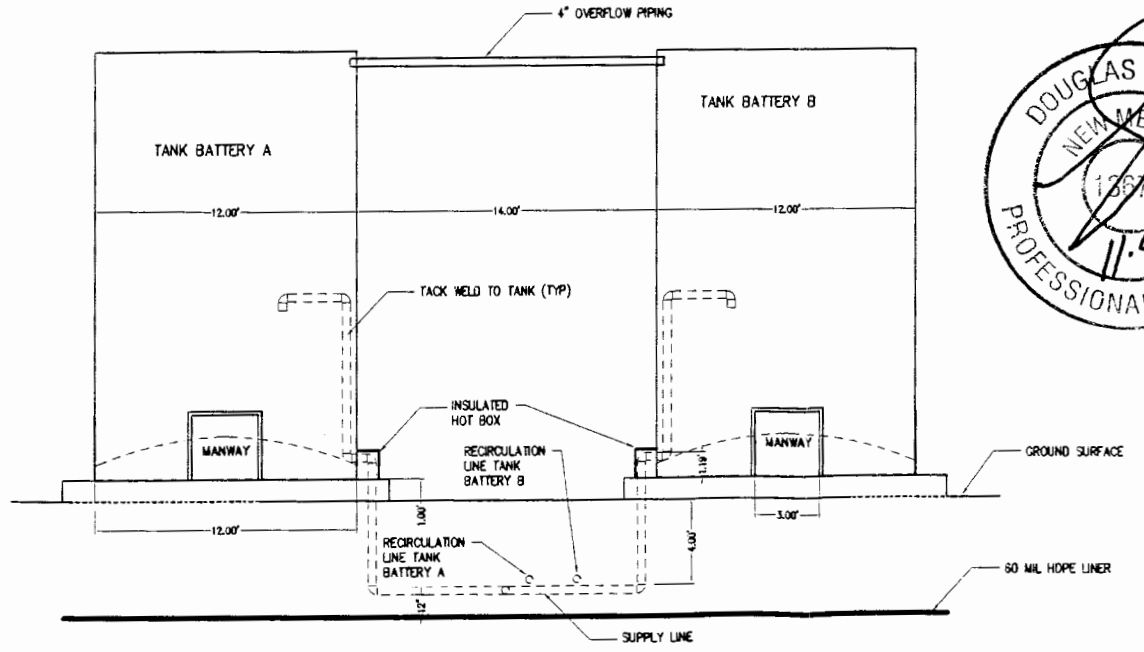


ELEVATION SECTION A-A
NOT TO SCALE

NOTE: SEE SECTION C-C, SHEET C105 FOR TYPICAL SITE CROSS-SECTION



ELEVATION SECTION B-B
NOT TO SCALE

Revision	Date	Description	By	Check'd
1	9/2012	OCD REVIEW COMMENTS	LHM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	LHM	

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PIPING PLAN

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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
DWM	DJB	DWM

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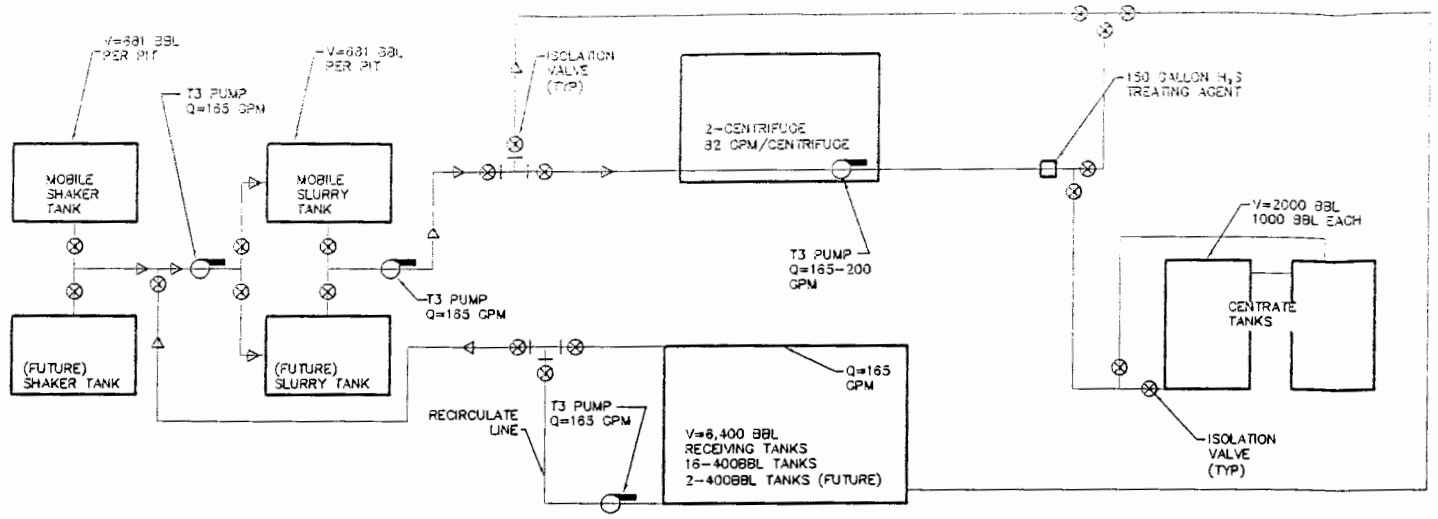
Date AUGUST, 2011

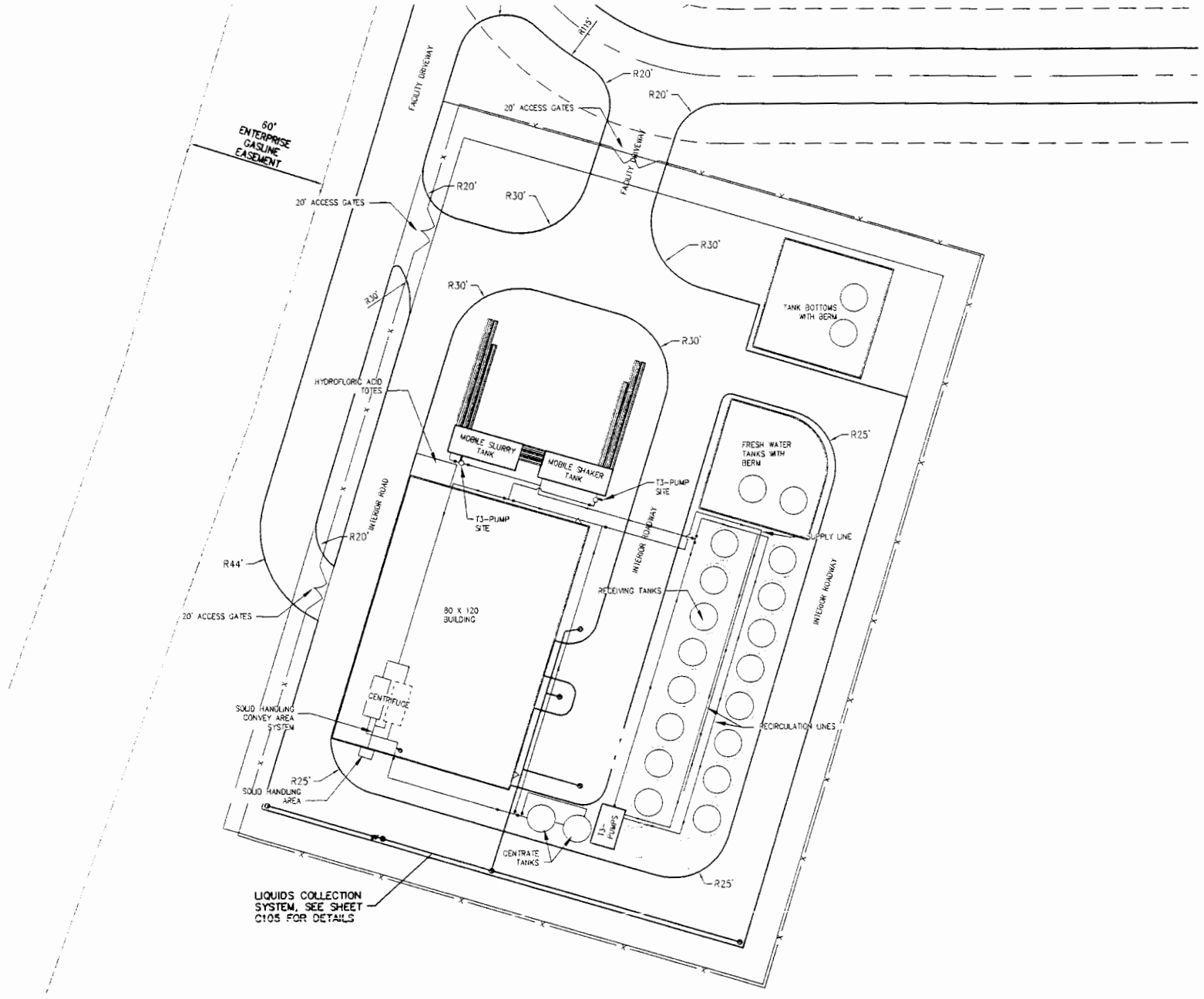
Scale Horiz. NTS
Vert. N/A

Project No 5119829

Sheet C109



PROFILE VIEW: PROCESS AND ENGINEER DESIGN
NOT TO SCALE



PLAN VIEW: PROCESS AND ENGINEER DESIGN
SCALE: 1" = 30'

EQUIPMENT SPECIFICATIONS:

MOBILE SHAKER TANK – SHAKER TANK SHALL BE 45' IN LENGTH, 8'-6" WIDE X 10' HIGH, 14" FLOOR (V-BOTTOM), 1/4" STEEL WALLS, ONE MAN-WAY ON LOWER REAR SIDE WALL, LADDER AND PLATFORM ON FRONT OF TANK. TWO (2) CHOTRONIC 4'X8' SHALE SHAKERS MOUNTED ON TOP. (80 MESH SCREENS). SHAKER UNIT SHALL HAVE THE TOP COVERED WITH EXPANDED METAL "CUT TO FIT" TO PROHIBIT WILDLIFE FROM ENTERING THE UNIT.

MOBILE SLURRY HOLDING TANK – SLURRY HOLDING TANK SHALL BE 45' IN LENGTH, 8'-6" WIDE X 10' HIGH, 1/4" FLOOR (V-BOTTOM), 1/4" CORRUGATED WALLS, ONE MAN-WAY ON LOWER REAR SIDE WALL, LADDER AND PLATFORM ON FRONT OF TANK. GORMAN RUPP 6" PUMP FOR TRANSFERRING SLURRY TO CENTRIFUGE OR STORAGE TANKS. SHAKER UNIT SHALL HAVE THE TOP COVERED WITH EXPANDED METAL "CUT TO FIT" TO PROHIBIT WILDLIFE FROM ENTERING THE UNIT.

CENTRIFUGE – THE CENTRIFUGE SHALL BE HUTCHINSON-HAYES MODEL 1448 14" DIAMETER, 48" LENGTH NORMAL CENTRIFUGAL FORCE 2118 G's AT 3250 RPM, MAXIMUM 3180 G's AT 4000 RPM. THE BASIC PURPOSE OF CENTRIFUGE IS TO SEPARATE THE LIQUID AND SOLIDS FROM THE FEED SLURRY IE: DRILL MUD, DRILL CUTTINGS, AND TANK BOTTOMS. A STAINLESS STEEL SCREW CONVEYOR (FACED WITH HARD TILES) GATHERS AND CONVEYS THESE SOLIDS TO A CENTRAL DISCHARGE AREA. THE CONVEYOR IS DRIVEN AT A SLIGHTLY SLOWER RPM THRU A PLANETARY GEAR REDUCER. THE LIQUIDS MIGRATE TO THE FRONT END OF THE MACHINE AND ARE DISPELLED THRU FOUR (4) ADJUSTABLE PLATE DAM OPENINGS, TO A CENTRAL DISCHARGE AREA THEN PUMPED TO A LIQUID STORAGE TANK TO BE DISPOSED OF.

STORAGE TANKS – STORAGE TANKS SHALL BE STANDARD, 400 BARREL, OIL FIELD TANKS (12' DIAMETER X 20' TALL).

CENTRATE TANK – THE CENTRATE TANK SHALL BE A 20' DIAMETER X 16' TALL STEEL TANK OF APPROXIMATELY 900 BARRELS.

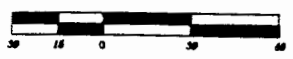
FRESH WATER TANK – THE FRESH WATER TANK SHALL BE A 12' DIAMETER X 20' TALL 400 BARREL TANK.

T3 PUMPS – PUMPS ARE SIZED BASED UPON 10 LB/GAL WATER/SOLIDS MIXTURE AND THE RATE @ WHICH CENTRIFUGE CAN PROCESS MIXTURE.

NOTE:
PUMP FLOW (Q) IS BASED UPON 10 LBS/GALLON MUD AND IS THE AVERAGE PROCESSING CAPABILITY FOR THE CENTRIFUGE. LIGHTER MUD WILL YIELD A HIGHER FLOW AND A HEAVIER MUD WILL HAVE A LOWER FLOW. IT IS IMPORTANT THAT THE OPERATOR MAINTAIN A CONSISTENT MUD WEIGHT TO OPTIMIZE FACILITY OPERATION, i.e. MUD @ OR AROUND 10 LBS/GALLON.

DOUGLAS W. MIZE
NEW MEXICO
13678
11.4.2013
PROFESSIONAL ENGINEER

SCALE: 1"=30'



No.	Revision	Date	By	Chkd
1	ODD REVIEW COMMENTS	4/2012	DWM	
2	REMOVE SEPTIC TANK & REVISED LAYOUT SIZE	2/2013	DWM	

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC.

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BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROCESS PLAN AND ENGINEER DESIGN PLAN

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Designed	Drawn	Checked
DWM	DJB	DWM

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Date AUGUST, 2011

Scale Horiz AS SHOWN
Vert N/A

Project No. 5119829

Sheet C110

OPERATIONAL/MANAGEMENT PLAN

(19.15.36.8.C.6, 19.15.36.13 & 19.15.36.15)

Introduction

This purpose of this Waste Acceptance and Operational Management Plan is to establish the minimum requirements and procedures for acceptance, management, treatment, bioremediation and final disposal of oilfield waste. These procedures comply with the applicable requirements contained pursuant to 19.15.36.8.C.6, 19.15.36.13 and 19.15.36.15 NMAC.

This plan includes test methods, details of planned waste sampling and analysis, description of waste shipment screening/verification and operational processes.

Supervisors and employees involved in the handling of oilfield waste shall comply with these procedures. Responsible supervisor(s) and employee(s) shall make frequent inspections and collect and maintain all data as outlined under the provisions of the permit.

During the life of the facility, a maximum of four cells will be used for active treatment/remediation of contaminated soils. Contaminated soils will be placed into biopiles within these cells during the treatment/remediation phase. These cells are referred to as the ***active "treatment" cells***.

As biopile(s) meet treatment zone closure performance standards (19.15.36.15.F NMAC) the treated/remediated soils will be moved to and spread in the other cells on the facility (and/or with prior division approval, disposed or reused of in an alternative manner 19.15.36.15.G.1 NMAC). These cells are referred to as the ***final disposition "receiving"*** cells.

1. WASTE (19.15.36.13.F)

Prior to accepting RCRA Exempt Oilfield Waste from a generator, the generator must comply with the applicable requirements of this plan.

Only Non-Hazardous, RCRA Exempt waste will be accepted at the facility. These materials are wastes generated from oil and gas exploration and production operations and are usually the by-product of "down-hole" operations.

1.1 Exempt Oilfield Waste (19.15.36.13.F.1)

Exempt Oilfield Waste destined for disposal at the facility will be identified by the generator using acceptable knowledge and all applicable test and analytical methods (*refer to Section 2 Waste Acceptance*).

Exempt waste is generated by various producers from a variety of sites and by various specific processes and activities. *Examples* of the major types of operations that generate exempt waste include:

1. Hydrocarbon Impacted Soils and Gravels – Production of hydrocarbon stained soils or gravels includes spillage, line failure, leaking vessels or valves, and the reclamation of production pits.
2. Tank Bottoms – Production of tank bottoms includes tank cleaning operations -cleaning the accumulation of hydrocarbon material and other substances that settle naturally below oil in tanks and receptacles that are used in oils' handling and storing, and which accumulation contains in excess of 2% of BS&W. For lease production and lease storage tanks, tank bottoms shall be limited to that volume of the tank in which it is contained that lies below the bottom of the pipeline outlet to the tank. Generators of tank bottoms will ensure that the waste does not contain economically recoverable petroleum hydrocarbons and a visual inspection of the waste will be confirmed upon arrival at the facility.
3. Hydrocarbon Impacted Drill Cuttings-Production of drill cuttings of rock and other materials (typically called solids) removed from the borehole while drilling petroleum wells.

1.2 Emergency Non-oilfield Waste (19.15.36.13.F.3)

The facility may accept non-hazardous, non-oilfield waste in an emergency and only if ordered by the department of public safety.

1.3 Waste Characterization

Characterization requirements for individual shipments of Exempt Oilfield Waste are specified on a waste stream basis. A waste stream is defined as waste material generated from a single site and a single process or an activity that is similar in material, physical form, and constituents. *Examples* of Exempt Oilfield Waste include:

1. Petroleum Hydrocarbon impacted soil and gravel
2. Tank Bottoms (as defined in Section 1.1 Exempt Oilfield Waste)
3. Petroleum Hydrocarbon impacted drill cuttings

1.4 Prohibited Waste:

The following waste is PROHIBITED from being disposed of at the facility:

1. Hazardous Waste
2. RCRA regulated materials
3. Waste containing NORM
4. Free Liquids - prior to placing waste in a biopile/landfarm cell, the waste will be sufficiently solidified to pass the paint filter test.

2. WASTE ACCEPTANCE (19.15.36.13.A.3, 19.15.36.13.E, and 19.15.36.15.A.)

A completed C-138 form shall be submitted to the facility prior to the shipment arriving or must accompany the shipment. Waste will NOT be accepted prior to receipt of the completed C-138 which has been executed by the generator.

Once the waste has arrived at the gate, prior to acceptance, facility personnel will ensure:

- through visual examination and review of the C-138, that the waste holds **NO** unacceptable waste;
- through visual examination and review of the C-138, that tank bottoms do not contain economically recoverable petroleum hydrocarbons (19.15.36.15.A);

Anytime the facility requests additional information concerning a waste shipment, the generator will provide the necessary analysis and other supporting documentation to verify the contents of the shipment in question.

2.1 Denied/Rejected Waste

Shipments of waste which do not meet the acceptance criteria shall be Denied/Rejected at the gate. The generator of the waste will be notified immediately that the waste had been denied/rejected and given the specifics as to why it has been denied/rejected. Copies of the C-138 indicating the waste has been Denied/Rejected will be kept on file.

3. FORMS

The following forms, specific to landfarms, will be utilized by the facility as required.

3.1 Form C-138 (19.15.36.13.F.1, 19.15.36.13.F.2, and 19.15.36.13.F.3)

All material (exempt and emergency non-oilfield waste), arriving at the facility must be accompanied by a "C-138 Request for Approval to Accept Solid Waste" (ADDENDUM A). The facility shall be responsible for the procurement and review of the C-138 and characterization information to verify compliance with the NMOCD permit.

C-138 forms are a permit requirement and must contain the following:

1. Generator name and address
2. Originating Site
3. Location of Material (Address or ULSTR)
4. Source and Description of Waste
    - Waste status: **EXEMPT** as defined by the 1988 RCRA act.
    - Hazardous waste is PROHIBITED and will NOT be accepted into the facility.
5. A. Generator representative signature - certifying the waste conforms with RCRA and US Environmental Protection Agency's regulatory determination that the waste is RCRA Non-Hazardous Exempt waste.
   B. Representative/Agent signature – certifying the waste samples have been subjected to the paint filter and chloride content tests and that said samples have been found to conform to specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. (Results are attached to the C-138)
6. Transporter of the waste
7. Name, Permit #, Address, Method of Treatment/Disposal, Acceptance Status: Approved or Denied (must be maintained as permanent record), and
8. Authorization from facility personnel to dispose of the waste

C-138 forms can be accepted on a monthly, weekly, or per load basis.

3.2 Form C-133 (19.15.36.13.D)

A division approved C-133 "Authorization to Move Produced Water" (ADDENDUM B) shall accompany transporters hauling "liquid" oilfield waste (does not apply to transporters hauling solids). Copies can be kept on file for future reference. Each month an updated printout of approved transporters will be obtained from OCD's website and will be crosschecked with the C-133 form(s) to ensure the C-133 form is still valid.

Form C-133 must contain the following:

1. Transporter name, address and phone number
2. State Corporation Commission Permit Number
3. Signature of authorized agent/responsible party
4. State approval Officer and title

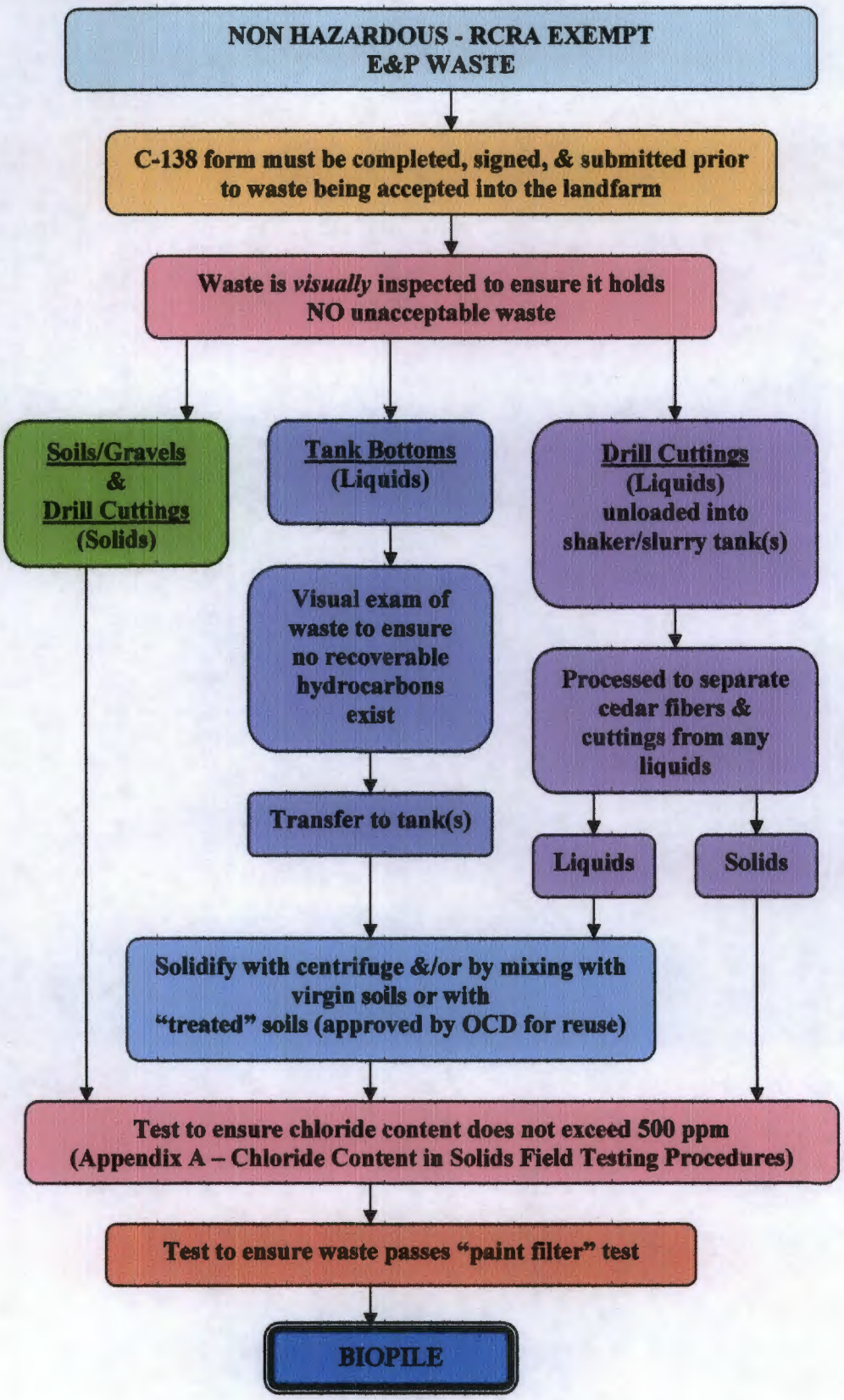
3.3 Form Department of Public Safety Order (19.15.36.13.F.3)

A department of public safety order, subject to division inspection, must accompany any emergency non-oilfield waste accepted at the facility along with a completed C-138 form.

4. DISPOSAL (19.15.36.13.H)

Disposal at the facility will only occur when an employee/attendant is on duty. The facility will be secured to prevent unauthorized disposal.

4.1 Flowchart for Waste Acceptance/Disposal:



4.2 Migratory Bird Protection (19.15.36.13.I)

To protect migratory birds, the open top shaker/slurry tanks will be screened with removable (for periodic maintenance) expanded metal.

5.0 TREATMENT/BIOREMEDIATION (19.15.36.15.C)

Within 72 hours of receipt, *contaminated* soils shall be spread and disked in 8" or less lifts or approximately 1000 cy per acre per 8" lift or biopile (19.15.36.15.C.4 NMAC). Prior to adding additional biopiles to the landfarm acre, the treatment zone (biopile) shall be tested to ensure that the GRO/DRO (8015M) or TPH (418.1) does not exceed 2500 mg/kg and Chloride concentration (300.1) does not exceed 500 mg/kg.

Also refer to Section 7.1 Treatment Zone Monitoring & Section 8.0-Treatment Zone Closure Performance Standards of this plan.

Alternative landfarm treatment procedures may be used if demonstration can be made that they provide equivalent protection of fresh water, public health/safety and the environment, with prior division approval (19.15.36.15.C.10).

*All setback requirements will be met and areas/portions of cells may be unusable).

5.1 Hydrocarbon Impacted Soils & Gravels

Upon meeting waste acceptance criteria (refer to Section 2 Waste Acceptance), hydrocarbon stained soils and/or gravel material is:

1. Tested to ensure waste does not exceed chloride concentration standards of 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) prior to placing into a biopile/landfarm cell. *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste (Refer to Appendix A - Chloride Content in Solids Field Testing Procedure);
2. Tested to ensure waste is sufficiently solidified to pass the "paint filter" test prior to placing into a biopile/landfarm cell. *Free Liquids* - Pursuant to 19.15.36.13.E. "The operator shall not place oil field waste containing "free liquids" in a landfarm cell. The operator shall use the paint filter test (Method 9095 of SW-846) to determine conformance. *"Free liquids" received at the facility will be solidified by use of a centrifuge and/or with virgin or treated soils prior to placing in a landfarm cell.* (19.15.36.13.E & 19.15.36.15.A);
3. Placed into a "under construction" biopile/lift within an active "treatment" cell. The "under construction" phase is completed once a biopile reaches approximately 1000 cy and/or upon generator notification that all materials associated with the "C-138" have been delivered (biopiles may contain materials from more than one generator and/or more than one location);
4. Waste specific to each biopile is recorded by use of the "Biopile Records" form which contains the following information: Generator(s) of Material, Origin of Material, Type and Volume of Waste, Transported By/Truck #, Date Received;
5. During the "construction" phase, the remediation process is started by adding organic waste (manure) or *chemical enhancers to accelerate the decomposition of hydrocarbons. IEI currently utilizes manure to mix with *contaminated* soils at a 2:1 (waste:manure) ratio. **In the event chemical enhancers were to be utilized, IEI would provide the corresponding MSDS to the Division and approval would be obtained prior to applying chemical enhancers (microbes) to soils (19.15.36.15.C.7);*
6. The biopile is completed and no longer in the "construction" phase once it reaches approximately 1000 cy- 12' base x 4' top x 8' height x 420' length, no other waste will be added, a cell location and number is assigned. Biopile numbers are assigned in consecutive order and numbers are never reused;
7. During the remediation process biopile temperatures are monitored on a weekly basis. Biopile temperatures fluctuate, however, the optimal temperature range for the biodegradation process is 77° - 140 ° F.
8. Additional remediation materials (manure & moisture) may be added to maintain and control decomposition of hydrocarbons;
9. Soils will be turned with an excavator monthly (19.15.36.15.C.5);
10. Moisture will be added to the soils to enhance the bioremediation process and to help control fugitive dust emissions (19.15.36.15.C.6);
11. Soil samples are taken at regular intervals and tested by independent laboratories. A "Chain of Custody" form accompanies all lab samples. Laboratory results are used to determine if further remediation is required and results are kept on file (refer to Section 7.1 Treatment Zone Monitoring)

5.2 Hydrocarbon Impacted Drill Cuttings

Drill Cuttings-Solids

Upon meeting waste acceptance criteria (refer to Section 2 Waste Acceptance), drill cuttings are:

1. Tested to ensure waste does not exceed chloride concentration standards of 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) prior to placing into a biopile/landfarm cell. *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste (Refer to Appendix A - Chloride Content in Solids Field Testing Procedure);
2. Tested to ensure waste is sufficiently solidified to pass the "paint filter" test prior to placing into a biopile/landfarm cell. **Free Liquids* - Pursuant to 19.15.36.13.E. "The operator shall not place oil field waste containing "free liquids" in a landfarm cell. The operator shall use the paint filter test (Method 9095 of SW-846) to determine conformance. *"Free liquids" received at the facility will be solidified by use of a centrifuge and/or with virgin or treated soils prior to placing in a landfarm cell.* (19.15.36.13.E & 19.15.36.15.A);
3. Placed into a "under construction" biopile/lift within an active "treatment" cell. The "under construction: phase is completed once a biopile reaches approximately 1000 cy and/or upon generator notification that all materials associated with the "C-138" have been delivered (biopiles may contain materials from more than one generator and/or more than one location);
4. Waste specific to each biopile is recorded by use of the "Biopile Records" form which contains the following information: Generator(s) of Material, Origin of Material, Type and Volume of Waste, Transported By/Truck #, Date Received;
5. During the "construction" phase, the remediation process is started by adding organic waste (manure) or *chemical enhancers to accelerate the decomposition of hydrocarbons. IEI currently utilizes manure to mix with *contaminated* soils at a 2:1 (waste:manure) ratio. **In the event chemical enhancers were to be utilized, IEI would provide the corresponding MSDS to the Division and approval would be obtained prior to applying chemical enhancers (microbes) to soils (19.15.36.15.C.7);*
6. The biopile is completed and no longer in the "construction" phase once it reaches approximately 1000 cy- 12' base x 4' top x 8' height x 420' length, no other waste will be added, a cell location and number is assigned. Biopile numbers are assigned in consecutive order and numbers are never reused;
7. During the remediation process biopile temperatures are monitored on a weekly basis. Biopile temperatures fluctuate, however, the optimal temperature range for the biodegradation process is 77° - 140 ° F.
8. Additional remediation materials (manure & moisture) may be added to maintain and control decomposition of hydrocarbons;
9. Soils will be turned with an excavator monthly (19.15.36.15.C.5);
10. Moisture will be added to the soils to enhance the bioremediation process and to help control fugitive dust emissions (19.15.36.15.C.6);
11. Soil samples are taken at regular intervals and tested by independent laboratories. A "Chain of Custody" form accompanies all lab samples. Laboratory results are used to determine if further remediation is required and results are kept on file (refer to Section 7.1 Treatment Zone Monitoring).

Hydrocarbon Impacted Drill Cuttings-Liquids

Upon meeting waste acceptance criteria (refer to Section 2 Waste Acceptance), drill cuttings are:

1. Offloaded into the above ground shaker/slurry tank(s); once in the processing area, truck backs up on elevated ramp and offloads into the shaker/slurry tank(s) (Refer to Sheet C107-Ramp Detail);
2. Processed to separate cedar fibers and cuttings from any liquids;
3. Solidified by processing through the centrifuge and/or mixing any remaining liquid with soils (virgin and/or *treated soils). The "Tank Solidification Record form (ADDENDUM E) will be used to record the type (virgin or *treated) of soil, the amount of soil, and to ensure waste conforms to the paint filter and chloride content requirements. The date & quantity of treated soils will also be logged on the Biopile Records form (ADDENDUM F). Also refer to Section 8.0 Treatment Zone Closure Performance Standards, 11.3 Tank Solidification Record and 11.4 Biopile Record forms. **Treated Soils=Soils which have been remediated to the higher of the background concentrations or which have met closure performance standards (19.15.36.15.F NMAC) and which have received prior division approval to reuse or recycle (19.15.36.15.G NMAC);*
4. Tested to ensure waste does not exceed chloride concentration standards of 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) prior to placing into a biopile/landfarm cell. *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste (Refer to Appendix A - Chloride Content in Solids Field Testing Procedure);
5. Tested to ensure waste is sufficiently solidified to pass the "paint filter" test prior to placing into a biopile/landfarm cell. **Free Liquids* - Pursuant to 19.15.36.13.E. "The operator shall not place oil field waste containing "free liquids" in a landfarm cell. The operator shall use the paint filter test (Method 9095 of SW-846) to determine conformance. *"Free liquids" received at the facility will be solidified by use of a centrifuge and/or with virgin or treated soils prior to placing in a landfarm cell.* (19.15.36.13.E & 19.15.36.15.A);
6. Placed into a "under construction" biopile within an active "treatment" cell. The "under construction" phase is completed once a biopile reaches 1000 cy and/or upon generator notification that all materials associated with the "C-138" have been delivered (biopiles may contain materials from more than one generator and/or more than one location);
7. Waste specific to each biopile is recorded by use of the "Biopile Records" form which contains the following information: Generator(s) of Material, Origin of Material, Type and Volume of Waste, Transported By/Truck #, Date Received;
8. During the "construction" phase, the remediation process is started by adding organic waste (manure) or *chemical enhancers to accelerate the decomposition of hydrocarbons. IEI currently utilizes manure to mix with drill cuttings at a 2:1 (waste:manure) ratio. **In the event chemical enhancers were to be utilized, IEI would provide the corresponding MSDS to the Division and approval would be obtained <u>prior</u> to applying chemical enhancers (microbes) to soils (19.15.36.15.C.7);*
9. The biopile is completed and no longer in the "construction" phase once it reaches approximately 1000 cy- 12' base x 4' top x 8' height x 420' length, no other waste will be added, a cell location and number is assigned. Biopile numbers are assigned in consecutive order and numbers are never reused;
10. During the remediation process biopile temperatures are monitored on a weekly basis. Biopile temperatures fluctuate, however, the optimal temperature range for the biodegradation process is 77° - 140 ° F.
11. Additional remediation materials (manure & moisture) may be added to maintain and control decomposition of hydrocarbons;
12. Soils will be turned with an excavator monthly (19.15.36.15.C.5);
13. Moisture will be added to the soils to enhance the bioremediation process and to help control fugitive dust emissions (19.15.36.15.C.6);
14. Soil samples are taken at regular intervals and tested by independent laboratories. A "Chain of Custody" form accompanies all lab samples. Laboratory results are used to determine if further remediation is required and results are kept on file (refer to Section 7.1 Treatment Zone Monitoring).

5.3 Tank Bottoms

Upon meeting waste acceptance criteria (refer to Section 2 Waste Acceptance), tank bottoms are:

1. Offloaded into the above ground tank(s)- once in the processing area, truck backs up on elevated ramp and offloads (Refer to Sheet C107-Ramp Detail); all waste is processed through the shaker/slurry tank(s), waste is sent through underground line to above ground enclosed storage tank(s);
2. Solidified by processing through the centrifuge and/or mixing any remaining liquid with soils (virgin and/or *treated soils). The "Tank Solidification Record form (ADDENDUM E) will be used to record the type (virgin or *treated) of soil, the amount of soil, and to ensure waste conforms to the paint filter and chloride content requirements. The date & quantity of treated soils will also be logged on the Biopile Records form (ADDENDUM F). Also refer to Section 8.0 Treatment Zone Closure Performance Standards, 11.3 Tank Solidification Record form and 11.4 Biopile Record forms. **Treated Soils=Soils which have been remediated to the higher of the background concentrations or which have met closure performance standards (19.15.36.15.F NMAC) and which have received prior division approval to reuse or recycle (19.15.36.15.G NMAC);*
3. Tested to ensure waste does not exceed chloride concentration standards of 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) prior to placing into a biopile/landfarm cell. *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste (Refer to Appendix A - Chloride Content in Solids Field Testing Procedure);
4. Tested to ensure waste is sufficiently solidified to pass the "paint filter" test prior to placing into a biopile/landfarm cell. **Free Liquids* - Pursuant to 19.15.36.13.E. "The operator shall not place oil field waste containing "free liquids" in a landfarm cell. The operator shall use the paint filter test (Method 9095 of SW-846) to determine conformance. *"Free liquids" received at the facility will be solidified by use of a centrifuge and/or with virgin or treated soils prior to placing in a landfarm cell.* (19.15.36.13.E & 19.15.36.15.A);
5. Placed into a "under construction" biopile within an active "treatment" cell. The "under construction" phase is completed once a biopile reaches 1000 cy and/or upon generator notification that all materials associated with the "C-138" have been delivered (biopiles may contain materials from more than one generator and/or more than one location);
6. Waste specific to each biopile is recorded by use of the "Biopile Records" form which contains the following information: Generator(s) of Material, Origin of Material, Type and Volume of Waste, Transported By/Truck #, Date Received;
7. During the "construction" phase, the remediation process is started by adding organic waste (manure) or *chemical enhancers to accelerate the decomposition of hydrocarbons. IEI currently utilizes manure to mix with *contaminated* soils at a 2:1 (waste:manure) ratio. **In the event chemical enhancers were to be utilized, IEI would provide the corresponding MSDS to the Division and approval would be obtained prior to applying chemical enhancers (microbes) to soils (19.15.36.15.C.7);*
8. The biopile is completed and no longer in the "construction" phase once it reaches approximately 1000 cy- 12' base x 4' top x 8' height x 420' length, no other waste will be added, a cell location and number is assigned. Biopile numbers are assigned in consecutive order and numbers are never reused;
9. During the remediation process biopile temperatures are monitored on a weekly basis. Biopile temperatures fluctuate, however, the optimal temperature range for the biodegradation process is 77° - 140 ° F.
10. Additional remediation materials (manure & moisture) may be added to maintain and control decomposition of hydrocarbons;
11. Soils will be turned with an excavator monthly (19.15.36.15.C.5);
12. Moisture will be added to the soils to enhance the bioremediation process and to help control fugitive dust emissions (19.15.36.15.C.6);
13. Soil samples are taken at regular intervals and tested by independent laboratories. A "Chain of Custody" form accompanies all lab samples. Laboratory results are used to determine if further remediation is required and results are kept on file (refer to Section 7.1 Treatment Zone Monitoring).

5.4 Centrate Water (Wastewater)

Centrate Water – produced in conjunction with the use of the centrifuge will be transported off-site (by an approved C-133 hauler) to a permitted facility with the proper manifest C-138 form.

6.0 BACKGROUND TESTING (19.15.36.15.B)

To establish background soil concentrations for the facility, prior to beginning operations, background sampling shall be collected and analyzed as follows:

- Soils samples shall be taken from at least 6" below the original ground surface;
- 12 composite soil samples (at a minimum) shall be collected, each sample shall consist of 16 discrete samples;
- Samples will be tested for:
  - TPH (EPA 418.1);
  - BTEX (EPA SW-846 8021B or 8260B);
  - Chloride (EPA 300.0);
  - Constituents of Subsections A & B of 20.6.2.3103 NMAC

Refer to binder Section 19.15.36.15.B Background Testing to review Background Testing Results.

7.0 MONITORING (19.15.36.15.D & 19.15.36.15.E)

Waste streams are strictly monitored and controlled from entry into the facility through the remediation process to state approval for final disposition.

7.1 Treatment Zone Monitoring (19.15.36.15.D)

During the life of the facility, a maximum of four cells will be used for active treatment/remediation of contaminated soils. Contaminated soils will be placed into biopiles within these cells during the treatment/remediation phase. These cells are referred to as the ***active "treatment" cells***.

As section 19.15.36.15.D NMAC-Treatment Zone Monitoring only discusses the use of "lifts" and IEI will be utilizing "biopiles", the following *alternative process* will be used to meet the requirements:

Within 72 hours after receipt, *contaminated* soils shall be placed into an "under construction" biopile, in an active "treatment" cell, until the pile reaches 1,000 cy (approximately 12' base x 4' top x 8' height x 420' length) and/or upon generator notification that all materials associated with the "C-138" have been delivered. At this time the pile is considered complete (no longer "under construction") and a cell location and pile number is assigned. This begins the treatment zone monitoring as specified below.

Prior to adding additional biopiles to the landfarm acre, the treatment zone (biopile) shall be tested by collecting and analyzing a minimum of one composite sample from each biopile consisting of four discreet aliquots.

The samples will be tested for:

- GRO/DRO or TPH concentrations (EPA methods 8015M or 418.1);
- Chloride concentrations (EPA method 300.1).

Semi-Annual Treatment Zone Monitoring

In accordance with 19.15.36.15.D NMAC the maximum thickness of treated soils in a landfarm cell shall not exceed 2' or approximately 3,000 cy per acre and once that thickness is reached additional waste will not be placed into the cell *until* semi-annual treatment zone closure standards have been met. Based on the biopile size of 1000 cy/pile, the total number of biopiles equivalent to the maximum thickness of treated soils allowable in a "landfarm cell" would be 3 biopiles per acre (3000 cy), *until* it is demonstrated by monitoring the treatment zone at least semi-annually that the *contaminated* soils are treated to the standards specified in 19.15.36.15.F NMAC or the *contaminated* soils have been removed to a division-approved SWMF (Refer to 8.0-Treatment Zone Closure Performance Standards of this plan).

Semi-annual treatment zone monitoring (two sampling events within a one year time period) will consist of collecting and analyzing a minimum of one composite sample from each biopile consisting of four discreet aliquots.

The samples will be tested for:

- Benzene (EPA SW-846 method 8021B or 8260B) shall not exceed 0.2 mg/kg;
- BTEX (EPA SW-846 method 8021B or 8260B) shall not exceed 50 mg/kg;
- Combined fractions of GRO/DRO (EPA SW-846 method 8015M) shall not exceed 500 mg/kg;
- TPH (EPA method 418.1) shall not exceed 2500 mg/kg;
- Chloride (EPA method 300.1) shall not exceed 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste; and
- The metals listed in Subsections A & B of 20.6.2.3103 NMAC (EPA Method 6010B or 6020) or other methods approved by the division shall not exceed the higher of PQL or background concentrations. If the concentrations are exceeded, a site specific risk assessment shall be performed using EPA methods and shall propose closure standards based upon individual site conditions that protect fresh water, public health/safety and the environment. The assessment will be subject to division approval or waste shall be removed pursuant to 19.15.36.15.G.2 NMAC. If the result of the site specific risk assessment is a request of an alternative closure standard, IEI will comply with the requirements of 19.15.36.15.G.4.

**Biopiles meeting semi-annual (two events within a one year timeframe) Treatment Zone monitoring standards also meet Treatment Zone Closure Standards and will not require further testing.*

7.2 Vadose Zone Monitoring (19.15.36.15.E.1)

The regulations state, "the operator shall monitor the vadose zone beneath the treatment zone in each landfarm cell". The operator shall take the vadose zone samples from soils between three and four feet below the cell's original ground surface. As 19.15.36.15.D NMAC-Treatment Zone Monitoring only discusses the use of "lifts" and IEI will be utilizing "biopiles", the following *alternative process* will be utilized to meet the requirements:

Semi-Annual Vadose Zone Monitoring (19.15.36.15.E.2)

Semi-Annual monitoring (two sampling events within a one year time period) will consist of the following:

- Collecting one, six point composite sample per acre, per active "treatment" cell (up to 35 samples per event for the 4 active "treatment" cells);
- Samples will be taken from soils 3' - 4' below the original ground surface by use of a hand auger;
- Sampling locations will be backfilled and sealed with bentonite chips and the original soil which was cut from the borehole.

The composite samples will be tested for:

- TPH concentrations (EPA SW-846 method 418.1);
- BTEX levels (EPA SW-846 method 8021B or 8260B);
- Chloride concentrations (EPA method 300.1)

The results shall be compared to the higher of the PQL or background soil concentrations to determine whether a release has occurred.

Five Year Vadose Zone Monitoring (19.15.36.15.E.3)

Five year monitoring will consist of the following:

- Collecting one, six point composite sample per acre, per active "treatment" cell (up to 35 samples for the four active "treatment" cells);
- Samples will be taken from soils 3' - 4' below the original ground surface by use of a hand auger;
- Sampling locations will be backfilled and sealed with bentonite chips and the original soil which was cut from the borehole.

The composite samples will be tested for:

- The metals listed in Subsections A & B of 20.6.2.3103 NMAC (EPA SW-846 methods 6010B or 6020) or other methods approved by the division.

The results shall be compared to the higher of the PQL or background soil concentrations to determine whether a release has occurred.

Vadose zone monitoring records shall be maintained at the facility office or facility records storage and made available for division inspection upon request.

Release Response

In the event that sampling results show concentrations of TPH, BTEX, or Chloride levels exceeding the higher of the PQL or background concentrations, the following actions shall be taken:

- NMOCD shall be notified;
- Four additional randomly selected, independent samples, shall be immediately collected and analyzed for TPH, BTEX, Chlorides and the constituents listed in Subsections A & B of 20.6.2.3103 NMAC.

The re-sampling results along with a response action plan shall be submitted to NMOCD for approval within 45 days of the initial notification of a release. The response action plan shall address changes of the facility's operation to prevent further releases, and if necessary, a plan for remediating the existing *contaminated* soils.

8.0 TREATMENT ZONE CLOSURE PERFORMANCE STANDARDS (19.15.36.15.F)

Contaminated soils (biopiles) will continue to receive treatment within the active "treatment" cell(s) until the soils have been remediated to the higher of the background concentrations or the following closure performance standards.

Semi-annual treatment zone closure performance standards (two sampling events within a one year time period) will consist of collecting and analyzing a minimum of one composite sample from each biopile consisting of four discreet aliquots.

The samples will be tested for:

- Benzene (EPA SW-846 method 8021B or 8260B) shall not exceed 0.2 mg/kg;
- BTEX (EPA SW-846 method 8021B or 8260B) shall not exceed 50 mg/kg;
- Combined fractions of GRO/DRO (EPA SW-846 method 8015M) shall not exceed 500 mg/kg;
- TPH (EPA method 418.1) shall not exceed 2500 mg/kg;
- Chloride (EPA method 300.1) shall not exceed 500 mg/kg (19.15.36.13.A.3 & 19.15.36.15.A) *Landfarm is located where ground water is less than 100' but at least 50' below the lowest elevation at which the operator will "place" oil field waste; and
- The metals listed in Subsections A & B of 20.6.2.3103 NMAC (EPA Method 6010B or 6020) or other methods approved by the division shall not exceed the higher of PQL or background concentrations. If the concentrations are exceeded, a site specific risk assessment shall be performed using EPA methods and shall propose closure standards based upon individual site conditions that protect fresh water, public health/safety and the environment. The assessment will be subject to division approval or waste shall be removed pursuant to 19.15.36.15.G.2 NMAC. If the result of the site specific risk assessment is a request of an alternative closure standard, IEI will comply with the requirements of 19.15.36.15.G.4.

**Biopiles meeting semi-annual (two events within a one year timeframe) Treatment Zone monitoring standards also meet Treatment Zone Closure Standards and will not require further testing.*

9.0 FINAL DISPOSITION OF TREATED SOILS (19.15.36.15.G)

During Normal Operations – As soils (biopiles) meet semi-annual treatment zone closure performance standards (19.15.36.15.F NMAC), the treated/remediated soils will be moved to and spread in the ***final disposition "receiving"*** *cells on the facility. (Also refer to Binder Section 19.15.36.8.C.9-Closure/Post-Closure Plan)*

During Closure of the Active "Treatment" Cells – As the remaining biopiles in the active "treatment" cells meet semi-annual closure performance standards, the treated/remediated soils will be graded within the four active "treatment" cells and left in place. (Also refer to Binder Section 19.15.36.8.C.9-Closure/Post-Closure Plan)

Failure to meet closure performance standards within five (5) years, or as extended by NMOCD, shall require the operator to remove the *contaminated* soils from the landfarm cell and dispose of at a division-permitted landfill, or reuse or recycle it in a manner approved by the division as set forth in (19.15.36.15.G.2).

In the event that closure performance standards are not met within five (5) years, or as extended by NMOCD, the division may require a modification to the financial assurance, as provided in 19.15.36.11.G, to provide for the appropriate disposition of *contaminated* soil in a manner acceptable (19.15.36.15.G.3).

An alternative soil closure standard may be submitted to the division for approval, with division-approved public notice of an application, for alternative soil closure standard in the manner provided in 19.15.36.9 (19.15.36.15.G.4).

10. OPERATIONAL (19.15.36.15.C)

10.1 Facility Identification (19.15.36.13.J)

Signage will be posted outside of the facility entrance and will comply with the following requirements:

- Readable from a distance of 50';
- Will provide the facility Name, Operator's Name and Permit Number;
- Will provide the facility's location by Unit Letter, Section, Township, Range (ULSTR); *and*
- Will provide Emergency Contact Name(s) and Number(s)

10.2 Facility Requirements (19.15.36.13.B & 19.15.36.13.C)

As per SWMF requirements, the landfarm will not be:

- within 200' of a watercourse, lakebed, sinkhole or playa lake (as there are some larger arroyos which cross the facility, it has been agreed upon by NMOCD and IEI that a 200' set-back from the arroyos is established in order to direct and control stormwater run on/off);
- Located within an existing wellhead protection area or 100 year floodplain;
- Located within, or within 500' of a wetland;
- Located within the area overlying a subsurface mine;
- Located within 500' from the nearest permanent residence, school, hospital, institution or church in existence at the time of initial application;
- Located within an unstable area; *and*
- More than 500 acres

*Also refer to Binder Section 19.15.36.8.C.4-Description of Facility & Diagram

10.3 Berms (19.15.36.15.C.1)

The facility perimeter and landfarm cells will be bermed (with virgin soils) to prevent stormwater run-on/off. (Also Refer to Binder Section 19.15.36.8.C.11-Run On/Off Control Plan)

10.4 Freestanding Liquids (19.15.36.15.C.8)

Freestanding liquids will be removed from the facility within 24 hours. This will be accomplished by use of water or king vacuum trucks.

10.5 Placement of Contaminated Waste (19.15.36.15.C.2 & 19.15.36.15.C.3)

Contaminated waste will not be placed within 100' of the facility's boundaries or within 20' of a pipeline crossing the facility.

10.6 Spill Reporting & Corrective Action Provisions (19.15.36.13.K)

IEI personnel will comply with the spill reporting and corrective action provisions of 19.15.30 NMAC or 19.15.29 NMAC as required by 19.15.36.13.K NMAC).

10.7 Monthly Inspections & Maintenance Activities (19.15.36.13.L)

The facility will comply with inspection and maintenance plan provisions of 19.15.36.13.L.3 NMAC (Refer to binder Section 19.15.36.8.C.7- Inspection & Maintenance Plan).

10.8 Run On/Off Water Control (19.15.36.13.M)

The facility will comply with provisions of 19.15.36.13.M to control run-on and run-off water. (Refer to Binder Section 19.15.36.8.C.11-Run On/Off Control Plan).

10.9 Contingency Plans (19.15.36.8.C.8, 19.15.36.8.C.10, 19.15.36.13.N, & 19.15.11)

The facility will comply with provisions of 19.15.36 & 19.15.11 NMAC to have a contingency plan in place to "minimize hazards to fresh water, public health, safety or the environment from fires, explosions or an unplanned sudden or non-sudden release of contaminants or oilfield waste to air, soil, surface water or ground water. (Refer to binder Section 19.15.36.8.C.10- Contingency Plan).

10.10 Training Program (19.15.36.13.P)

All key personnel will receive annual training related to:

- General Operations;
- Permit Conditions;
- Emergencies;
- Proper sampling methods;
- Identification of Exempt waste (can accept), Non-Exempt & Hazardous waste (unacceptable).

Training records shall be maintained at the facility office or facility records storage for no less than five (5) years and made available for division inspection upon request.

11.0 RECORDS MANAGEMENT (19.15.36.13. Sections F, G, L & P, 19.15.36.15.C.9 & 19.15.36.15.E)

Data obtained through the plan implementation will be used to ensure the facility meets the conditions of the permit and to ensure that all waste is properly managed.

Records related to waste type, waste acceptance, sampling, material tracking, biopile temperature testing, waste status, generator, location of origin, volume/type of waste, date of disposal, trucking company, waste storage location and other applicable records will be maintained at the facility.(19.15.36.13.F & 19.15.36.13.G, 19.15.36.15.C.9)

Other records related to the facility's inspection and maintenance plan 19.15.36.13.L), Contingency Plan-training records for key personnel 19.15.36.13.P, and Vadose zone monitoring reports (as described in Section 7.2-Vadose Zone Monitoring of this document) will also be maintained at the facility. (Also refer to Binder Section 19.15.36.8.C.7-Inspection & Maintenance Plan and Binder Section 19.15.36.8.C.10-contingency Plan)

Said data/records will be maintained at the facility office or facility records storage and made available for division inspection upon request. Data/records shall be maintained at the facility office or facility records storage for no less than five (5) years after the closure of the facility.

11.1 Forms (19.15.36.13.G & 19.15.36.15.C.9)

In order to comply with requirements set forth in 19.15.36, the following forms will be utilized and maintained at the facility office or facility records storage:

- C-138 Request for Approval to Accept Solid Waste (ADDENDUM A);
- C-133 Authorization to Move Produced Water (ADDENDUM B);
- Material Entry Record –Short Form (ADDENDUM C) – Long Form (ADDENDUM D)
- Tank Solidification form (ADDENDUM E)
- Biopile Record (ADDENDUM F)
- Biopile Temperature Maintenance Record (ADDENDUM G)
- C-141 Release Notification and Corrective Action (ADDENDUM H)
- Chloride Content Field Testing Procedures (APPENDIX A)

11.2 Material Entry Record (19.15.36.13.G)

The Material Entry Record (ADDENDUM C & ADDENDUM D) contains the following information:

- Date (Date Waste is Received/Disposed of)
- Generator
- Origin of Material
- Material Transported by (Hauling Company)
- Driver's Name
- Driver's Cell Number (not required)
- Truck Number
- Logged in Corresponding Biopile Record Sheet (IEI information purposes)
- Type of Waste (Soil, Gravel, Tank Bottoms, Drill Cuttings)
- Amount of Waste (quantity in cubic yards or barrels)
- Company Representative
- Company Representative Phone Number (IEI information purposes)
- Paykey/PO Number (IEI information purposes)
- H2S Gas Test Results
- Chloride Content Test Results
- Paint Filter Test Results
- Location of Disposal within the facility ("Under Construction" Biopile #___ or Tank)
- DENIED/REJECTED
- Driver(s) Signature(s)
- Facility Attendant Signature

11.3 Tank Solidification (19.15.36.13.E &19.15.36.15.A)

The Tank Solidification Record form (ADDENDUM E) contains the following information:

- Date (Date waste is being processes/solidified)
- Tank # or name
- Solidified With (Virgin or Treated) Soils
- Amount used to solidify
- If using Treated Soils the Pile # of the treated soils and the amount used
- Paint Filter Test Results
- Chloride Content Test Results
- Employee Signature

11.4 Biopile Record (19.15.36.15.C.9)

The Biopile Record (ADDENDUM F) contains the following information:

- Name/Description of Biopile (i.e., Conoco – Drill Mud, Community – Liquids, BP – Dirt)
- Date Material is Received
- Date "Under Construction" Biopile is completed (once a biopile reaches approximately 1000 cy and/or upon generator notification that all materials associated with the "C-138" have been delivered)
- Pile # & Cell # (location of disposal within the facility)
- Generator
- Origin of Material
- Transported By/Truck #
- Quantity Received
- Date Received
- Comments

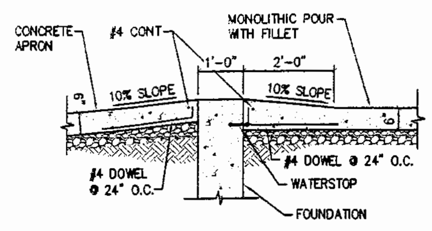
Upon meeting closure standards (19.15.36.15.F) and receiving approval from NMOCD:

- Date approval Received from NMOCD to reuse/recycle or spread "treated" soils
- Cell # treated soils are spread in and/or
- Date and manner "treated" soils are reused/recycled.

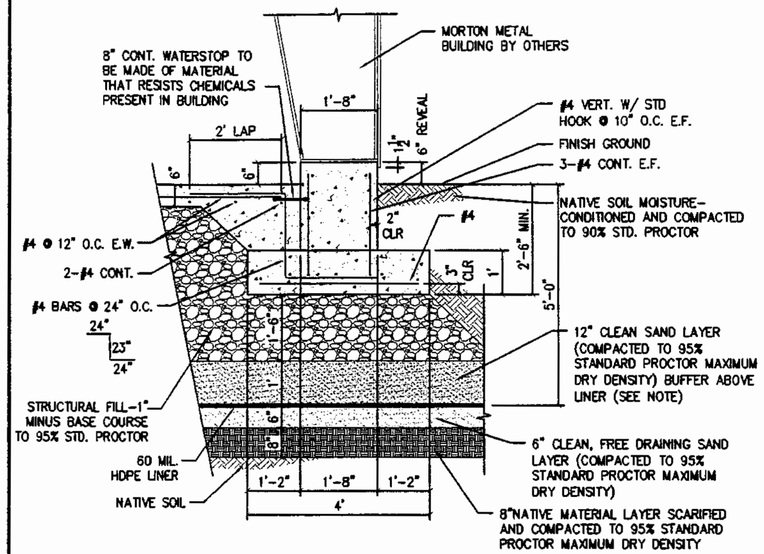
11.5 Biopile Temperature & Maintenance Record (19.15.36.15.C.9)

The Biopile Temperature & Maintenance Record (ADDENDUM G) contains the following information:

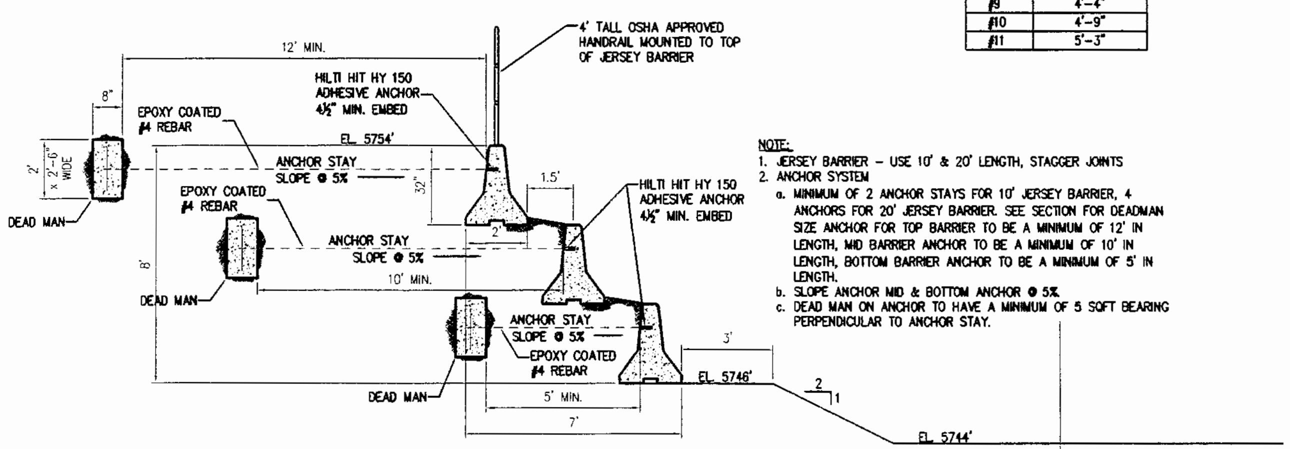
- Page #
- Pile #
- Cell #
- Date "Under Construction" Pile is completed
- Name/Description of Biopile (i.e., Conoco–Drill Mud, Community–Liquid, BP-Dirt)
- Weekly Pile Temperature Date
- Monthly Pile "Turned" Date
- Date Moisture is added to the Pile, Amount & Source of Moisture



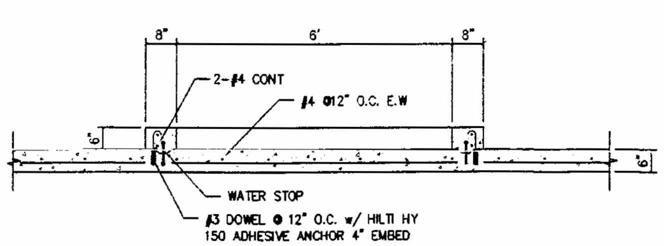
1 C107 RAMP DETAIL
SCALE: 1/2"=1'-0"



2 C107 PERIMETER FOOTING DETAIL
SCALE: 1/2"=1'-0"



3 C107 JERSEY BARRIER DETAIL
NOT TO SCALE



4 C107 SECONDARY CONTAINMENT DETAIL
SCALE: 1/2"=1'-0"

GENERAL STRUCTURAL NOTES

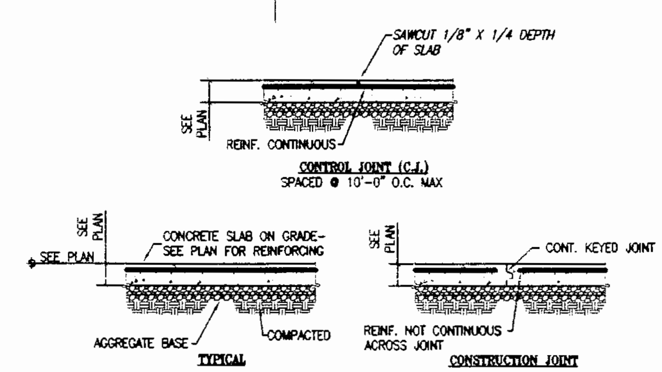
1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2009 EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318
2. DESIGN CRITERIA:
   A. VERTICAL:
      ROOF SNOW 25 PSF
   B. HORIZONTAL:
      (1) WIND*
         BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
         EXPOSURE "C"
      (2) SEISMIC*
         SITE CLASS "D"
3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
   E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.
4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMALWEIGHT CONCRETE:
         A. F'C = 3000 PSI @ 28 DAYS
      (4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

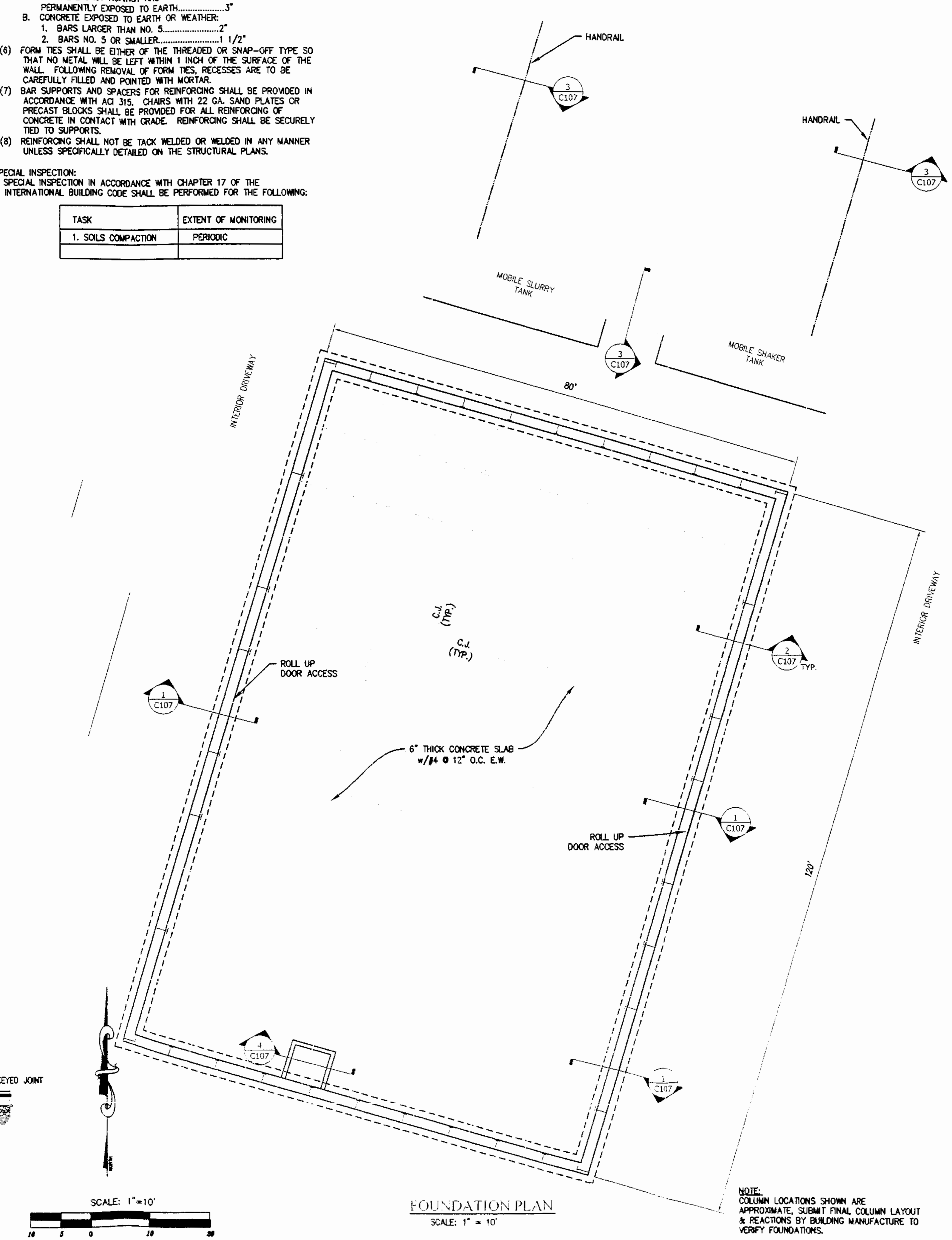
      (4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
      (5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
         A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH....................3"
         B. CONCRETE EXPOSED TO EARTH OR WEATHER:
            1. BARS LARGER THAN NO. 5......................2"
            2. BARS NO. 5 OR SMALLER.........................1 1/2"
      (6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
      (7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.
5. SPECIAL INSPECTION:
   A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC

NOTE:
1. JERSEY BARRIER – USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
   a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
   b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%
   c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SQFT BEARING PERPENDICULAR TO ANCHOR STAY.



5 C107 SLAB JOINTS
NOT TO SCALE



FOUNDATION PLAN
SCALE: 1" = 10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE, SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
FOUNDATION PLAN

Revision	Date	Description	By	Chk'd

SMA SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BLVD
FARMINGTON, NM 87401
Engineering Environmental Surveying
www.soudermiller.com
Serving the Southwest & Rocky Mountains

Designed	Drawn	Checked
GYQ	DJB	DWM

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED
Date AUGUST 2011
Scale Horiz AS NOTED Vert N/A
Project No 5119829
Sheet C107

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

ADDENDUM A

Form C-138
Revised August 1, 2011

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. Generator Name and Address:

2. Originating Site:

3. Location of Material (Street Address, City, State or ULSTR):

4. Source and Description of Waste:

Estimated Volume _____ yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) _____ yd^3 / bbls

5. GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS

I, _____, representative or authorized agent for _____ do hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☐ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. *Operator Use Only: Waste Acceptance Frequency ☐ Monthly ☐ Weekly ☐ Per Load*

☐ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☐ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, _____, representative for _____ do hereby certify that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

5. Transporter:

OCD Permitted Surface Waste Management Facility

Name and Facility Permit #:

Address of Facility:

Method of Treatment and/or Disposal:

☐ Evaporation ☐ Injection ☐ Treating Plant ☐ Landfarm ☐ Landfill ☐ Other

Waste Acceptance Status:

☐ **APPROVED** ☐ **DENIED** (Must Be Maintained As Permanent Record)

PRINT NAME: _____ TITLE: _____ DATE: _____

SIGNATURE: _____ TELEPHONE NO.: _____

Surface Waste Management Facility Authorized Agent

ADDENDUM B

Submit a single copy to
Santa Fe Office

State of New Mexico
Energy Minerals and Natural Resources

Form C-133
Revised April 19, 2011

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

AUTHORIZATION TO MOVE PRODUCED WATER

Transporter Name: _____

Business (Physical) Address in New Mexico: _____

Contact Mailing Address (If different): _____

Business Phone: _____ Contact Phone: _____
Business Fax: _____ Contact Fax: _____

1. Attach a copy of the applicant's New Mexico Public Regulation Commission (PRC) Warrant for Transportation Services.

2. Identify the form of the applicant's business entity: (Example: corporation, limited liability company [LLC], limited partnership, limited liability partnership, partnership, sole proprietor): _____

A. If the applicant is a corporation or LLC, provide the PRC NMSCC number: _____

B. If the applicant is a limited partnership or limited liability partnership, provide the Secretary of State registration number: _____

C. If the applicant is any other form of partnership, identify all partners:
_____

D. If the applicant is a sole proprietor, provide the name of the sole proprietor:
_____

(Note: If the form of your business entity changes, the name of your business changes, or the business address changes, you must re-apply for authorization.)

It is the responsibility of each holder of an approved Form C-133 to comply with 19.15.34 NMAC and familiarize its personnel with that rule's requirements. Failure to move or dispose of produced water in accordance with 19.15.34 NMAC may be cause for cancellation of the Form C-133.

"I hereby certify that the information above is true and complete to the best of my knowledge and belief." (Application must be signed by person who is authorized to obligate the company applying for the permit)

Signature: _____ Date: _____

Printed Name: _____ Title: _____

E-mail Address: _____

(This space for State use)

Approved by: _____ Title: _____

Date: _____

ADDENDUM C

Industrial Ecosystems Inc.
Blanco Landfarm

Material Entry Record

Date:_____

Company Representatives Name:_____

Generator of Material:_____

Phone Number:_____

Origin of Material (Location):_____

Paykey / Purchase Order Number:_____

Material Transported by:_____

H2S Gas ☐ **Non-Detect** ☐ **Detect: Level** ____

Driver's Name: _____

Driver's Cell #: _____

_____ Chloride Content Level **attach copy of results to C-138*

Truck Number:_____

Paint Filter Test:

☐ Logged in Corresponding BioPile Sheet

☐Passed ☐Under Construction Pile #:____

☐Failed ☐ Tank(s)

☐ DENIED / REJECTED

Type of Waste

Soil		Tank Bottoms	
Gravel		Drill Cuttings	

Amount of Waste

	Load #1	Load #2	Load #3	Load #4	Load #5	Load #6	Load #7	Load #8	Load #9	Load #10
Cubic Yards										
Barrels										

Driver's signature:_____

F / Attendant's signature:_____

ADDENDU

Industrial Ecosytems Inc
Blanco Landfarm
Material Entry Record (Long Form)

Page NO. _____

GENERATOR OF MATERIAL:_____ COMPANY REP._____

PHONE #_____

ORIGIN OF MATERIAL(LOCATION):_____ PAYKEY/P.O# _____

NOTES:_____ H2S GAS ☐ NON-DETECT ☐ DETECT: Level ___

_____ Chloride Content Level **attach copy of results to C-138*

Type of Material: _____ Soil _____ Gravel _____ Tank Bottoms _____ Drill Mud

Paint Filter Test: ☐ Passed ☐ Under Construction Biopile #:___
☐ Failed ☐ Tanks

☐ DENIED/REJECTED

Date	Time	Transported by	Truck#	Yards	Barrels	Driver's Name (Print)	Driver's Signature	Attendant	Time Out

ADDENDUM E

Industrial Ecosystems Inc.
Blanco Landfarm

TANK SOLIDIFICATION RECORD

Date:_____

Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
Tank # or Name:_____ Tank # or Name:_____
ank # or Name:_____ Tank # or Name:_____

Solidified with:

☐ Virgin Soils Amount: _____ cy
☐ "Treated" Soils Pile #:_____ Amount: _____ cy

Paint Filter Test:

☐ Passed ☐ Under Construction Pile #:____

_____ Chloride Content Level

nployee Signature:_____

ADDE. _JM F

BIOPILE RECORDS

Name/Description of Pile : _____

PILE#:_____

CELL#: _____

DATE "Under Construction" PILE COMPLETED:_____

Generator of Material	Origin of Material	Transported By/ Truck #	Quantity Received	Date Received	Comments
		TOTAL			

DATE RCV'D APPROVAL TO REUSE/RECYCLE OR SPREAD:_____ **SPREAD IN CELL #:**_____

Date	☑Berm Maintenance	☑Solidification of Materials from Pit(s)/Tank(s)	Quanity Reused/Recycled

ADDENDUM G

IEI Industrial Ecosystems Inc.

20__ BIOPILE TEMPERATURE & MAINTENANCE RECORDS

Page #: ____________ **Pile #:** ____________ **Cell #:** _________

Date Pile Completed: __________________________

Name/Description of Material: ____________________________________

Date	Pile Temp	Date Turned	Fresh Water Added for Moisture	
			Date Added	Amount Added

ADDENDUM H

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☐ Final Report

Name of Company	Contact
Address	Telephone No.
Facility Name	Facility Type

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Source of Release	Date and Hour of Occurrence	Date and Hour of Discovery
Was Immediate Notice Given? ☐ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☐ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Describe Area Affected and Cleanup Action Taken.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name:	Approved by Environmental Specialist:	
Title:	Approval Date:	Expiration Date:
E-mail Address:	Conditions of Approval:	Attached ☐
Date: Phone:		

- Attach Additional Sheets If Necessary

(APPENDIX A)
CHLORIDE CONTENT IN SOLIDS FIELD TESTING PROCEDURE

Chloride Determination

When a Quantab® strip is placed in an aqueous solution, fluid rises up the strip by capillary action until the strip is completely saturated. The strip contains silver ions, which combine with chloride in the sample to form a white column of chloride. A moisture sensitive yellow string across the top of the tab turns dark when saturated and indicates completion of capillary action and the reaction. The length of the white silver chloride column on the strip is proportional to the chloride concentration.

Following saturation, the value on the tab is read and the chart on the back of the appropriate bottle used to get the chloride value for the strip. Each Quantab® lot is calibrated independently; the chloride concentration chart on the bottle from which the strip was removed is used as values may differ from those of a previous bottle. Multiply the chart value by four (4) to get the chloride concentration in soil in ppm (mg/Kg). Depending on the time taken to shake the sample, decant and filter the liquid, and the turbidity of the filtrate, the time required to conduct a single test is usually from five to ten minutes.

Equipment: (Prior to use all equipment should be clean and dry)

- Spoon (plastic disposable or stainless steel)
- 125 mL (or slightly larger) plastic bottle with lid (wide mouth bottle with a screw on lid is preferred)
- 25 mL pre-measured or graduated container
- 20 mL plastic syringe
- 0.45 μm syringe membrane filter (screw on)
- 40 mL glass vial
- Distilled water
- Hach Quantab strips (low and high range)

Sampling and preparation procedure:

1. Collect soil sample (minimum of 25 grams). Remove/crush the larger pieces of soil (rock fragments, gravel, etc). Mix well.
2. Measure 100 mL of distilled water using a pre-measured or graduated container.
3. Place soil (25g) and distilled water (100 mL) into 125 mL plastic bottle, close lid and shake container vigorously between 2 - 4 minutes.
4. Place container on level surface for 2 – 3 minutes to allow sediment settling.
5. Collect liquid into syringe and attach filter.
6. Press syringe until fluid comes out the filtered end into a 40 mL vial (or similar sized container).
7. Insert lower end of the titrator strip (Low Range) into the filtered fluid. Notes: There must be enough fluid in the vial to saturate the wick of the titrator. Replace cap on Quantab bottle to prevent moisture from degrading the tabs.
8. Reaction is complete when the yellow band turns dark in color.
9. If the Low Range test strip records out of range, remove and replace with High Range test strip.

Chloride Determination:

1. Read the value on the strip where the tip of the white chloride peak falls, this will be the Quantab Units.
2. Use the chart on the back of the appropriate bottle to get the chloride value. Multiply the chart value by four (4) to get the mg/Kg (ppm) concentration of chloride in soil. Note: Each Quantab® bottle is calibrated independently, so the chart on the bottle where you removed the strip must be used as the chart may differ from a previous bottle.

Operational/Management Plan ADDENDUMS & APPENDIXES

APPENDIX A
Chloride
Testing In Field

ADDENDUM H
C141

ADDENDUM G
Biopile Temp/
Maintenance

ADDENDUM F
Biopile Record

ADDENDUM E
Tank
Solidification

ADDENDUM C&D
Material Entry
Record

ADDENDUM B
C-133

ADDENDUM A
C-138

Crowe Blanco Properties, LLC / IEI Blanco
Routine Inspection & Maintenance Activities
(19.15.36.8.C.7 & 19.15.36.13.L. NMAC)

Routine inspection/maintenance activities, and the frequency conducted, are shown in Table 1.

TABLE 1

Maintenance Task	Frequency of Task
General Housekeeping (Facility/Vehicles/Equipment)	Daily
Gates & Fencing	Daily/Weekly
Freestanding Liquids (19.15.36.15.C.8)	Within 24 hours
Moisture/Dust Control	Varies
Berms	Quarterly and/or within 24 hours of the end of a major rainfall or windstorm
Processing Area (Centrifuge/Tanks) (19.15.36.13.L.1)	Daily/Monthly
Monitoring Wells (19.15.36.13.L.2)	Semi-Annually
Retention Ponds (19.15.36.13.L.3)	Quarterly and/or within 24 hours of the end of a major rainfall or windstorm

Inspections
The attached Inspection and Maintenance Checklist shall be used to conduct inspections, as specified in Table 1. The Checklist will identify routine inspections; maintenance needed, and will record corrections and/or maintenance performed.

Crowe Blanco Properties, LLC / IEI Blanco
Inspection and Maintenance Checklist

Week of/Date of Inspection: _____

Inspector(s): _____

Inspector(s): _____

Type of Inspection:

- ☐ Daily/Weekly
- ☐ Quarterly _____
- ☐ Bi-weekly (Mon & Wed)
- ☐ After heavy rainfall
- ☐ Monthly
- ☐ Semi-Annually (Jan & July)
- ☐ Other: _____
- ☐ After major windstorm

Area	Conditions When Maintenance Is Needed	Frequency of Inspection	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
General Housekeeping (Daily)				
Facility	• Stains from oils, gasoline, or other contaminants from vehicles and/or equipment visible on the ground. • Trash and debris accumulated on the facility.	____ Mon ____ Tue ____ Wed ____ Thu ____ Fri		• Stains are cleaned up and there is no visible grease, oil, gasoline, or other contaminants present on the ground in the vehicle/equipment parking area(s). • Trash and debris will be cleared from site and disposed of properly.
Gates and Fencing (Daily / Weekly)				
Gate(s) -missing or broken parts	Any defect or damage to the gate which would allow easy entry to the facility	____ Mon ____ Tue ____ Wed ____ Thu ____ Fri		Gate(s) are repaired to proper working condition.
Fence	Any defect or damage to the fence which would allow easy entry to the facility	____ Mon		Fencing is repaired to design specification.
Freestanding Liquids (Within 24 hours)				
Freestanding Liquids (19.15.36.15.C.8)	Freestanding liquids on the facility	____ Mon ____ Tue ____ Wed ____ Thu ____ Fri		Freestanding liquids removed within 24 hours.

Moisture/Dust Control (Depends on time of year & natural precipitation received)				
Blowing Dust	During drier months when natural precipitation is not frequent and has not been received w/in the prior 48 hours	____ Mon ____ Tue ____ Wed ____ Thu ____ Fri		Moisture (centrate and/or fresh) water will be added to completed biopiles (not under construction) by trenching with water to enhance the bioremediation process. ** Trenching is defined as: Use of excavator(s) to cut a trench into the top of the pile, adding moisture, and then mixing the moisture into the pile by "rolling" it.*
Has the facility received moisture w/in the last 48 hours?	Specify: □ Rain □ Snow □ Ice			
Berms (Quarterly and/or within 24 hours of the end of a major rainfall or windstorm)				
Berms	• Settlement - berm settlement or berm integrity has been compromised • Erosion – eroded over 2" deep where cause of damage is still present or potential for continued erosion	____ Mar ____ June ____ Sept ____ Dec ____ After storm event		• Berm is built back to the design elevation & specifications. • Cause of erosion is managed appropriately. Side slopes or berms are restored to design specifications, as needed.
Processing Area - Metal Pits / Centrifuge / Tanks (Daily/Monthly)				
Tanks *(above ground-which allows leak detection to be covered by visual inspections)*	• Visible leaks or cracks in the walls or floor • Any visible leaks on or around the supply pump(s) • Any Stained soil around the tank(s) or hoses/pipes	____ Mon ____ Tue ____ Wed ____ Thu ____ Fri		• Waste not accepted into tanks(s) until cleaned & repaired. • Spills/Leaks cleaned from the area. • Hoses/Pipes checked for leaks & to ensure proper attachment/connection. *Spills/leaks in excess of 5 bbls shall be reported as specified in 19.15.29 NMAC.

Monitoring Wells (Semi-Annually)				
Monitoring Wells (19.15.36.13.L.2)	Must perform semi-annual inspections & sampling on all ground monitoring wells ___ MW1 ___ MW3 ___ MW4 ___ MW5 ___ MW6 ___ MW7 ___ MW8 ___ MW9 ___ MW10	____ Jan & ____ July		Pursuant to 19.15.36.13.L.2 NMAC - Semi-annual inspection & sampling of monitoring wells will be performed with analytical results, maintenance records, inspection dates, inspector and status of monitor well(s) reports furnished to NMOCD. ** MW2 will not be monitored as it has been plugged per NMOCD request.*
Retention Ponds (Quarterly & and/or within 24 hours of the end of a major rainfall or windstorm)				
Retention Ponds/Dikes (19.15.36.13.L.3)	• Stormwater runoff not directed or contained as needed • Berm settlement or berm integrity has been compromised • Eroded over 2" deep where cause of damage is still present or potential for continued erosion.	____ March ____ June ____ Sept ____ Dec		Monitor and restore the integrity of the retention pond(s) and the flow of the stormwater runoff.

Inspector(s) Signature(s): _____

_____

Hydrogen Sulfide (H2S) CONTINGENCY PLAN
(19.15.36.8.C.8 & 19.15.11 NMAC)

Company Name: Crowe Blanco Properties, LLC / Industrial Ecosystems, Inc. (IEI)

Facility Address: 7577 US Hwy 64 Blanco, NM (near mile marker 75 San Juan County S-16, T29N, R-09W)

Emergency Coordinator: Alberta Pablo

Emergency Coordinator Phone Number: (505) 860-4068

Designated assembly points(s):

1. North assembly point
2. NE assembly point
3. West assembly point

Prevailing Wind

The prevailing winds on the facility blow from the west/southwest towards the east.

Emergency Numbers:

Fire **911** or **(505) 334-6622**

Medical **911** or (**505) 325-5011**

Sheriff's Office / Police **911** or **(505) 334-6622**

* 911 – As per Don Cooper, San Juan County Emergency Manager - San Juan County is set up on a "single dispatch & reverse 911 notification" system – all necessary emergency and HazMat responders, etc. will be dispatched from the 911 office & rapid notification is sent out to local residents and other occupants in the event of an emergency. The Integrated Public Alert & Warning System (IPAWS) will become effective in 2014 which will be used to alert any cells phones within a specific area. Until IPAWS is implemented, residences that only have cellular phones will be notified through door-to-door contact by law enforcement.

Law enforcement will initiate door-to-door notification for nearby residences which have been identified as not having a landline or cellular phone. *During annual training, the EC will obtain information (address, whether or not the residence has a landline or cellular phone) from nearby residences. This information will be updated annually and maintained in this plan.* (See Appendix E)

Industrial Ecosystems Incorporated:

Health and Environmental Department: (505) 860-4068
Contact: Alberta Pablo

Main Office: (505) 632-1782
Contact: Marcella Marquez

Plan Revised: August 27, 2013

TABLE OF CONTENTS

I. INTRODUCTION

The Crowe Blanco Properties, LLC is a New Mexico Oil Conservation Division (OCD) permitted Surface Waste Management Facility (SWMF) operated by Industrial Ecosystems, Inc. (IEI) specializing in remediating Non-Hazardous, RCRA Exempt Oilfield Waste. This H2S Contingency Plan was created to outline procedures that are to be followed in the event of an H2S Release that occurs at the Processing Area of the facility.

II: PURPOSE AND OBJECTIVES

This plan complies with 19.15.36.8.C.8 & 19.15.11 as well as the standards set forth in Paragraph 7.6 of the API "Recommended Practices for Oil and Gas Producing and Gas Processing Plan Operation Involving Hydrogen Sulfide" RP-55. The Crowe Blanco facility does not perform drilling, completion, workover or well services operations at the facility, and thus, OCD regulations 19.15.11.11 & 19.15.11.14 NMAC are not applicable for this facility.

While there are no known public areas within the 100 ppm radius of exposure (ROE), IEI has committed to notify 911 in the event that the H2S sensor located at the front entrance is triggered & H2S levels are confirmed to be **10 ppm** or greater

This plan is specific to the Crowe Blanco Properties SWMF. This plan contains procedures to provide an organized response to an unplanned release from the Processing Area of the facility and outlines procedures that would be followed to alert and protect members of the public, surrounding areas and/or visitors working on the facility or around the Processing Area in the event of an unplanned release.

III: PLAN AVAILABILITY

This plan shall be made available to all personnel responsible for implementing and participating in any portion of the plan and shall be available at the Main Office and Processing Area of the facility. Copies of the plan will be distributed to the agencies listed in Appendix D.

IV: REGULATORY THRESHOLD (19.15.11.8 NMAC)

By use of *process knowledge*, as determined by reasonable comparison of H2S levels encountered at the "tank battery" located at the JFJ Landfarm (OCD Permitted SWMF, operated by IEI for over 20 years). H2S concentration levels at the JFJ Landfarm have never reached or exceeded **100 ppm**. The processes and waste streams characteristics are the same (tank bottoms, drill mud) with waste being processed within 72 hours of receipt (19.15.11.8.A NMAC).

If H2S concentration levels on the facility ever reach **100 ppm** or greater, the EC shall calculate the radius of exposure and the results shall be provided to the division within 60 days (19.15.11.8.D NMAC).

V: EMERGENCY PROCEDURES (19.15.11.9.B.2.a NMAC)

A. Responsibilities and Duties of Personnel

At all times, there must be at least one Emergency Coordinator (EC) either on the facility premises or on call (available to respond to an emergency by reaching the facility within a short period of time). The emergency coordinator(s) must be thoroughly familiar with all aspects of the CP, operations and activities at the facility, the location and characteristics of H2S, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the H2S contingency plan.

Health and Environmental Officer

- Will serve as the primary Emergency Coordinator;
- Oversees the development, communication, implementation and maintenance of the overall CP;
- Provides training and on-site drills to facility personnel and local residents;
- Briefs public official on evacuation or shelter-in-place plans;
- Coordinates the plan with the local and state emergency plans;
- Activates the plan in the event of an unplanned H2S release;
- Coordinates emergency response measures.

Facility Supervisor(s) & Safety Officer will serve as the Alternate Emergency Coordinator(s) in the absence of the designated Emergency Coordinator.

Facility Personnel will perform operations in accordance with this safety plan; assist in the accountability and evacuation of visitors and contractors on the facility to designated assembly points; and keep management informed on the progress.

Office personnel will be familiar with the procedures in this plan and assist Facility Personnel with the implementation of this plan in a safe manner.

B. Responsibilities of Visitors (Third Party Contractors, Service Companies)

All vehicles must stop at the office building and visitors must check-in/out by signing the "Visitor Check In/Out" form upon arrival/exit of the facility. Upon check-in visitors will be familiarized with the Emergency Evacuation Routes and designated assembly points. They will also be notified that they will need to adhere to instructions of landfarm personnel in the event of a H2S release.

C. Plan Activation (19.15.11.9.B.2.f & 19.11.15.9.C NMAC)

1. Activation Levels

Level I– Intermittent alarm sounded and flashing yellow beacons activated for H2S greater than or equal to **10 ppm**.
Level II – Intermittent alarm sounded and flashing blue beacons activated for H2S greater than or equal to **20 ppm**.
Level III–Continual siren and flashing red beacons activated for H2S greater than or equal to **30 ppm**.

2. Events That Could Lead to a Release of H2S

Non-hazardous, RCRA Exempt waste may be placed into tank(s) while awaiting processing. Hydrogen Sulfide may be dissolved in liquids and then released if agitated, depressurized, or heated. This means that gas in the liquids is released when they are circulated, pumped, flowed or swabbed into tanks. H2S treating agent will be utilized as needed to help neutralize H2S gases in tank(s). The H2S treating agent will be fed into the tanks through and injection pump. The H2S treating agent is contained in a 150 gallon tote within a cement bermed area (secondary containment) in the Processing Area building which the floors & walls have been coated to resist chemicals. (Refer to Sheet C104-Proposed Site Plan & Sheet C107-4 Secondary Containment Detail)

D. Immediate Action Plan (19.15.11.9.C NMAC & Paragraph 7.6 of API RP-55)

The following outlines the Immediate Action Plan that is illustrated by the response flow diagram in Appendix A. This is to be used when responding to an H2S release.

LEVEL 1: H2S levels reaching 10 ppm-Intermittent alarm will sound and flashing yellow lights/beacons will indicate directly above the sensor which has been triggered.

1. When the H2S alarm system is activated-the EC, personnel (except for *designated personnel*-step #3 below) & visitors will evacuate to an appropriate designated assembly point which is upwind or crosswind (determined by windsock direction) from the H2S sensor which has indicated a release. (Refer to Addendum A-Emergency Evacuation Routes);
2. H2S levels will be monitored at the designated assembly point(s) with personal gas monitors. If H2S levels at a designated assembly point reaches or exceeds **10 ppm**, personnel will immediately evacuate to an alternate assembly point; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
3. *Designated personnel* (have been notified in advance of their responsibilities and have been appropriately trained and medically certified) will secure the front entrance to prevent unauthorized access; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind from the release-determined by windsock direction) and await further instructions from the EC;
4. The EC will account for personnel by utilizing the "Employee Roster" and for visitors by utilizing the "Visitor Check-In" sheet (provided by office personnel), so that everyone can be accounted for;
5. The EC will inform *designated personnel* of anyone suspected of missing. *Designated personnel* will immediately begin search and rescue activities. Prior to entering areas where H2S may be present, designated personnel will don self-contained breathing apparatus (SCBA). SCBA alarm will signal when 20-25% of air supply remains at which time designated personnel will leave the area and notify the EC they have left the area to replace their air supply tank. (the facility will have 3 extra air tanks);
6. Personnel & visitors on the facility who are not in the direct vicinity of the release will be notified by the PA system, two-way radios or by other facility personnel of the release location and will be directed to immediately proceed to the nearest appropriate designated assembly point (upwind or crosswind from the release as determined by windsock direction);
7. **It should be noted that at the time of creation and submission of this plan there are no known public areas within the 100 ppm radius of exposure (ROE).** However, in the event that the H2S sensor located at the front entrance indicates H2S at **10 ppm** or any sensor indicates H2S at **30 ppm or greater**, the EC will contact 911 *and if* s/he deems necessary shall recommend that public notification proceedings be initiated & coordinated by law enforcement. The EC will instruct *designated personnel* (will have 10 minute escape pack to use if needed) to establish pre-determined roadblocks (refer to Addendum A) which will be "manned" and monitored for H2S. If H2S levels at a roadblock reach or exceed 10 ppm, personnel will leave the roadblock barriers in place; immediately evacuate the area; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
8. The EC will don SCBA and evaluate the area of the release through physical inspection while simultaneously monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time the EC will leave the area to replace his/her air supply tank (the facility will have 3 extra air tanks);
9. If the EC determines H2S levels to be ***less than 10 ppm***, s/he will notify personnel that they may return to work. Personnel will don PPE and add H2S treating agent to the tank(s) to neutralize H2S gases. Personnel will continue to monitor the area with a portable gas monitor. The portable gas monitors will alert personnel if concentrations of H2S rise above the Time Weighted Average (TWA) or the Short Term Exposure Limit (STEL). The EC will notify 911 dispatch (if previously contacted) that the release has been contained and will direct personnel to remove roadblocks (if established);
10. If the EC determines H2S levels to be ***10 ppm or greater*** s/he will notify d*esignated personnel* to don SCBA prior to entering the area where H2S is present & begin to take immediate measures to secure the area, control the release (H2S treating agent may be added to the tank(s) to neutralize H2S gases) and to eliminate possible ignition sources by monitoring for leaks, pressure build-up, gas generation and ruptured valves. The EC will rotate out designated personnel as determined by heat or physical related stresses. Each SCBA has an alarm which will signal when 20-25% of air supply remains, at which time designated personnel will leave the area to replace their air supply tank (the facility will have 3 extra air tanks). If after 30 minutes the release is not controlled or H2S levels continue to increase, proceed to Level 2 (below).

The following outlines the Immediate Action Plan that is illustrated by the response flow diagram in Appendix B. This is to be used when responding to an H2S release.

LEVEL 2: H2S levels reaching 20 ppm-Intermittent alarm will sound and flashing blue lights/beacons will indicate directly above the sensor which has been triggered.

1. When the H2S alarm system is activated-the EC, personnel (except for *designated personnel*-step #3 below) & visitors will evacuate to an appropriate designated assembly point which is upwind or crosswind (determined by windsock direction) from the H2S sensor which has indicated a release. (Refer to Addendum A-Emergency Evacuation Routes);
2. H2S levels will be monitored at the designated assembly point(s) with personal gas monitors. If H2S levels at a designated assembly point reaches or exceeds **10 ppm**, personnel will immediately evacuate to an alternate assembly point; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
3. *Designated personnel* (have been notified in advance of their responsibilities and have been appropriately trained and medically certified) will secure the front entrance to prevent unauthorized access; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind from the release-determined by windsock direction)and await further instructions from the EC;
4. The EC will account for personnel by utilizing the "Employee Roster" and for visitors by utilizing the "Visitor Check-In" sheet (provided by office personnel), so that everyone can be accounted for;
5. The EC will inform *designated personnel* of anyone suspected of missing. *Designated personnel* will immediately begin search and rescue activities. Prior to entering areas where H2S may be present, designated personnel will don self-contained breathing apparatus (SCBA). SCBA alarm will signal when 20-25% of air supply remains at which time *designated personnel* will leave the area and notify the EC they have left the area to replace their air supply tank. (the facility will have 3 extra air tanks);
6. Personnel & visitors on the facility who are not in the direct vicinity of the release will be notified by the PA system, two-way radios or by other facility personnel of the release location and will be directed to immediately proceed to the nearest appropriate designated assembly point (upwind or crosswind from the release as determined by windsock direction);
7. **It should be noted that at the time of creation and submission of this plan there are no known public areas within the 100 ppm radius of exposure (ROE).** However, in the event that the H2S sensor located at the front entrance indicates H2S at **10 ppm** or any sensor indicates H2S at **30 ppm or greater**, the EC will contact 911 *and if* s/he deems necessary shall recommend that public notification proceedings be initiated & coordinated by law enforcement. The EC will instruct *designated personnel* (will have 10 minute escape pack to use if needed) to establish pre-determined roadblocks (refer to Addendum A) which will be "manned" and monitored for H2S. If H2S levels at a roadblock reach or exceed 10 ppm, personnel will leave the roadblock barriers in place; immediately evacuate the area; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
8. The EC will don SCBA and evaluate the area of the release through physical inspection while simultaneously monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time the EC will leave the area to replace his/her air supply tank (the facility will have 3 extra air tanks);
9. If the EC determines H2S levels to be ***less than 10 ppm***, s/he will notify personnel that they may return to work. Personnel will don PPE and add H2S treating agent to the tank(s) to neutralize H2S gases. Personnel will continue to monitor the area with a portable gas monitor. The portable gas monitors will alert personnel if concentrations of H2S rise above the Time Weighted Average (TWA) or the Short Term Exposure Limit (STEL). The EC will notify 911 dispatch (if previously contacted) that the release has been contained and will direct personnel to remove roadblocks (if established);
10. If the EC determines H2S levels to be ***20 ppm or greater*** s/he will notify d*esignated personnel* to don SCBA prior to entering the area where H2S is present & begin to take immediate measures to secure the area, control the release and to eliminate possible ignition sources by monitoring for leaks, pressure build-up, gas generation and ruptured valves. The EC will rotate out designated personnel as determined by heat or physical related stresses. Each SCBA has an alarm which will signal when 20-25% of air supply remains, at which time designated personnel will leave the area to replace their air supply tank (the facility will have 3 extra air tanks). If after 30 minutes the release is not controlled or H2S levels continue to increase, proceed to Level 3 (below).

The following outlines the Immediate Action Plan that is illustrated by the response flow diagram in Appendix C. This is to be used when responding to an H2S release.

LEVEL 3: H2S levels reaching 30 ppm-Continual alarm will sound and flashing red lights/beacons will indicate directly above the sensor which has been triggered.

1. When the H2S alarm system is activated-the EC, personnel (except for *designated personnel*-step #3 below) & visitors will evacuate to an appropriate designated assembly point which is upwind or crosswind (determined by windsock direction) from the H2S sensor which has indicated a release. (Refer to Addendum A-Emergency Evacuation Routes);
2. H2S levels will be monitored at the designated assembly point(s) with personal gas monitors. If H2S levels at a designated assembly point reaches or exceeds **10 ppm**, personnel will immediately evacuate to an alternate assembly point; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
3. *Designated personnel* (have been notified in advance of their responsibilities and have been appropriately trained and medically certified) will secure the front entrance to prevent unauthorized access; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind from the release-determined by windsock direction) and await further instructions from the EC;
4. The EC will account for personnel by utilizing the "Employee Roster" and for visitors by utilizing the "Visitor Check-In" sheet (provided by office personnel), so that everyone can be accounted for;
5. The EC will inform *designated personnel* of anyone suspected of missing. *Designated personnel* will immediately begin search and rescue activities. Prior to entering areas where H2S may be present, designated personnel will don self-contained breathing apparatus (SCBA). SCBA alarm will signal when 20-25% of air supply remains at which time designated personnel will leave the area and notify the EC they have left the area to replace their air supply tank. (The facility will have 3 extra air tanks);
6. Personnel & visitors on the facility who are not in the direct vicinity of the release will be notified by the PA system, two-way radios or by other facility personnel of the release location and will be directed to immediately proceed to the nearest appropriate designated assembly point (upwind or crosswind from the release as determined by windsock direction);
7. **It should be noted that at the time of creation and submission of this plan there are no known public areas within the 100 ppm radius of exposure (ROE).** However, in the event that the H2S sensor located at the front entrance indicates H2S at **10 ppm** or any sensor indicates H2S at **30 ppm or greater**, the EC will contact 911 *and if* s/he deems necessary shall recommend that public notification proceedings be initiated & coordinated by law enforcement. The EC will instruct *designated personnel* (will have 10 minute escape pack to use if needed) to establish pre-determined roadblocks (refer to Addendum A) which will be "manned" and monitored for H2S. If H2S levels at a roadblock reach or exceed 10 ppm, personnel will leave the roadblock barriers in place; immediately evacuate the area; notify the EC of the evacuation due to increasing H2S levels; and notify the EC of where relocated to;
8. The EC will don SCBA and evaluate the area of the release through physical inspection while simultaneously monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time the EC will leave the area to replace his/her air supply tank (the facility will have 3 extra air tanks);
9. If the EC determines H2S levels to be ***less than 10 ppm***, s/he will notify personnel that they may return to work. Personnel will don PPE and add H2S treating agent to the tank(s) to neutralize H2S gases. Personnel will continue to monitor the area with a portable gas monitor. The portable gas monitors will alert personnel if concentrations of H2S rise above the Time Weighted Average (TWA) or the Short Term Exposure Limit (STEL). The EC will notify 911 dispatch (if previously contacted) that the release has been contained and will direct personnel to remove roadblocks (if established);
10. If the EC determines H2S levels to be ***30 ppm or greater*** s/he will notify *designated personnel* to don SCBA prior to entering the area where H2S is present & begin to take immediate measures to secure the area, control the release and to eliminate possible ignition sources by monitoring for leaks, pressure build-up, gas generation and ruptured valves. The EC will rotate out designated personnel as determined by heat or physical related stresses. Each SCBA has an alarm which will signal when 20-25% of air supply remains, at which time designated personnel will leave the area to replace their air supply tank (the facility will have 3 extra air tanks). If after 30 minutes the release is not controlled or H2S levels continue to increase, the EC will initiate Emergency Shut Down:
    - *Designated personnel* will shut down critical operations, processes/equipment & monitor for fire, vapor clouds, ignition hazards, over-pressured equipments, flow lines, ruptured pipes or valves which may dictate the need for evacuation; IF SO, CALL THE EC & all remaining *designated personnel* will immediately EVACUATE to nearest appropriate designated assembly area(s) (upwind or crosswind from the release).

E. Telephone Numbers and Communication Methods (19.15.11.9.B.2.a NMAC)

1. External Emergency Responders

Agency	Telephone Number
Fire Department	911 or (505) 334-6622
Sheriff Department	911 or (505) 334-6622
Police Emergency #	911
San Juan Regional Medical Center	911 or (505) 325-5011

2. IEI Internal Call List

Title	Name	Responsibilities	Location	Telephone
Emergency Coordinator	Alberta Pablo	Primary assessment and on-site notification	Main Office	(505) 860-4068
Alternate Emergency Coordinator	Steve Abeyta	Assessment and on-site notification; continuing monitoring; mitigation of release source	Facility	(505) 860 -3801
Management	Terry Lattin	Notification of Emergency Dispatch of potential off-site impact; mitigation of release source	Main Office	(505) 860-2885
Office Staff	Marcella Marquez	Support to all above	Main Office	(505) 632-1782

3. Government Agencies

Agency	Telephone Number
Oil Conservation Department (OCD)	(505) 476-3480

4. Public Notification

In the event the H2S sensor at the front entrance is triggered at **10 ppm *or greater*** and/or any other sensor is triggered with H2S at **30 ppm *or greater***, the EC will contact 911 and if s/he deems necessary shall recommend that public notification proceedings be initiated & coordinated by law enforcement.

San Juan County has a "Reverse 911 Notification System" to allow rapid notification of the residents and other occupants of potentially affected areas. The Integrated Public Alert & Warning System (IPAWS) will become effective in 2014 which will be used to alert any cells phones within a specific area. Until IPAWS is implemented, residences that only have cell phones will be notified through door-to-door contact by law enforcement.

During annual training, the EC will obtain information (addresses & if the residence has a landline or cellular phone) from nearby residences. This information will be updated annually and maintained in the plan so that in the event that public notification proceedings are initiated, law enforcement will know which residences they need to perform door-to-door notification to. (See Appendix E)

5. Emergency Communication Methods

Communication Equipment/Alarms	Location(s)	Capabilities/Description
Telephone System	Office	Telephones with loudspeaker/paging systems for internal and external communication.
Cell Phones	Various	Key personnel are provided with cell phones
2 Way Radio(s)	Main Office Tank Battery In Heavy Equipment	Provides the ability for office, landfarm personnel and truck drivers to communicate on the facility at all times
H2S Sensors & Alarm System	Front Entrance Processing Area	Sensor detects H2S at 10ppm or greater, audible alarm and visual lights are activated, control panel(s) indicates which sensor has triggered the alarm system. If alarm system is triggered after hours, it is configured to call IEI internal call list until a party is reached

VI. Location of Public Areas, Public Roads & Nearby Residences (19.15.11.9.B.2.a NMAC)

While there are no known "public areas" within the 100 ppm radius of exposure (ROE), IEI has committed to notify 911 and recommend public notification proceedings be initiated whenever H2S levels reach or exceed **10 ppm** at the front entrance.

1. The following public roads are located on/near the facility:
    - Highway 64 from mile marker 75 to mile marker 76
    - CR 4450 (Largo Canyon Road) where it crosses the south western areas of the facility
    - CR 4445 Entrance/Exit onto the facility
    - CR4440 where it enters/exits the East side of the facility

VII. EVACUATION MAPS/ROUTES, DESIGNATED ASSEMBLY AREAS & ROAD BLOCK LOCATIONS (19.15.11.9.B.2.a & 19.15.1.9.B.2.c NMAC)

A. Evacuation Routes and Designated Assembly Areas are shown on ADDENDUM "A"

The map also illustrates the locations of:

- "Caution Poison Gas" signs;
- Roadblock barricades;
- Wind Sock locations;
- Emergency Evacuation/Designated Assembly Points; *and*
- Potentially affected public roads.

B. Evacuation Routes

- Resident(s) located southeast of the facility will evacuate using CR 4445 to Largo Canyon;
- Residents located off of CR 4440 will evacuate East on CR 4440 to Highway 64;
- Traffic traveling North and South on CR 4450 (Largo Canyon Road) will be restricted on an "as need" basis (the road crosses the facility on the southern boundary of the facility where H2S is not likely to cause restriction to traffic flow).

C. Road Block Locations

Pre-determined road block locations will be set-up at each entry point onto the facility:

- Facility entrance;
- CR 4445 & CR 4440; *and*
- Any well location road on the facility that is not already gated.

Personnel will establish roadblock barriers (warning sign with flashing lights) at pre-determined locations. Roadblock locations will be "manned" by personnel to prevent unauthorized access onto the facility. Personnel "manning" roadblocks will utilize two-way radios for communication purposes and a portable gas monitor to check the area for H2S levels. If H2S levels at a roadblock location reach or exceed **10 ppm**, personnel will leave the roadblock barrier in place; evacuate the area; notify the EC of the roadblock evacuation due to increasing H2S levels; and notify the EC of their new location. If deemed necessary by the EC, law enforcement will be asked to assist with enforcing/maintaining the roadblocks. In the event law enforcement is utilized to help maintain roadblocks, personal gas monitors & two-way radios would be provided for safety & communication purposes.

VIII. ALARM SYSTEM, MONITORING EQUIPMENT, EMERGENCY EQUIPMENT/SUPPLIES, SIGNS & MARKERS (19.15.11.9.B.2.a & 19.15.11.10 NMAC)

A. H2S ALARM SYSTEM – The facility will utilize a Sentry H2S Monitoring System with fixed H2S sensors (or equivalent). The system uses fixed point monitoring to detect the presence of H2S in ambient air. If a sensor detects H2S at **10 ppm or greater**, the alarm system will activated with an intermittent or continually sounding alarm (audible) and flashing lights/beacons (visual). The system, sensors and audible alarms are calibrated monthly. ***In the event that the H2S alarm system is triggered while facility personnel are not present, the system is configured to call individuals listed on the "IEI Internal Call List" until a party is reached.***

B. MONITORING EQUIPMENT (Also Refer to Emergency Equipment/Supplies section below)

1. **H2S Alarm System Main Processor**-is located in the storage room of the processing area building. The heart of the system, equipped with battery backup, which performs functions including management of the sensor modules, management of alarm relays and interface with the user.
2. **H2S Alarm System Smart Sensors-** are strategically placed in various locations of the Processing Area and at the facility entrance to detect a release of H2S. When the alarm system is activated the sensor(s) will require attention as they will not clear themselves. The sensors are equipped with battery backup systems and are calibrated monthly.
3. **H2S Alarm System Control Panels-** one control panel is located in the centrifuge operator room and another one is located at the offloading area. The control panels allow facility personnel to monitor the status of the alarm system at all times and will notify personnel exactly which H2S sensor has been triggered.
4. **Wind Socks (Wind Direction Indicators)**-Wind socks to indicate wind direction will be located in the Processing Area, at each designated assembly point and will also be strategically placed in various areas on the facility which are visible from all principle working areas.
5. **Gas Detection Equipment-** OSHA/ANSI approved portable four gas monitors will be provided to all personnel working on the facility. The monitors have sensors which indicate the presence of H2S with a beeping sound at **10 ppm**. The beeps change in tone as H2S increases. If concentrations of H2S rise above TWA or STEL-vibrates, buzzer sounds *faster* alternating low/high pitch alarm, "TWA" or "STEL" warning light flashes
6. **Respirators-** 30 minute self-contained breathing apparatus (SCBA) respirators and 10 minute escape packs will be utilized on the facility. The facility will also have three additional "back up" air supplies tanks on hand. They will be located in the Processing Area, Office and in the Portable Emergency trailer. All personnel are FIT tested. *Designated Personnel*-(notified in advance of this responsibility and have been appropriately trained) are medically certified to use the SCBA.

C. SIGNS & MARKERS-The Facility has caution signs posted at all access points (front entry and all gates) on the facility warning of the potential presence of "Poisonous Gas". Facility personnel contact numbers are posted at the front entrance along with signs notifying all visitors that they are required to check-in with the attendant upon arrival. (Refer to Addendum A-Emergency Evacuation Routes)

D. Emergency Equipment/Supplies

EQUIPMENT	AMOUNT/LOCATION(S)	CAPABILITIES/DESCRIPTION
Communication		
Telephone System	Office	Telephones w/loudspeaker/paging systems for internal and external communication.
Cell Phones	Various	Key personnel are provided with cell phones.
2 Way Radio(s)	Office/Processing Area/ Portable Emergency Trailer/ Heavy Equipment	Provides the ability for personnel, truck drivers & equipment operators to communicate at all times.
Alarm System		
H2S Alarm system	Processing Area Building-Storage Room	Activated when H2S sensors detect H2S levels at **10 ppm** or greater.
Smart Sensors	Front Entrance, centrifuge room, offloading area & Processing Area	Fixed point sensors monitor H2S levels in ambient air & triggered when H2S is detected at 10 ppm or greater.
Control Panel(s)	Centrifuge Control Room & Offloading Area	Monitors status of the alarm system and indicates which sensor has been triggered.
Personal Protective Equipment (PPE)		
Gloves Eye Protection Hearing Protection Head Protection	Portable Emergency Trailer & Office	Cotton, leather, chemical resistant. Safety glasses, goggles, face shields. Ear plugs. Hard Hat.
Respiratory Protection		
10 Minute Escape Pack	3-Processing Area 2-Office 2-Portable Emergency Trailer	Provides 10 minutes of compressed air-allows user to escape from hazardous atmosphere.
30 Minute Self Contained Breathing Apparatus (SCBA)	1-Processing Area 2-Portable Emergency Trailer	Provides 30 minutes of supplied air-respiratory protection in hazardous environments & may be used for entrance into and/or escape from atmospheres that are immediately dangerous to life or health (IDLH).
Additional 30 Minute SCBA Air Tanks	1-Processing Area 2-Portable Emergency Trailer	
Gas Monitors Portable Four Gas Monitor (OSHA/ANSI approved) which simultaneously detects the presence of combustible gas, oxygen (O2), carbon monoxide (CO), and hydrogen sulfide (H2S)	1-Office 1-Emergency Coordinator Provided to all personnel to use while working on the facility (allows personnel assigned to various activities in this plan to have access to a gas monitor at all times)	**H2S levels detected at 10 ppm**-vibrates, buzzer sounds alternating low/high pitch alarm, "WARNING" light flashes. **H2S levels detected at 20 ppm**-vibrates, buzzer sounds *faster* alternating low/high pitch alarm, "WARNING" light flashes. **TWA (Time Weighted Average) or STEL (Short-term Exposure Limit)**-if concentrations of H2S rise above TWA or STEL-vibrates, buzzer sounds *faster* alternating low/high pitch alarm, "TWA" or "STEL" warning light flashes. **H2S Levels detected at 30 ppm or greater**-vibrates, buzzer sounds faster alternating low/high pitch alarm, "OVER" warning light flashes.
Wind Socks	Assembly Areas/Processing Area/Various Areas on Facility	Indicates wind direction & relative wind speed.
Roadblock Barricades	Portable Emergency Trailer	Road signs/barricades to prevent access into potentially affected public areas on the facility.
Portable Emergency Trailer	Located near entrance/office	Portable trailer which stores two-way radios, PPE, respiratory protection & roadblock barricades to be used in the event of a H2S release.

IX. PROTECTION FROM H2S AT TANK BATTERIES (19.15.11.12 NMAC)

A. **Security-**Signs will be posted indicating only "authorized personnel" have access to the tanks. To prevent unauthorized access, the tank battery at the "Processing Area" will be fenced with locking gates and tanks containing stairs/ladders will be chained. Gates will be locked when facility personnel are not on duty.

B. **Wind Socks (Wind Direction Indicators)-**Wind socks to indicate wind direction will be located in the "Processing Area", at each designated assembly point and will also be strategically placed in various areas on the facility which are visible from all principle working areas.

X. TRAINING & DRILLS (19.15.11.9.B.2.d & 19.15.11.13 NMAC)

A. Responsibilities and Duties of Essential Personnel

- Personnel responsible for implementing this plan shall be trained on their duties and responsibilities related to the plan, hydrogen sulfide hazards, detection, personal protection and contingency procedures.
- Training on the plan will be provided to new facility personnel during new hire orientation.
- Refresher training will be provided annually to all facility personnel.

B. On-site or Classroom drills

- IEI will hold periodic on-site and/or classroom drills and exercises simulating a release; and
- "Hands on" training methods will be conducted annually at a minimum.

C. Notification and Training of Others on Protective Measures in Emergency Situations

1. **Nearby Residences & Businesses** - At the time of submission of this plan there are no know residences or businesses within the 100 ppm ROE, however the EC will hold annual training and practice drills and invite nearby residents to participate in and/or observe annual drills, as appropriate, on the proper protective measures to be taken in the event of a release.

2. **Public Officials-**Local law enforcement, first responders, and fire personnel will be invited to attend annual training and practice drills and will be briefed on issues such as evacuation or shelter-in-place plans.

D. Training and Attendance Documentation

All training and drills will be documented. Documentation shall include sign in sheets, synopsis of the training conducted, and an after action review of the training.

XI. NOTIFICATION (19.15.11.16 NMAC)

Anytime H2S is detected at **10 ppm or greater**, the CP plan is activated. The EC will notify the Division as soon as possible, but no more than 4 hours after plan activation. The EC shall submit a full report of the incident to the division on form C-141 no later than 15 days following the release.

XII. COORDINATION WITH STATE EMERGENCY PLANS (19.15.11.9.B.2.e NMAC)

In accordance with the NM Hazardous Material Emergency Response Plan, the Emergency Coordinator will notify the nearest state police headquarters and will be responsible for management of all response resources on scene and will coordinate and perform protective actions only to the extent that his/her knowledge and capability permit (19.15.11.9.B.2.e). Law enforcement related activities will be coordinated by State Police.

The EC will be responsible for contacting 911 of a release anytime the H2S sensor at the front entrance is triggered at **10 ppm or greater**, any sensor is triggered with H2S at **30 ppm or greater**, or s/he believes that a threat to human health or the environment exists outside of the facility exists and if deems necessary will recommend that public notification proceeding be initiated and coordinated by law enforcement personnel (19.15.11.9.B.2.a).

San Juan County is set up on a "Reverse 911 Notification/Single Dispatch System" which notifies all appropriate emergency and HazMat responders of the emergency situation and implements procedures to notify the public when necessary. The Integrated Public Alert & Warning System (IPAWS) will become effective in 2014 which will be used to alert any cells phones within a specific area. Until IPAWS is implemented, residences that only have cellular phones will be notified through door-to-door contact by law enforcement.

Law enforcement will initiate door-to-door notification for nearby residences which have been identified as not having a landline or cellular phone. *During annual training, the EC will obtain information (address, whether or not the residence has a landline or cellular phone) from nearby residences. This information will be updated annually and maintained in this plan.* (See Appendix E)

XIII. PLAN SUBMISSION, REVIEW/AMENDMENTS, RETENTION/INSPECTIONS, ANNUAL INVENTORY (19.15.11.9.D, 19.15.11.9.E, 19.15.11.9.F, 19.15.11.9.G, 19.15.11.9.H NMAC)

1. **Submission (19.15.11.9.D)** – IEI will submit this plan to the Oil Conservation Division (OCD) with the Crowe Blanco Properties, LLC SWMF permit application.
2. **Failure to Submit** (19.15.11.9.E.) – Failure to submit a H2S plan when required may result in enforcement action appropriate to the facility or operation.
3. **Review/Amendments** (19.15.11.9.F) -The EC shall review and amend/modify the CP any time a subject addressed in the plan materially changes, or as necessary to protect public safety. Copies of the amended/updated plan shall be provided to the individuals listed in Appendix D of this plan.
4. **Retention/Inspection** (19.15.11.9.G) – IEI shall maintain a copy of the contingency plan in the Main Office and in the Processing Area of the facility. The plan shall be readily accessible for review, upon request, by the Oil Conservation Division (OCD).
5. **Inventory** (19.15.11.9.H) – IEI will file an annual inventory of the facilities and operations to the appropriate Local Emergency Planning Committee and the State Emergency Response Commission, for which plans are on file with OCD. The inventory shall include the name, address, telephone number, and point of contact for the facility.

XIV. HYDROGEN SULFIDE & SULFER DIOXIDE CHARACTERISTICS (19.15.11.9.B.2.b NMAC)

A. Hydrogen Sulfide (H2S): is a by-product of decaying organic matter and microbial activity. Workers in oil and gas operations, mining, sewage treatment, landfills, and laboratories are the most commonly exposed groups.

Because of the dangers of working with H2S, IEI is required by law to follow certain safety standards and procedures, such as monitoring the air in certain work areas and providing engineering controls. But, and most importantly, you must know how to protect yourself from H2S. If you recognize the hazard and follow specific procedures, you can work around H2S safely.

H2S is a colorless, toxic and flammable gas, heavier than air, and has the odor of rotten eggs. Hydrogen sulfide presents a significant health hazard by paralyzing the respiratory system resulting in serious injury or death.

Hydrogen Sulfide Properties and Characteristics	
CAS No.	7783-06-4
Molecular Formula	H2S
Molecular Weight	34.082 g/mol
Ceiling Concentration (not to be exceeded)	20 ppm (OSHA)
Ceiling Peak Concentration (10 minute period once within an 8 hour day)	50 ppm (OSHA)
Threshold Limit Value (TLV)	15 ppm (ACGIH)
Time Weighted Average (TWA) (during an 8 hour day)	10 ppm (NIOSH)
Short Term Exposure Level (STEL)	15 ppm (ACGIH)
Immediately Dangerous to Life or Health (IDLH)	100 ppm (NIOSH)
Specific Gravity Relative to Air (Air=1.0)	1.189
Boiling Point	-76.5F
Freezing Point	-121.8F
Vapor Pressure	396 psia
Auto ignition Temperature	518F
Lower Flammability Limit	4.3%
Upper Flammability Limit	46.0%
Stability	Stable
pH in Water	3
Corrosivity	Highly corrosive; reacts with metals and plastics, causes damage to human tissues

Physical Effects of Hydrogen Sulfide		
Concentration in ppm	Concentration in %	Physical Effects
1	0.00010	Can be smelled (rotten egg odor)
10	0.0010	Obvious and unpleasant odor; Permissible Exposure Level; safe for 8 hour exposure
20	0.0020	Acceptable Ceiling Concentration
50	0.0050	Loss of sense of smell in 15 minutes
100	0.0100	**Immediately dangerous to life and health(IDLH)** loss of sense of smell in 3-15 minutes; stinging in eyes & throat; altered breathing
200	0.0200	Kills sense of smell rapidly; stinging in eyes and throat
500	0.0500	Dizziness; **unconscious after short exposure;** Need artificial respiration
700	0.0700	**Unconscious quickly; death will result if not rescued promptly**
1000	0.1000	**Instant unconsciousness; followed by death within minutes**

B. Sulfur Dioxide (SO2): Sulfur dioxide is produced as a by-product of combustion of H2S. It is a colorless, transparent, and non-flammable gas, with a pungent odor associated with burning sulfur. Sulfur dioxide is heavier than air, but will be picked up by a breeze and carried downwind at elevated temperatures. Sulfur dioxide can be extremely irritating to the eyes and mucous membranes of the upper respiratory tract.

Sulfur Dioxide Properties & Characteristics	
CAS No.	7446-09-5
Molecular Formula	SO2
Molecular Weight	64.07 g/mol
Permissible Exposure Limit (PEL)	5 ppm(OSHA)
Time Weighted Average (TWA)	2 ppm(ACGIH)
Short Term Exposure Level (STEL)	5 ppm(ACGIH)
Immediately Dangerous to Life and Health (IDLH)	100 ppm
Specific Gravity Relative to Air (Air = 1.0)	2.26
Boiling Point	14°F
Freezing Point	-103.9°F
Vapor Pressure	49.1 psia
Auto ignition Temperature	Non-flammable
Lower Flammability Limit	Non-flammable
Upper Flammability Limit	Non-flammable
Stability	Stable
Corrosivity	Could form an acid in aqueous solutions

Physical Effects of Sulfur Dioxide	
Concentration	**Effect**
1 ppm	Pungent odor, may cause respiratory changes
2 ppm	Permissible exposure limit; Safe for an 8 hour exposure
3-5 ppm	Pungent odor; normally a person can detect sulfur dioxide in this range
5 ppm	Short Term Exposure Limit (STEL); safe for 15 minutes of exposure
12 ppm	Throat irritation, coughing, chest constriction, eyes tear and burn
100 ppm	**Immediately Dangerous To Life & Health (IDLH)**
150 ppm	So irritating that it can only be endured for a few minutes
500 ppm	Causes a sense of suffocation, even with first breath
1,000 ppm	**Death may result unless rescued promptly**

CALL 911 for death or injury requiring medical assistance

APPENDIX A

OPERATOR QUICK REFERENCE GUIDE

Industrial Ecosystems, Inc.

LEVEL 1 RESPONSE

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H2S Levels detected at 10 ppm or greater: Intermittent Audible Alarm and Flashing Yellow Lights

- The EC, personnel (except for designated personnel –step 3 below) & visitors evacuate to appropriate designated assembly point, upwind or crosswind from the release as determined by windsocks
- If H2S levels reach or exceed **10 ppm** at assembly area; relocate to alternate assembly point; notify EC of increasing H2S levels and where relocated to
- Designated personnel (have been notified in advance of this responsibility & have been appropriately trained & medically certified) will secure the front entrance; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind-determined by windsocks) & await further instructions from EC
- The EC will use the "Employee Roster" and "Visitor Check-In" sheet to account for personnel/visitors and will notify *designated personnel* of anyone suspected of missing
- *Designated personnel* will immediately perform search & rescue for anyone unaccounted for donning SCBA prior to entering areas where H2S may be present. If SCBA alarm signals that 20-25% of air supply remains, personnel will leave area to replace air tank and will notify EC
- Others not in the vicinity of the release will be notified by two-way radios or by other personnel and directed to proceed to nearest designated assembly point upwind or crosswind from release
- If the H2S sensor at facility entrance indicates H2S levels at **10 ppm** and/or a sensor indicates H2S levels at **30 ppm or greater**, EC will notify 911 & if s/he determines necessary will recommend public notification proceedings be initiated/coordinated by law enforcement; instruct designated personnel to establish "manned" roadblocks which will be monitored for H2S. If H2S levels reach or exceed **10 ppm** at a roadblock personnel will leave roadblock in place; evacuate the area; notify EC of increasing H2S levels and where relocated to
- Donning SCBA-the EC evaluates the area while monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time EC will leave area & replace air tank
- If H2S determined to be less than **10 ppm**, the EC will notify personnel to return to work; personnel will don PPE & add H2S treating agent to the tank(s) to neutralize H2S gases; continue to monitor area with a portable gas monitor; notify 911 dispatch the release is contained (if previously contacted) & direct personnel to remove roadblocks (if established)
- If H2S determined to be **10 ppm or greater** the EC will notify *designated personnel* to don SCBA and take immediate measures to control the release & eliminate possible ignition source(s). The EC will rotate out personnel as determined by heat/physical stresses. SCBAs will signal when 20-25% or air supply remains, at which time designated personnel will leave the area to replace tank

If H2S Levels exceed 10 ppm, proceed to Level 2 response

CALL 911 for death or injury requiring medical assistance

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H2S Levels detected at 20 ppm or greater: Intermittent Audible Alarm and Flashing Blue Lights

- The EC, personnel (except for designated personnel –step 3 below) & visitors evacuate to appropriate designated assembly point, upwind or crosswind from the release as determined by windsocks
- If H2S levels reach or exceed **10 ppm** at assembly area; relocate to alternate assembly point; notify EC of increasing H2S levels and where relocated to
- Designated personnel (have been notified in advance of this responsibility & have been appropriately trained & medically certified) will secure the front entrance; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind-determined by windsocks) & await further instructions from EC
- The EC will use the "Employee Roster" and "Visitor Check-In" sheet to account for personnel/visitors and will notify *designated personnel* of anyone suspected of missing
- *Designated personnel* will immediately perform search & rescue for anyone unaccounted for donning SCBA prior to entering areas where H2S may be present. If SCBA alarm signals that 20-25% of air supply remains, personnel will leave area to replace air tank and will notify EC
- Others not in the vicinity of the release will be notified by two-way radios or by other personnel and directed to proceed to nearest designated assembly point upwind or crosswind from release
- If the H2S sensor at facility entrance indicates H2S levels at **10 ppm** and/or a sensor indicates H2S levels at **30 ppm or greater**, EC will notify 911 & if s/he determines necessary will recommend public notification proceedings be initiated/coordinated by law enforcement; instruct designated personnel to establish " manned" roadblocks which will be monitored for H2S. If H2S levels reach or exceed **10 ppm** at a roadblock personnel will leave roadblock in place; evacuate the area; notify EC of increasing H2S levels and where relocated to
- Donning SCBA-the EC evaluates the area while monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time EC will leave area & replace air tank
- If H2S determined to be less than **10 ppm**, the EC will notify personnel to return to work; personnel will don PPE & add H2S treating agent to the tank(s) to neutralize H2S gases; continue to monitor area with a portable gas monitor; notify 911 dispatch the release is contained (if previously contacted) & direct personnel to remove roadblocks (if established)
- If H2S determined to be **20 ppm or greater** the EC will notify *designated personnel* to don SCBA and take immediate measures to control the release & eliminate possible ignition source(s). The EC will rotate out personnel as determined by heat/physical stresses. SCBA will signal when 20-25% or air supply remains, at which time designated personnel will leave the area to replace tank

If H2S Levels exceed 20 ppm, proceed to Level 3 response

▲

H2S Levels detected at 30 ppm or greater: Continual Sounding Siren and Flashing Red Lights

- The EC, personnel (except for designated personnel –step 3 below) & visitors evacuate to appropriate designated assembly point, upwind or crosswind from the release as determined by windsocks
- If H2S levels reach or exceed **10 ppm** at assembly area; relocate to alternate assembly point; notify EC of increasing H2S levels and where relocated to
- Designated personnel (have been notified in advance of this responsibility & have been appropriately trained & medically certified) will secure the front entrance; mobilize the portable emergency trailer & proceed to nearest appropriate designated assembly point (upwind or crosswind-determined by windsocks) & await further instructions from EC
- The EC will use the "Employee Roster" and "Visitor Check-In" sheet to account for personnel/visitors and will notify *designated personnel* of anyone suspected of missing
- *Designated personnel* will immediately perform search & rescue for anyone unaccounted for donning SCBA prior to entering areas where H2S may be present. If SCBA alarm signals that 20-25% of air supply remains, personnel will leave area to replace air tank and will notify EC
- Others not in the vicinity of the release will be notified by two-way radios or by other personnel and directed to proceed to nearest designated assembly point upwind or crosswind from release
- If the H2S sensor at facility entrance indicates H2S levels at **10 ppm** and/or a sensor indicates H2S levels at **30** ppm or greater, EC will notify 911 & if s/he determines necessary will recommend public notification proceedings be initiated/coordinated by law enforcement; instruct designated personnel to establish " manned" roadblocks which will be monitored for H2S. If H2S levels reach or exceed **10 ppm** at a roadblock personnel will leave roadblock in place; evacuate the area; notify EC of increasing H2S levels and where relocated to
- Donning SCBA-the EC evaluates the area while monitoring H2S levels with a portable gas monitor. SCBA alarm will signal when 20-25% of air supply remains at which time EC will leave area & replace air tank
- If H2S determined to be less than **10 ppm**, the EC will notify personnel to return to work; personnel will don PPE & add H2S treating agent to the tank(s) to neutralize H2S gases; continue to monitor area with a portable gas monitor; notify 911 dispatch the release is contained (if previously contacted) & direct personnel to remove roadblocks (if established)
- If H2S determined to be **30 ppm or greater** the EC will notify *designated personnel* to don SCBA and take immediate measures to control the release & eliminate possible ignition source(s). The EC will rotate out personnel as determined by heat/physical stresses. SCBA will signal when 20-25% or air supply remains, at which time designated personnel will leave the area to replace tank
- If after 45 minutes the release is not controlled or H2S levels continue to increase, the EC will initiate Emergency Shut Down:
  - *Designated personnel* will shut down critical operations, processes and equipment and will monitor for fire, vapor clouds, ignition hazards, over-pressured equipment, flow lines, ruptured pipes or valves which may dictate the need for evacuation; IF SO, IMMEDIATELY CALL THE EC and EVACUATE to designated assembly area(s).

APPENDIX D

H2S Contingency Plan Distribution List

New Mexico Oil Conservation Division-Santa Fe
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: (505) 476-3480
Fax: (505) 476-3462

New Mexico Oil Conservation Division-District 3 Office
1000 Rio Brazos Road
Aztec, NM 87410
Phone: (505) 334-6178
Fax: (505) 334-6170

New Mexico State Emergency Response Committee
P.O. Box 27111 (Mail)
13 Bataan Blvd. (Overnight Delivery)
Santa Fe, NM 87502
Phone: (505) 476-0617
Fax: (505) 476-9695

San Juan County Emergency Management
209 S. Oliver
Aztec, NM 87410
Phone: (505) 334-1180
Fax: (505) 334-0915

San Juan County Sheriff's Office
211 S. Oliver
Aztec, NM 87410
Phone: (505) 334-6107

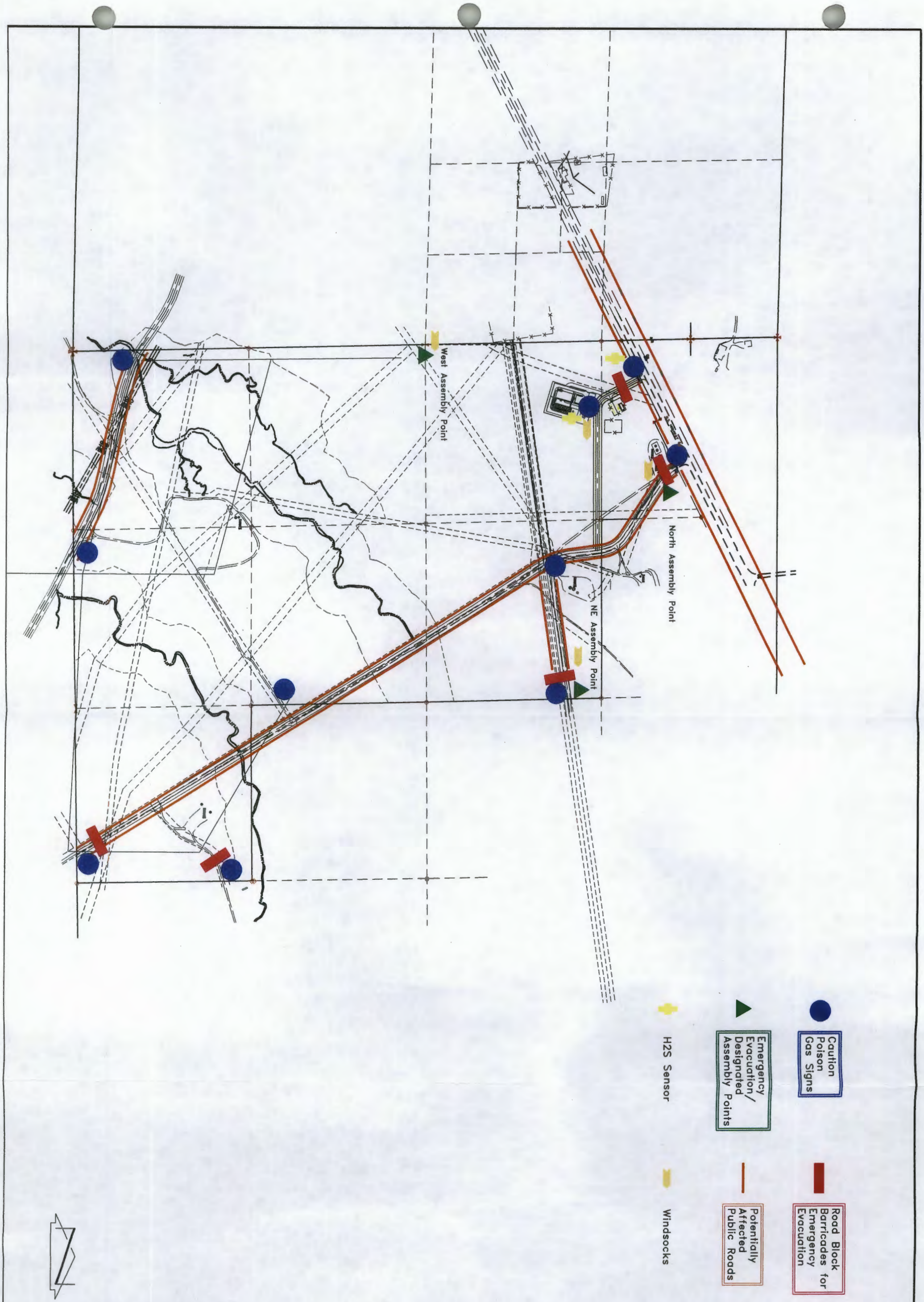
Blanco Fire Department
7372 Hwy. 64
Blanco, NM 87412
Phone: (505) 632-8135

APPENDIX E

Notification of Nearby Residences

The following is a list of nearby residences and establishes what type of communication the residence uses (Landline * Cellular Phone * No Phone)

NAME	ADDRESS (Description of Physical Location)	Landline #	Cell Phone #	No Phone
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐



ADDENDUM "A" EMERGENCY EVACUATION ROUTES
CROWE BLANCO PROPERTIES, LLC

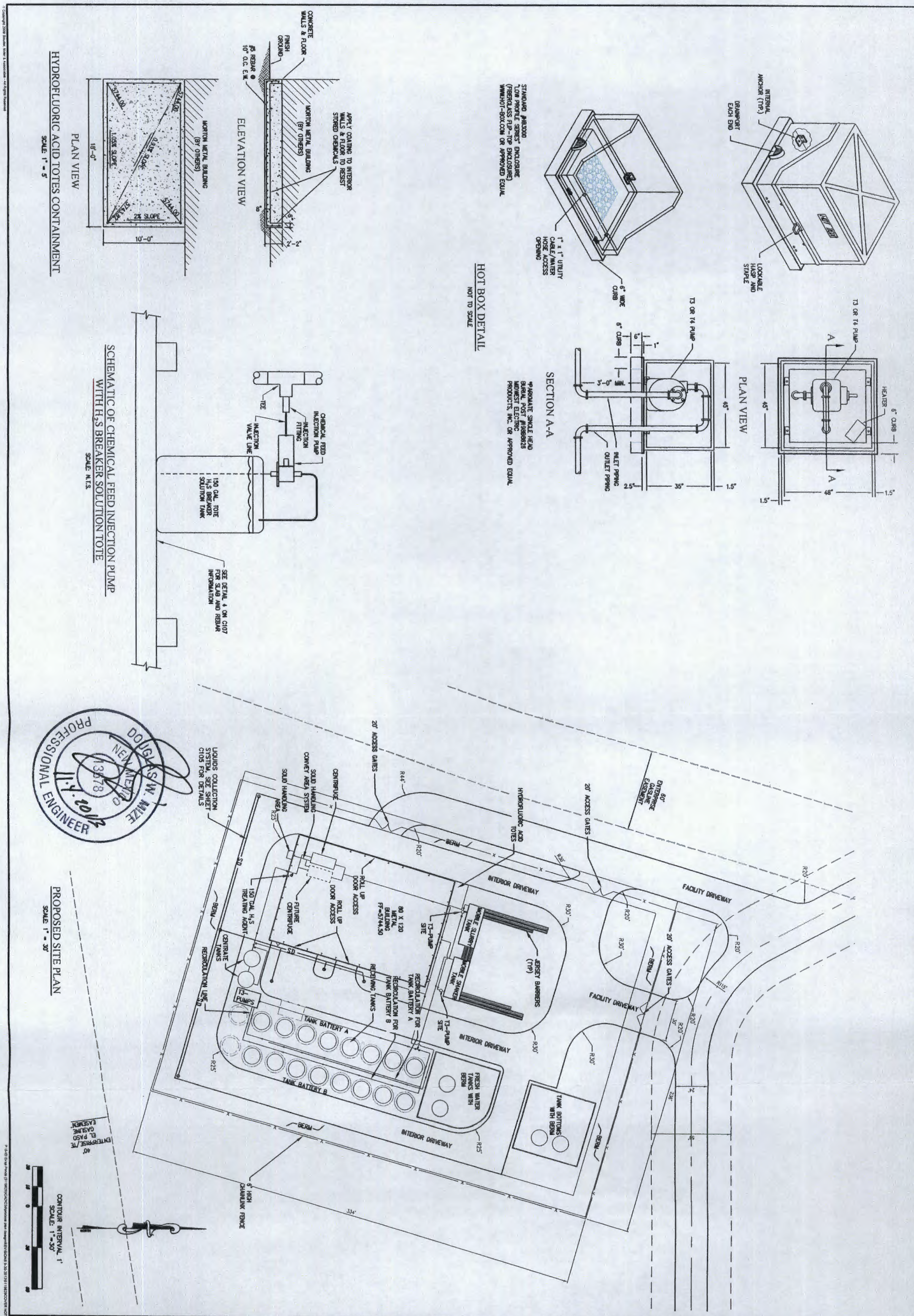
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:N.T.S.
FILE:09467SET
SHEET 13 OF 15

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467set.dwg



Designed	Drawn	Checked
DWM	DJB	DWM

SOUDER, MILLER & ASSOCIATES
2101 SAN JUAN BLVD.
FARMINGTON, NM 87401
Phone (505) 325-7535 Toll-Free (800) 519-0098 Fax (505) 326-0045
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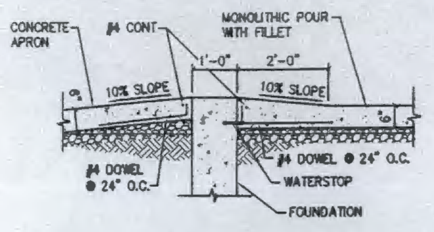
Date: AUGUST, 2011
Scale: Horiz: 1" = 30' Vert: N/A
Project No: 5119829
Sheet: C104

INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

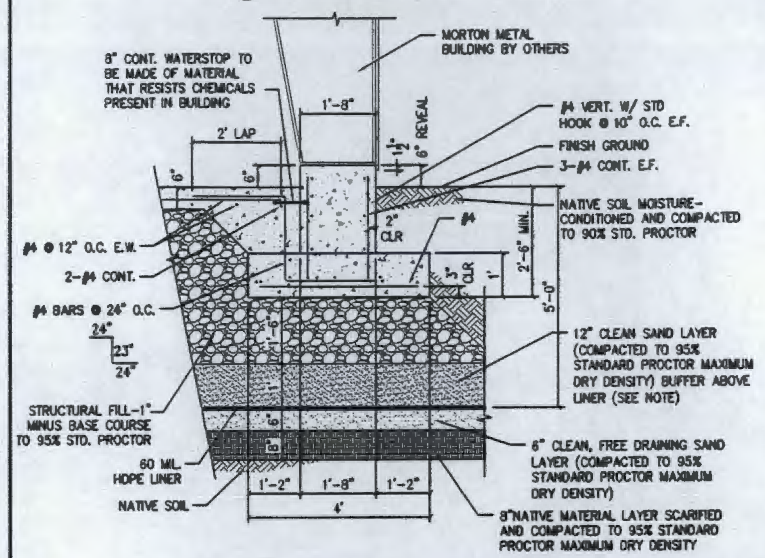
CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROPOSED SITE PLAN

Revision	Date	Description	By	Chk'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	



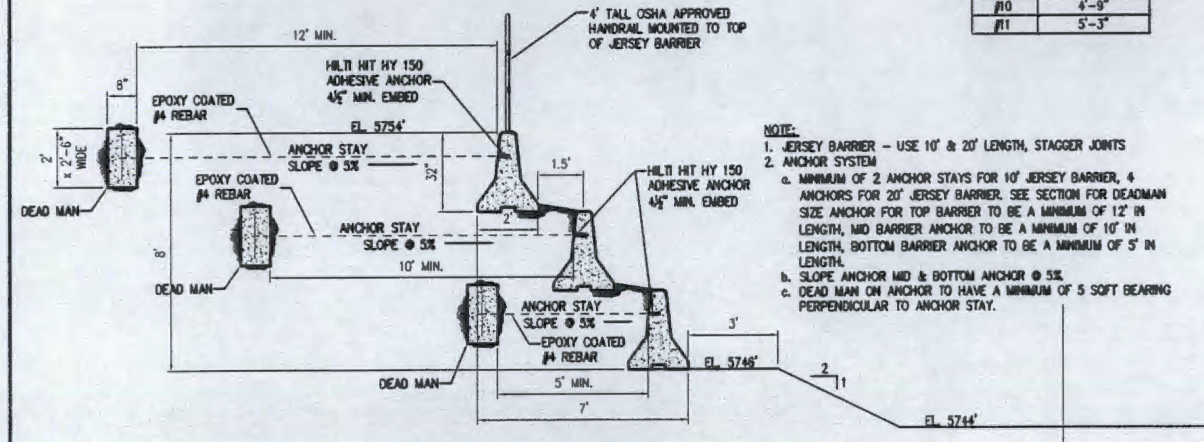
1 C107 RAMP DETAIL

SCALE: 1/2"=1'-0"



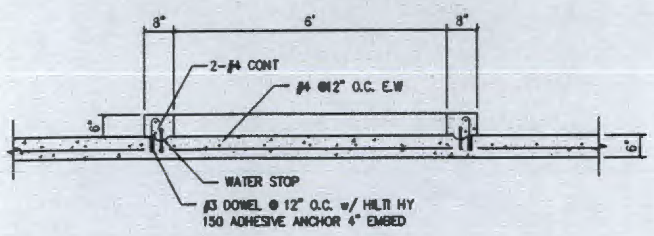
2 C107 PERIMETER FOOTING DETAIL

SCALE: 1/2"=1'-0"



3 C107 JERSEY BARRIER DETAIL

NOT TO SCALE



4 C107 SECONDARY CONTAINMENT DETAIL

SCALE: 1/2"=1'-0"

GENERAL STRUCTURAL NOTES

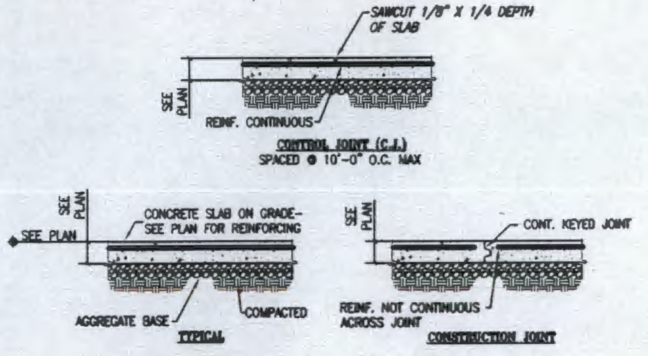
1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2009 EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318
2. DESIGN CRITERIA:
   A. VERTICAL:
      ROOF SNOW 25 PSF
   B. HORIZONTAL:
      (1) WIND*
      BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
      EXPOSURE "C"
      (2) SEISMIC*
      SITE CLASS "D"
3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
   E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.
4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMALWEIGHT CONCRETE:
      A. F'C = 3000 PSI @ 28 DAYS
      (4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

      (4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
      (5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
      A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH..........3"
      B. CONCRETE EXPOSED TO EARTH OR WEATHER:
         1. BARS LARGER THAN NO. 5..........2"
         2. BARS NO. 5 OR SMALLER..........1 1/2"
      (6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
      (7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.
5. SPECIAL INSPECTION:
   A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

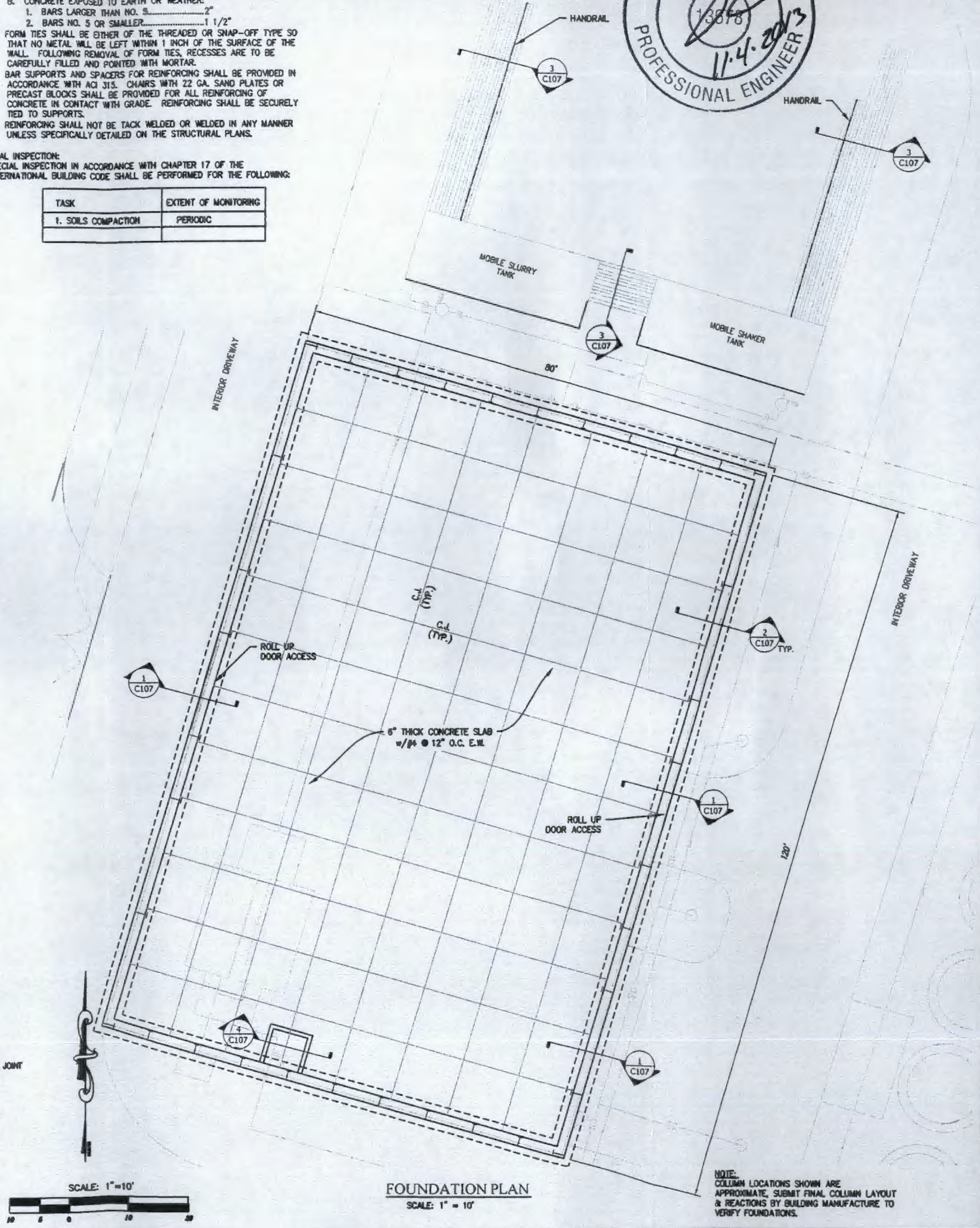
TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC

NOTE:
1. JERSEY BARRIER – USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
   a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
   b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%.
   c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SOFT BEARING PERPENDICULAR TO ANCHOR STAY.



5 C107 SLAB JOINTS

NOT TO SCALE



FOUNDATION PLAN

SCALE: 1" = 10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE, SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

PROFESSIONAL ENGINEER — DOUGLAS W. MIZE — NEW MEXICO — 13878 — 11.4.2013

INDUSTRIAL ECOSYSTEMS INC.	SAN JUAN COUNTY, NM
CROWE BLANCO PROPERTIES, LLC. OPERATED BY: INDUSTRIAL ECOSYSTEMS INC. BLANCO FACILITY PROCESS ENGINEERING DESIGN FOUNDATION PLAN	

Revision	Date	Description	By	Chk'd

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Engineering Environmental Surveying

Designed	Drawn	Checked
GYQ	DJB	DWM

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Date: AUGUST, 2011
Scale: Horiz: AS NOTED Vert: N/A
Project No: 5119829
Sheet: C107

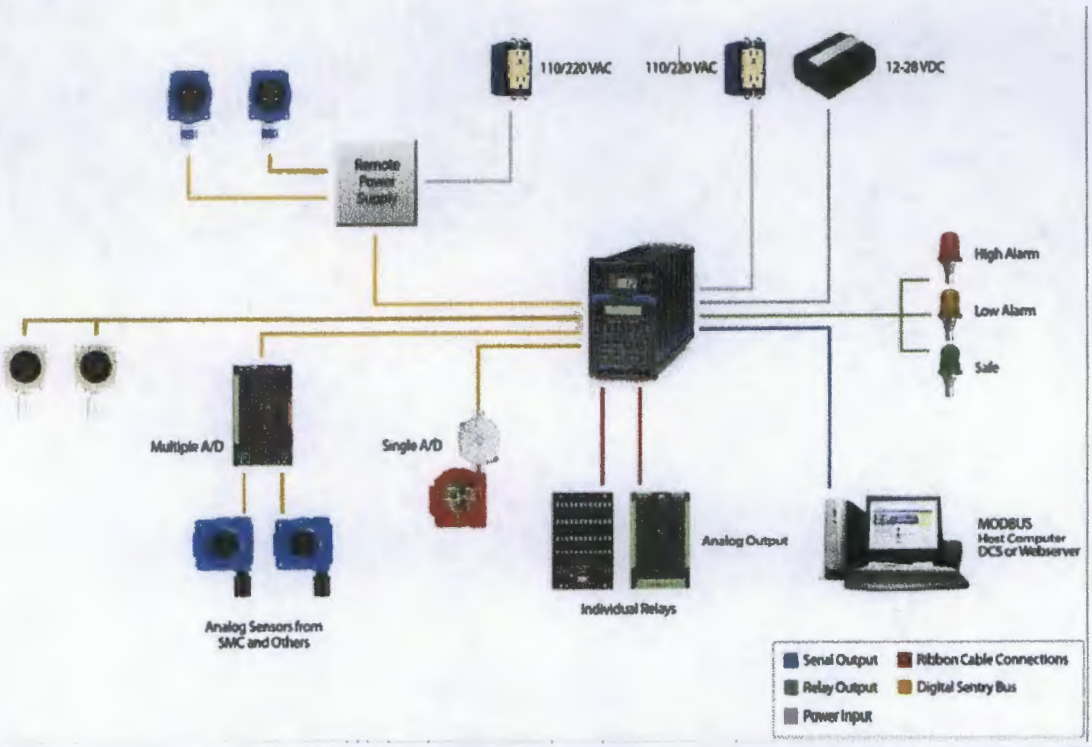
Sentry Controller

The Sentry controller is the heart of the Sentry Gas Risk Management system. It is a microprocessor based system that performs functions including management of the sensor modules, management of alarm relays and interface with the user via the front panel display, printer output, Modbus digital communication, alarm indicators and relay outputs.

Sentry system two-way communication between the sensors and the controller results in the capability to perform one-person calibration and diagnostic checks from the controller. The user-friendly front panel includes a large display of the gas concentration and sensor number. Various scan modes are available to meet the user's specific monitoring needs. A separate 2-line alphanumeric display provides more detailed information including sensor data, error messages and menu prompting for calibration and set-up.

A series of alarm LEDs instantly inform the user of alarm status on any of the eight sensors interfaced to the controller. These LEDs are solid for low alarm and flashing for high alarm. A trouble LED warns that one of 120 diagnostic checks has detected a problem. More information about the trouble will be displayed on the alphanumeric display. A calibrate/change LED indicates that calibration or configuration change is being performed on at least one sensor. The remaining sensors will remain on-line providing continuous protection.

The Sentry keypad, together with the user-friendly menu on the alphanumeric display, guides the user through set-up, calibration and maintenance of the Sentry system.



Sierra Monitor Corp. 1991 Tarob Ct., Milpitas, CA 95035, USA, 408-262-6611, 800-727-4377, FAX: 408-262-9042
Web Site: http://www.sierramonitor.com E-Mail: sales@sierramonitor.com

1. PRODUCT DESCRIPTION

1.1 GENERAL

The Sentry 5000 is a fixed installation gas monitoring system designed for continuous operation in open or confined areas. The system is comprised of a controller and up to eight sensor modules. The sensor modules are supplied for detection of combustible gas, oxygen deficiency or various toxic gases and can be mixed within one system as required.

1.2 CONTROLLER

The Sentry controller is a microprocessor computer which performs functions including management of the sensor modules, management of alarm relays and interface with the user via the front panel which includes a concentration display, an alphanumeric display, keypad and status indicators. The microprocessor functions are permanently installed in the controller. They cannot be changed or damaged by the user and will not be altered by loss of power.

Configuration variables, such as alarm levels, can be changed via a simple keypad sequence. Information provided to the controller in this manner is retained even when the power is interrupted. This information can be protected by a "user code" to avoid unauthorized modification.

Sentry continually scans all modules for alarm conditions. No sequence of key presses can prevent the scanning except specific actions during calibration or deliberate disabling of the sensor module.

The Sentry controller is provided in a rack or panel mount version for control rooms, an environmental enclosure for outdoor, stand alone applications, or other packages for specialty applications.

1.2.1 ENHANCEMENT PACKAGE

Various factory installed firmware enhancements are available for the Sentry controller. These are selected at the time of purchase or subsequent upgrade. The enhancements, which are described in detail in the appropriate sections of this manual, include:

- Addition of printer output firmware for models 5000-04 or 5000-02. Printer output is standard on model 5000-08.
- Replace printer output firmware with MODBUS data address protocol for host computer or DCS interface. MODBUS is an industry standard communication protocol which allows bi-directional communication via the controller RS-232C serial port.
- High Alarm Acknowledge function for alarm reset.
- Low Alarm Acknowledge function for alarm reset
- Emergency Alarm function adds a third alarm level.
- Zone and Voting assignment of individual alarm relays.
- Analog Output software driver for use with Model 4314-01 output module.
- Custom default Gas Tags and Engineering Units Tags for up to eight input devices.
- Custom default Module Tags for up to eight module addresses.
- Configure alarm relays to be normally energized in the safe condition.

1.3 SENSOR MODULES

Each sensor module ("module") is labeled internally to identify the type of gas it is designed to detect. For each gas group, the sensor and the electronics board in the explosion proof housing is different. During installation, switches in the electronics are set by the user to give the module an address (module number) to make it unique from others in the same system. Sentry then "communicates" with each module to determine its number, the type of gas it detects, the gas concentration and other information.

Inside the module housing is an electronic assembly consisting of two printed circuit board assemblies mounted under a metal top plate. The address switches and adjustment potentiometers are accessible through the plate and electrical test points (test lead jacks) are installed in the plate. Connectors for wiring from the controller and the sensor are located on the bottom of the electronic assembly. The sensor is installed in one hub of the enclosure.

1.4 INTERCONNECT WIRING

Not supplied with Sentry, but necessary to the installation and operation is the three conductor wiring which connects the controller to the modules. Before this wiring is installed it is important to read and understand the installation instructions (Chapter 3) because significant economies can be realized by connecting more than one module onto a common wiring run. This standard feature is accomplished by multiplexing the signals from the modules to the controller.

1.5 DATA TRANSMISSION

Transparent to the user is the data transfer which occurs on the installed interconnect wiring. Two of the conductors are used to pass direct current (DC) from the controller to the modules. The third wire transfers a series of very rapid pulses between the controller and the sensor modules. This digital transfer of information is an important feature of the system which significantly reduces RFI and EMI problems.

1.6 POWER REQUIREMENTS

The standard system requires 120 VAC, 60 Hz, at 0.5 Amp electrical supply. A factory option can be ordered for 220 VAC operation. DC voltage (12 to 28 VDC) can be used for standby power. The system will automatically switch to supplied DC operation at any time the AC voltage is interrupted.

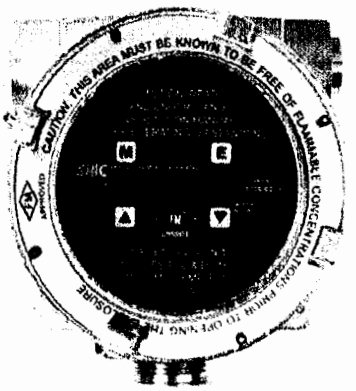
The system includes a lithium battery for RAM memory retention during power interruptions. To ensure continuous trouble free operation, however, the primary power source must be one which is continuous and reliable, preferably dedicated to this equipment. Battery back-up or emergency power is recommended to insure continuous operation.

1. PRODUCT DESCRIPTION

1.1 GENERAL

The Model 5100-02-IT Catalytic Bead Combustible Gas Sensor Module is a member of the ***Sentry Information Technology*** *"IT"* family of gas sensor transmitter modules. *IT* modules offer a broad array of features including:

- Integral Alphanumeric display
- 180 day calibration frequency
- SIL-2 Certified
- FM Approved for performance and hazardous locations
- 4-20 mA output
- Modbus® RTU interface
- SMC Sentry interface
- 316 Stainless steel enclosure option
- Remote alarm reset
- Optional Alarm Relays
- Remote sensor option



IT modules are designed, and approved for installation and operation in hazardous locations.

1.2 PRODUCT CONFIGURATION

Various module configuration options are available. Where applicable, these options are factory configured prior to shipment.

1.3 THEORY OF OPERATION

Catalytic bead gas sensors detect gas by comparing the resistance of two heated elements. One element is catalytic to enhance the burning of combustible gases, the other element is passive. Electronic circuits are used to compare the change in the catalytic bead resistance relative to the passive bead. The relative change is calibrated to determine the concentration of the gas of interest.

1.4 MODES OF OPERATION

1.4.1 SENTRY INTERFACE

All *IT* gas sensor modules can be installed on Sierra Monitor Sentry Model 5000 controllers. Catalytic bead modules communicate as a combustible gas sensor module (Type 2 communication) and are automatically detected by the Sentry controller. When it is installed in a Sentry system the *IT* module must have a unique address which can be established by setting an address between 1 and 8 on the rotary switch accessible from the cover plate as illustrated in Figure 4-1. Figure 4-4 in this manual provides the wiring terminations for connections to the Sentry controller.

When the module is operated in conjunction with a Sentry controller, the alarm relay setup (See section 4.3) should be set to "Sentry", allowing the Sentry controller to manage alarm relay action rather than the 5100-02-IT Gas Sensor Module.

An available option, applicable only to Sentry installations, is a connector card which allows daisy chain installation using the Sentry multiplex capability. Use of the connector card reduces costs by avoiding the requirement for wiring junction boxes. The connector card has two sets of connections, allowing for a continuous run to the next module

® *Registered trademark of Schneider Electric.*

1.4.2 MODBUS OPERATION

An RS-485 Modbus RTU serial interface allows direct connection to standard PLCs and DCSs. The Module Address Switch (section 4.5) allows the user to select up to 15 different Modbus addresses. Also, up to 254 different Modbus Addresses are available via menu selection. Figure 4-5 in this manual provides the wiring terminations for Modbus connections.

1.4.3 ANALOG OPERATION

The analog 4-20 mA interface allows direct connection to standard controller and distributed system. The module is an active current source.

The standard configuration is set up for a 3-wire non-isolated connection. An optional 4-wire isolated connection is also available and can be enabled by changing JP1 and JP2.

1.4.4 REMOTE SENSOR (APPENDIX E)

The Remote Sensor option enables the remote mounting of the sensor up to 50' from the transmitter.

1.4.5 HART CONNECTION (APPENDIX F)

A HART interface option is available. Refer to Appendix F for information.

1.4.6 OPTIONAL INTEGRAL RELAYS

The optional relays are integral to the gas sensor module and are rated as SPDT, 250VAC, 5 Amps for the High Alarm and Low Alarm relays and SPDT, 250VAC, 0.25 Amp for the Trouble relay.

* HART option, alarm relays are all SPDT, 250VAC, 2 Amp

If the gas sensor module is provided with the optional relays, it will include Terminal P4 on the interface board (Figure 4-3). Relay output connections are on P4.

1.4.7 REMOTE ALARM RESET

An input is available for connection of remote alarm reset/acknowledge. Figure 4-6 provides the wiring termination for connecting the remote alarm reset. This only resets local alarms, not Sentry alarms.

1.5 MECHANICAL

The sensor module of comprised of the following three primary components:

- **ENCLOSURE**
  Standard on the 5100-02-IT is an explosion-proof, rain-tight cast aluminum electrical housing (Figure 1-2) with three ¾" FNPT conduit hubs. The 5100-02-IT-SS has a 316 Stainless Steel enclosure (Figure 1-3). Both enclosure covers have a viewing window. The design of the enclosure allows 3-way mounting choices as shown in figure 1-1.
- **TRANSMITTER ELECTRONICS**
  Electronic Assembly consisting of one printed circuit board assembly mounted under a cover plate, plugged into one field termination board. Connectors for wiring for power, signal interface and alarm relays are located on the bottom of the termination board.
- **SENSOR ASSEMBLY**
  The sensor assembly includes an explosion proof housing containing the gas sensor and a wiring harness for connection to the transmitter. The sensor assembly threads into one hub of the enclosure. The exposed end of the sensor assembly is threaded to allow connection of a rain-shield or calibration gas.

CROWE BLANCO PROPERTIES, LLC
CLOSURE AND POST CLOSURE PLAN & ESTIMATE
(19.15.36.8.C.9, 19.15.36.15.E – G & 19.15.36.18 NMAC)

SUBMITTED TO:
New Mexico Oil Conservation Division (OCD)
1220 South St. Francis Drive
Santa Fe, NM 87505

SUBMITTED BY:
Souder, Miller & Associates
2101 San Juan Blvd.
Farmington, New Mexico 87401

FOR OPERATOR:
Industrial Ecosystems, Inc. (IEI)
#49 CR 3150
Aztec, NM 87410

TABLE OF CONTENTS

1. INTRODUCTION

The purpose of this plan is to establish the minimum requirements, procedures and costs associated with closure and post-closure activities of the Crowe Blanco Properties, LLC Surface Waste Management Facility.

Details and closure costs listed in this plan are based on the use of a maximum of four active "treatment" cells for treatment/remediation of contaminated soils. In the event that additional cells are needed for "treatment" of contaminated soils, the company's financial assurance would be adjusted accordingly and approval would be obtained from OCD prior to converting a *final disposition "receiving" cell* to an *active "treatment" cell.*

A. NORMAL OPERATIONS

Active "Treatment" Cells-Contaminated soils will be placed into biopiles within these four cells for treatment/remediation in accordance with the Treatment Zone Monitoring standards as specified in 19.15.36.15.D NMAC.

Note: This is a brief summary; more detailed procedures are provided in Binder Section 19.15.36.8.C.6-Operational Plan, Section 7.1 Treatment Zone Monitoring.

Final Disposition "Receiving" Cells-Once biopile soils meet semi-annual (two events within a one year timeframe) Treatment Zone Closure Performance standards as specified in 19.15.36.15.F, the biopile soils will be *moved from* the active "treatment" cell(s) and *spread in* a final disposition "receiving" cell and/or with prior division approval, disposed or reused of in an alternative manner 19.15.36.15.G.1 NMAC.

Note: This is a brief summary; more detailed procedures are provided in Binder Section 19.15.36.8.C.6-Operational Plan, Section 8.0 Treatment Zone Closure Performance Standards.

B. CLOSURE OF THE ACTIVE "TREATMENT" CELLS & FINAL DISPOSITION "RECEIVING"

Active "Treatment" Cells-During closure activities these four cells will remain subject to Treatment Zone Monitoring as set forth in 19.15.36.15.D NMAC and Vadose Zone Monitoring as set forth in 19.15.36.15.E NMAC, with annual reports submitted to the Division. (Refer to *Table 1: Facility Closure Testing Requirements)*

As the remaining biopiles in the active "treatment" cells are remediated, confirmation samples will be taken according to the Treatment Zone Closure Performance standards as set forth in 19.15.36.15.F NMAC. (Refer to *Table 1: Facility Closure Testing Requirements).*

Once soils meet Treatment Zone Closure Performance standards, the "treated/remediated" soils will be graded (spread) and *left in place*. After the soils have been spread in place, the active "treatment" cells will be re-vegetated in accordance with 19.15.36.18.A.6 NMAC.

Final Disposition "Receiving" Cells-At the time of facility closure the final disposition "receiving" cells will be re-vegetated in accordance with 19.15.36.18.A.6 NMAC.

Note: This is a brief summary; more detailed procedures are provided in Section 6 & Section 7 of this plan.

2. General Surface Waste Management Facility Closure (19.15.36.18.A NMAC)

The facility consists of the following areas: (Also refer to Sheet 6 of 15-Cell Map):

- Processing Area: Cell # 2- consists of 8.57 useable acres (9.22 acres w/pond area). This cell will contain the liquid processing and separation equipment, including mobile shaker and slurry tanks, up to twenty-eight steel tanks and centrifuges housed in a 80'x200' building. The processing area is 200' x 300' or 60,000 square-foot lined enclosure with a 2 ½ foot compacted earthen berm surrounded by six-foot tall chain-link fencing. The area is lined with a 60-mil HDPE liner (or equivalent) and covered with a 12-inch layer of sand protecting the liner, followed by approximately 4 to 5 1/2 feet of topsoil to allow vehicular traffic in/out of the Processing Area (also refer to Binder Section 19.15.36.8.C.5 -Engineering designs & Technical data).

- Landfarm: Comprised of 17 cells encompassing a total of 81.10 useable acres (86.18 acres w/pond area) available for active treatment/remediation or as final disposition of remediated materials. Four cells - numbers 7 - 10 are designated as the four active "treatment" cells consisting of 35.21 useable acres (37.56 acres w/pond area). Thirteen cells – numbers 1, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17 & 18 are designated as final disposition "receiving" cells consisting of 45.89 useable acres (48.62 acres w/pond area).

IEI will notify the OCD more than 60 days prior to the proposed date for cessation of operations and provide a schedule for closure. Upon receipt of notification, OCD will review the current closure plan for adequacy and may inspect the facility (19.15.36.18.A.1).

If any modifications to the closure plan or additional requirements are found to be necessary, OCD will notify IEI within 60 days of the closure notification from IEI (19.15.36.18.A.2 NMAC).

If OCD has not notified IEI of any modifications or requirements within 60 days, IEI will proceed with the closure activities listed in the current closure plan. The Division director may, with good cause, send IEI written notice that they are extending the time for their response for an additional period not to exceed 60 days (19.15.36.18.A.3 NMAC).

IEI is entitled to a hearing concerning any modifications or additional requirements requested by OCD. IEI must file an application for a hearing within 10 days after receipt of the written notice from OCD of the proposed modifications or additional requirements (19.15.36.18.A.4 NMAC).

Closure shall proceed in accordance with the approved closure plan and schedule including modifications or additional requirements imposed by OCD. Throughout closure operations, IEI will maintain the facility to protect fresh water, public health and safety, and the environment (19.15.36.18.A.5 NMAC).

In order to maintain the facility's Storm Water Pollution Prevention Plan, re-vegetation of the site will be completed during both closure and post-closure activities as discussed in Sections 5 through 8 of this plan (19.15.36.18.A.6 NMAC).

Post-closure will be considered accomplished when all closure activities have been completed, closure standards have been achieved, and vegetative cover is equal to 70 percent of the native perennial cover excluding noxious weeds through two successive growing seasons (19.15.36.18.A.6 NMAC).

3. Release of Financial Assurance (19.15.36.18.B NMAC)

Upon approval of closure and post-closure completions, OCD will release financial assurance as described in 19.15.36.18.B NMAC.

4. Closure Initiated by The Division. Forfeiture of Financial Assurance (19.15.36.18.C NMAC)

In the event facility closure is initiated by the division, the provisions of 19.15.36.18.C NMAC will be implemented.

5. PROCESSING AREA CLOSURE (19.15.36.15.F & 19.15.36.D NMAC)

Closure of the processing area includes removal of all equipment, soil and liner. The contents and equipment located inside of the building will be removed, estimated 1 day. The building will be disassembled/demolished for reuse/recycling, estimated 2 days. Disassembly/demolition will include removal of the steel building, concrete floor, foundation & fencing around the processing area, estimated 2 days. Waste associated with the disassembly/demolition of the building will be disposed of at the local landfill and/or recycling facility, estimated 15 loads. Prior to disposal of the concrete floor/foundation, it will be NORM tested with a licensed instrument, estimated 5 hours and 1 sample scraping will be tested for Benzene, BTEX, GRO/DRO, Corrosivity, Ignitability, Paint Filter and RCRA 8 metals-TCLP. The results will be submitted to the division and approval will be obtained in accordance with 19.15.35 NMAC. The fence surrounding the processing area will be removed, estimated 10 hours, for reuse/recycling or disposed of at the local landfill, estimated 2 loads (19.15.36.18.D.4.f NMAC).

Tanks will be emptied and cleaned, disposing of any remaining BS&W/washout water at a permitted SWMF, estimated 23 tanks. Removal and disposal of all fluids in the tanks within the Processing Area is estimated to be a maximum of 12,800 barrels. The liquid waste will be transported off-site by an approved C-133 hauler along with the proper manifest C-138 form. The tanks will be cleaned, disconnected and manways will be removed. Tanks will be reused/recycled or scrapped and removed from the facility within 90 days of removal from the processing area. Removal of tanks for reuse will require an escort and permits for transporting on highways (price per tank includes trucking, swamping, escort, permits & tank skids).

Piping (above and below ground) and pumps will be disassembled and removed, estimated 20 hours. The pipe/pumps will be reuses/recycled or disposed of at a local landfill and/or recycling facility, estimated 2 loads (19.15.36.18.D.1.a NMAC). Prior to disposal, NORM testing will be completed with a licensed instrument and approval will be obtained in accordance with 19.15.35.8.C.2.j NMAC, estimated 5 hours.

Soils covering the liner will be sampled in lift prior to removal. Two samples consisting of 4 discrete aliquots will be taken from 12" below the surface and a second set of two samples consisting of 4 discrete aliquots will be taken from 48" below the surface, but above the liner. The samples will be tested for Benzene, BTEX, GRO/DRO, TPH, chlorides and the metals listed in Subsections A & B of 20.6.2.3103 NMAC (EPA SW-846 methods 6010B or 6020). If the laboratory results meet treatment zone closure standards (19.15.36.15.F NMAC), no additional actions will be taken and the soil will be set aside to be used to backfill the "Processing Area". If analytical results indicate the soil has been impacted, upon meeting the waste acceptance protocols for paint filter and chloride concentration testing, the soils will be placed into an active "treatment" cell for remediation. Soils not meeting the paint filter test will be solidified prior to being placed into a biopile. Soils not meeting chloride concentration standards will be transported off-site, with proper manifest C-138 form, to a division-approved SWMF or landfill. It will take approximately 2 days to remove the soil covering the liner.

The liner beneath the processing area will be exposed, cut into manageable pieces and removed for disposal to a division-approved facility, estimated 2 days.

Once the liner is removed, two five point composite samples will be taken from 6" below the exposed surface. The soils will be sampled for TPH, BTEX, chlorides, and the metals listed in Subsections A and B of 20.6.2.3103 (EPA SW-846 methods 6010B or 6020). If the laboratory results do not exceed the higher of the PQL or background (19.15.36.15.E NMAC) the processing area will be backfilled with the soils removed from above the liner which have met treatment zone closure standards and supplemented with native soils from within the facility as needed, estimated 40 hours. If analytical results indicate the soil has been impacted, upon meeting waste acceptance protocols for paint filter and chloride concentration testing, the soils will be placed into an active "treatment" cell for remediation. Soils not meeting the paint filter test will be solidified prior to being placed into a biopile. Soils not meeting chloride concentration standards will be transported off-site, with the proper manifest C-138 form to a division-approved SWMF for disposal. In addition, the facility shall comply with spill reporting and corrective action provisions of 19.15.29 NMAC and/or 19.15.30 NMAC, as applicable.

The processing area berms will be used to backfill the processing area. The entire 9.22 acres of the processing will then be re-vegetated in accordance with 19.15.36.18.A.6 NMAC. All analytical results will be submitted to the Division for closure approval before backfilling may begin.

Specific Testing Requirements are summarized in *Table 1: Facility Closure*
Expected "Processing Area" closure costs are summarized in *Table 2: Processing Area Closure*

6. ACTIVE "TREATMENT" CELL CLOSURE (19.15.36.18.D.4 NMAC)

Active "treatment" cell closure will begin upon acceptance of the last load of contaminated soils, in accordance with Treatment Zone Monitoring Standards 19.15.36.15.D NMAC and/or upon facility closure. From this time it is anticipated it will take 3-12 months for the different biopiles within the four active "treatment" cells to remediate to closure standards as specified in 19.15.36.15.F.

The biopiles which have not yet passed closure standards will continue with the remediation process by being turned at least every 30 days for an estimated total of up to 105 days of equipment usage, 10 equipment mobilization events and 10 soils enhancement events-addition of manure & fertilizer (19.15.36.18.D.4.a NMAC).

During closure, the remediation process of the individual biopiles will be monitored by sampling the Treatment Zone for GRO/DRO (EPA 8015M) not to exceed 500 mg/kg or TPH (EPA 418.1) not to exceed 2500 mg/kg and Chlorides (EPA 300.1) not to exceed 500 where groundwater is <50 ft. below surface. Up to four different events will take place with a total of 105 samples being taken. Each sampling event will consist of a technician collecting one composite sample from a specific biopile consisting of four discreet aliquots.

During closure, the four active "treatment" cells will remain subject to semi-annual (two events within a one year time period) Treatment Zone and Vadose zone monitoring, expected to consist of 7 days of field work.

- Treatment Zone Monitoring-The technician will construct one composite sample from each biopile consisting of four discrete aliquots, for up to 105 samples/event for the four active "treatment" cells. The samples will be tested for Benzene, BTEX, GRO/DRO, TPH, Chlorides and the metals listed in Subsections A & B of 20.6.2.3103 NMAC. If the concentrations are exceeded, a site specific risk assessment shall be performed using EPA methods and shall propose closure standards based upon individual site conditions that protect fresh water, public health/safety and the environment. The assessment will be subject to division approval or waste shall be removed pursuant to 19.15.36.15.G.2 NMAC. If the result of the site specific risk assessment is a request of an alternative closure standard, IEI will comply with the requirements of 19.15.36.15.G.4. **Biopiles meeting semi-annual (two events within a one year timeframe) Treatment Zone monitoring standards also meet Treatment Zone Closure Standards and will not require further testing.*
- Vadose Zone Monitoring-The technician will collect one six point composite sample per acre, from 3-4' below the original ground surface, for up to 35 samples/event for the four active "treatment" cells. The samples will be tested for TPH, BTEX and Chlorides concentrations. If there is a release to the vadose zone or to ground water, then the operator shall comply with the applicable requirements of 19.15.30 NMAC and 19.15.29 NMAC.

Biopiles meeting semi-annual (two events within a one year timeframe) Treatment Zone Closure standards are considered remediated and will not require additional testing. To meet Treatment Zone Closure standards a technician will construct one composite sample from each biopile consisting of four discrete aliquots. The samples will be tested for Benzene, BTEX, GRO/DRO, TPH, Chlorides and the metals listed in Subsections A & B of 20.6.2.3103 NMAC (Refer to Table 1: Facility Closure-Treatment Zone Monitoring and/or Treatment Zone Closure). **Biopiles meeting semi-annual Treatment Zone Monitoring and/or semi-annual Treatment Zone Closure standards are considered remediated and will not require further testing.*

Once soils meet the semi-annual Treatment Zone and/or or semi-annual Treatment Zone Closure Performance standards, the soils will be graded (spread) and *left in place*. After the soils have been spread in place, the cells will be re-vegetated in accordance with 19.15.36.18.A.6 NMAC. (19.15.36.18.D.4.b)

Soils which cannot or have not been remediated to the standards as provided in 19.15.36.15.F will be transported off-site, with the proper manifest C-138 form, to a division-approved SWMF (19.15.36.18.D.4.c) or will be reused/recycled in a manner approved by the division. Removal of soils will not result in excavation of the cell's original ground surface and minor depressions will be filled with native soil and re-vegetated in accordance with 19.15.36.18.A.6. (19.15.36.18.D.4.d)

Until the Division has approved final closure of the site, IEI will submit reports of annual vadose and treatment zone sampling results (19.15.36.18.D.4.g) but will not take additional samples after closure standards are reached.

Specific Testing Requirements are summarized in *Table 1: Facility Closure*
Expected "Landfarm" closure costs are summarized in *Table 3: Landfarm Closure*

7. Other Closure Procedures & Re-Vegetation (19.15.36.18.G)

Other final closure activities will consist of dismantling/removal of the fuel storage tank and its containment area, estimated 8 hours. Removal of roads specifically created for operational purposes (existing county/access roads will remain intact), removal of the manure pile and its containment, grading of the remaining interior facility berms and grading of the landfarm, and removal of any other equipment associated with the SWMF, estimated 40 hours (19.15.36.18.D.4.e & 19.15.36.18.D.4.f).

The retention pond liners in the four active "treatment" cells will be exposed, cut into manageable pieces and removed for disposal to a division-approved facility, estimated four days.

The perimeter fencing and perimeter berms will be removed during facility post closure (see Section 8).

Any final disposition "receiving" cells which have been disturbed will be re-vegetated in accordance with 19.15.36.18.A.6 (19.15.36.18.D.4.d), estimated 48.62 acres.

The area where the main office building is located has not been used for waste handling; therefore property owner, Crowe Blanco Properties, LLC, has opted to keep the office building in place.

In the event Crowe Blanco Properties, LLC or designated responsible entity contemplates using the land for purposes inconsistent with re-vegetation, and only after receiving division approval, an alternative surface treatment will be implemented, providing that the alternative treatment effectively prevents erosion. If the division approves an alternative to re-vegetation, the division shall not release the portion of the operator's financial assurance reserved for post-closure until the landowner has obtained necessary regulatory approvals and begun implementation of such alternative use.

Expected "Other Closure & Re-Vegetation" costs are summarized in *Table 3: Landfarm Closure*

8. Facility Post Closure (19.15.36.18.F)

Once IEI has achieved closure of the Processing Area and the four active "treatment" cells as approved by the Division, post-closure care shall continue for a minimum of three years (36 months). During that time, IEI or a hired contractor shall inspect and maintain required re-vegetation and erosion control on a monthly basis with up to 6 erosion control and 6 re-seeding events.

In order to comply with the company's Stormwater Pollution Prevention plan, the perimeter fencing & perimeter berms will not be removed until vegetation has stabilized the soil. Re-vegetation will be considered complete (stabilized) when the vegetative cover equals 70 percent of the native perennial vegetative cover (un-impacted by grazing, fire or other intrusion damaging to native vegetation) 19.15.36.18.A.6, 19.15.36.18.D.4.e. Once re-vegetation is complete the perimeter fencing will be removed for reuse/recycling or disposed of at the local landfill (estimated 4 loads) and the perimeter berms will be graded and left in place, estimated 40 hours (19.15.36.18.D.4.f NMAC).

If there has been a release to the vadose zone or to ground water, then IEI or hired contractor shall comply with the applicable remediation requirements of 19.15.30 and 19.15.29 NMAC

Expected "Post Closure" costs are summarized in *Table 3: Landfarm Closure*

9. Closure Costs (19.15.36.11.B)

Closure costs are attached in Tables 2 and 3. All costs are based on contractor rates including Souder, Miller and Associates, Three Rivers Trucking, Inc., Envirotech, Inc., Hall Environmental Analysis and Green/Cardinal Laboratories.

TABLE 1: FACILITY CLOSURE TESTING REQUIREMENTS

Purpose	How many/ frequency	Analyses	Standard(s) (mg/Kg)
Vadose Zone Monitoring 19.15.36.15.E NMAC	1 (6 point) composite per acre/ active "treatment" cell **Semi-annually** (2x/within a year) 3-4 ft below original surface	TPH (EPA 418.1) Total BTEX (EPA 8021B or 8260B) Chlorides (EPA 300.1)	Higher of PQL or background-If there is a release to the vadose zone or to ground water, operator will comply with the applicable requirements of 19.15.30 and 19.15.29 NMAC
Treatment Zone Monitoring and/or Treatment Zone Closure 19.15.36.15.F NMAC	1 composite (4 discrete)/biopile **Semi-annually** (2x/within a year)	Benzene (EPA 8021B or 8260B) Total BTEX (EPA 8021B or 8260B) GRO/DRO (EPA 8015M) TPH (EPA 418.1) Chlorides (EPA 300.1) Metals listed in Subsections A & B of 20.6.2.103 NMAC (EPA 6010B or 6020) or other methods approved by the division	0.2 50 500 2500 500 (groundwater <50 ft below surface) Higher of PQL or background
Processing Area Closure 19.15.36.F NMAC	Concrete Floor/Foundation (scraping surface for sample)	GRO/DRO (EPA 8015) /or TPH (EPA 4181.) RCRA 8 Metals-TCLP (Method 1311/or other approved by OCD) Benzene (EPA 8021B or 8260B) BTEX (EPA 8021B or 8260B) Ignitability Test (EPA 1030) & Corrosivity (EPA 1110) NORM (licensed instrument)	1000 mg/kg TCLP Regulatory Limits 9.99 499.99 Standards set forth in 20.3.14 NMAC
	Piping above & below ground	NORM (licensed instrument)	Standards set forth in 20.3.14 NMAC
	Soils above liner 2 samples (4 discrete) taken 12" below the surface & 2 samples (4 discrete) taken 48" below the surface	Benzene (EPA 8021B or 8260B) Total BTEX (EPA 8021B or 8260B) GRO/DRO (EPA 8015M) TPH (EPA 418.1) Chlorides (EPA 300.1) Metals listed in Subsections A & B of 20.6.2.103 NMAC (EPA 6010B or 6020) or other methods approved by OCD	0.2 50 500 2500 500 (groundwater <50 ft below surface) Higher of PQL or background
	Soils beneath the liner 2 (five point) composite samples from 6' below exposed surface	TPH (EPA 418.1) Total BTEX (EPA 8021B or 8260B) Chlorides (EPA 300.1) Metals listed in Subsections A & B of 20.6.2.103 NMAC (EPA 6010B or 6020) or other methods approved by OCD	2500 50 500 (groundwater <50 ft below surface) Higher of PQL or background
Active "Treatment" Cell Closure 19.15.36.18.D(4) NMAC	Must meet **semi-annual** (2 events within a one year timeframe) Treatment Zone Monitoring or Treatment Zone Closure requirements as listed above. Soils which cannot meet closure requirements must be removed to a division permitted SWMF or reused/recycled it in a manner approved by the division. If exceeded, a site specific risk assessment shall be performed using EPA methods and IEI shall propose closure standards based upon individual site conditions that protect fresh water, public health/safety and the environment. The assessment will be subject to division approval or waste shall be removed pursuant to 19.15.36.15.G.2 NMAC. If the result of the site specific risk assessment is a request of an alternative closure standard, IEI will comply with the requirements of 19.15.36.15.G.4 NMAC		

Table 2 - Processing Area Closure

Task	Cost/unit		# of units	Cost
BUILDING				
Remove equipment from centrifuge bldg.	$ 2,200.00	day	1	$ 2,200.00
Dismantle Bldg, Cut floor and footings	$ 1,800.00	day	2	$ 3,600.00
Remove Bldg, Floor and Foundation	$ 2,850.00	day	2	$ 5,700.00
Haul demolition materials and dispose	$ 625.00	load	15	$ 9,375.00
NORM Testing (licensed instrument)	$ 65.00	hour	5	$ 325.00
Sample Concrete (scraping)	$ 43.00	hour	1	$ 43.00
Remove 6 foot chain link fencing	$ 155.00	hour	10	$ 1,550.00
Haul fencing for recycling and/or disposal	$ 588.00	load	2	$ 1,176.00
TANKS				
Remove/dispose of liquids in tanks	$ 4.00	bbl	12,800	$ 51,200.00
Cleaning	$ 125.00	tank	23	$ 2,875.00
Disconnecting & removing manways	$ 195.00	tank	23	$ 4,485.00
Remove/Transport tanks	$ 535.00	tank	23	$ 12,305.00
PIPING/PUMPS				
Disassemble/Remove piping & pumps	$ 200.00	hour	20	$ 4,000.00
Haul and dispose of piping and pumps	$ 588.00	load	2	$ 1,176.00
NORM Testing (licensed instrument)	$ 65.00	hour	5	$ 325.00
LINER				
Remove soil covering liner w/machinery	$ 1,400.00	day	2	$ 2,800.00
Cut liner into pieces, haul & dispose	$ 2,200.00	day	2	$ 4,400.00
SOIL SAMPLING (Above & Below Liner)				
Staff Engineer Scientist	$ 59.50	hour	32	$ 1,904.00
Support Vehicle	$ 15.00	hour	36	$ 540.00
BACKFILL & RE-VEGETATION				
backfill w/berms & soils from above liner	$ 300.00	hour	40	$ 12,000.00
Seeding	$ 200.00	acre	9.22	$ 1,844.00
LAB ANALYSIS				
Concrete Scrapings				
Benzene/BTEX (8021B or 8260B)	$ 50.00	sample	1	$ 50.00
GRO/DRO (8015M) or TPH (418.1)	$ 60.00	sample	1	$ 60.00
Corrosivity, Ignitability, Paint Filter (1110, 1030, 9095A)	$ 75.00	sample	1	$ 75.00
RCRA 8 Metals-TCLP (1311)	$ 172.50	sample	1	$ 172.50
Soil Above Liner				
Benzene/BTEX (8021B or 8260B)	$ 50.00	sample	4	$ 200.00
GRO/DRO (8015M)	$ 60.00	sample	4	$ 240.00
TPH (418.1)	$ 60.00	sample	4	$ 240.00
Chlorides (300.1)	$ 25.00	sample	4	$ 100.00
Metals listed in Subsections A & B of 20.6.2.3103 NMAC (6010B or 6020) or other methods approved by the division.	$ 200.00	sample	4	$ 800.00
Soil Below Liner				
TPH (418.1)	$ 60.00	sample	2	$ 120.00
BTEX (8021B or 8260B)	$ 50.00	sample	2	$ 100.00
Chlorides (300.1)	$ 25.00	sample	2	$ 50.00
Metals listed in Subsections A & B of 20.6.2.3103 NMAC (6010B or 6020) or other methods approved by the division.	$ 200.00	sample	2	$ 400.00
TOTAL PROCESSING AREA CLOSURE COSTS				**$ 126,430.50**

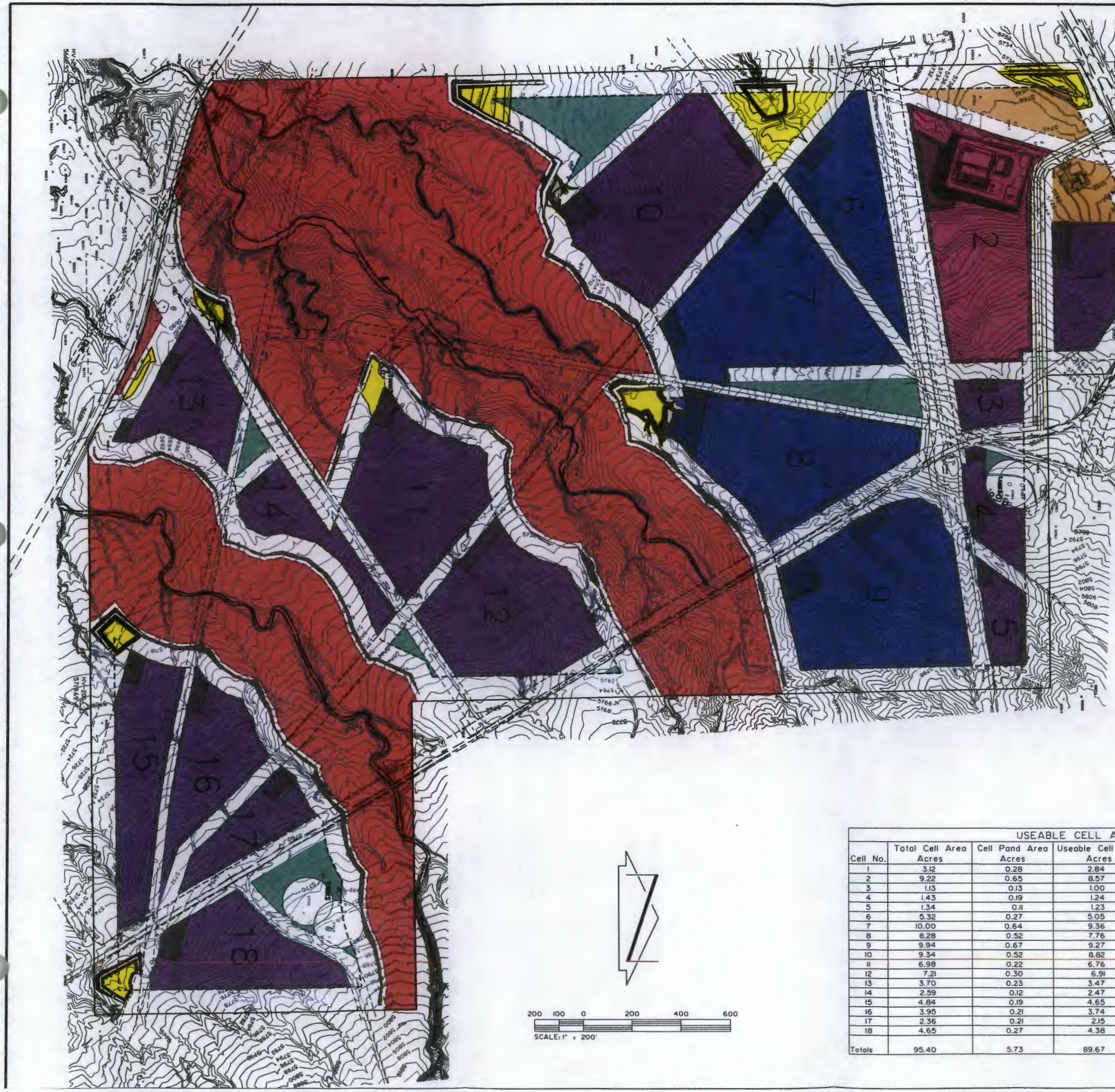
Table 3 - Landfarm Closure

Task	Cost/unit		units	# of events	Cost
3-12 MONTHS OF REMEDIATION					
Equipment costs	$ 1,070.00	day	1	105	$ 112,350.00
Equipment transport	$ 420.00	event	1	10	$ 4,200.00
Addition of enhancing materials	$ 1,000.00	event	1	10	$ 10,000.00
Treatment Zone-Soil Sampling					
Field Technician	$ 43.00	hour	8	4	$ 1,376.00
Support Vehicle	$ 15.00	hour	9	4	$ 540.00
Treatment Zone-Lab Analysis					
GRO/DRO (8015M) or TPH (418.1)	$ 60.00	sample	105	1	$ 6,300.00
Chlorides (300.1)	$ 25.00	sample	105	1	$ 2,625.00
SEMI-ANNUAL MONITORING					
Soil Sampling					
Field Technician	$ 43.00	hour	8	8	$ 2,752.00
Support Vehicle	$ 15.00	hour	9	8	$ 1,080.00
Lab Analysis					
Semi-Annual Treatment Zone					
Benzene/BTEX (8021B)	$ 50.00	sample	105	2	$ 10,500.00
GRO/DRO (8015M) or TPH (418.1)	$ 60.00	sample	105	2	$ 12,600.00
TPH (418.1)	$ 60.00	sample	105	2	$ 12,600.00
Chlorides (300.1)	$ 25.00	sample	105	2	$ 5,250.00
Metals listed in Subsections A and B of 20.6.2.3103 NMAC (6010B or 6020) or other methods approved by the division	$ 200.00	sample	105	2	$ 42,000.00
Semi-Annual Vadose Zone					
TPH (418.1)	$ 60.00	sample	35	2	$ 4,200.00
Benzene/BTEX (8021B or 8260B)	$ 50.00	sample	35	2	$ 3,500.00
Chlorides (300.1)	$ 25.00	sample	35	2	$ 1,750.00
Grade (spread) remediated soils in place	$ 300.00	hour	8	3	$ 7,200.00
Seeding-Active "Treatment" Cells	$ 200.00	acre	37.56	1	$ 7,512.00
				SUBTOTAL	**$ 248,335.00**
OTHER CLOSURE & RE-VEGETATION					
Fuel Storage Tank	$ 155.00	hour	8	1	$ 1,240.00
Remove berms/grade landfarm/roads	$ 300.00	hour	40	1	$ 12,000.00
Remove retention pond liners	$ 2,200.00	day	1	4	$ 8,800.00
Seeding-Final Disposition Cells	$ 200.00	acre	48.62	1	$ 9,724.00
				SUBTOTAL	**$ 31,764.00**
POST CLOSURE					
Monitoring Facility Monthly Inspection	$ 400.00	Month	36	1	$ 14,400.00
Erosion Control	$ 1,000.00	incident	6	1	$ 6,000.00
Re-seeding	$ 1,000.00	incident	6	1	$ 6,000.00
Perimeter fence removal & clean-up	$ 155.00	hour	40	1	$ 6,200.00
Disposal of perimeter wire, fencing, etc	$ 588.00	load	4	1	$ 2,352.00
				SUBTOTAL	**$ 34,952.00**
				TOTAL LANDFARM CLOSURE COSTS	**$ 315,051.00**

IEI FACILITY CLOSURE COSTS

Task	Cost
Processing Area Closure	$ 126,030.50
Landfarm Closure	$ 248,335.00
Other Closure	$ 31,764.00
Post Closure Costs	$ 34,952.00

Estimated Total Closure Financial Assurance $ 441,081.50



USEABLE CELL AREAS

Cell No.	Total Cell Area Acres	Cell Pond Area Acres	Useable Cell Area Acres	Minimum Cell Pond Volume	Comments
1	3.12	0.28	2.84	7269	Final Disposition
2	9.22	0.65	8.57	21765	Processing Area
3	1.13	0.13	1.00	2468	Final Disposition
4	1.43	0.19	1.24	3331	Final Disposition
5	1.34	0.11	1.23	3122	Final Disposition
6	5.32	0.27	5.05	12615	Final Disposition
7	10.00	0.64	9.36	23713	Active Treatment
8	8.28	0.52	7.76	19634	Active Treatment
9	9.94	0.67	9.27	22578	Active Treatment
10	9.34	0.52	8.82	22439	Active Treatment
11	6.98	0.22	6.76	16261	Final Disposition
12	7.21	0.30	6.91	16377	Final Disposition
13	3.70	0.23	3.47	8404	Final Disposition
14	2.59	0.12	2.47	6142	Final Disposition
15	4.84	0.19	4.65	11276	Final Disposition
16	3.95	0.21	3.74	9490	Final Disposition
17	2.36	0.21	2.15	5670	Final Disposition
18	4.65	0.27	4.38	10833	Final Disposition
Totals	95.40	5.73	89.67		

DATE	REVISION	BY

PRINTED: October 28, 2013
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CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

CELL MAP
CROWE BLANCO PROPERTY LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1"= 200'
FILE:09467DRN3
SHEET
6
OF
15

CONTINGENCY PLAN
(19.15.36.8.C.10 & 19.15.36.13.N NMAC)

INTRODUCTION

The facility functions as a New Mexico Oil Conservation Division (NMOCD) permitted Surface Waste Management Facility (SWMF) specializing in remediating Non-Hazardous, RCRA Exempt Oilfield Waste.

The Contingency Plan describes the actions to be taken by the SWMF personnel in the event of a spill, fire or other response to incident. It includes information necessary to address response situations efficiently and in such a manner as to prevent or minimize hazards to human health and the environment due to fire, explosion or any unplanned sudden or non-sudden release of contaminants or oilfield waste constituents that could threaten fresh water, public health, safety or the environment.

The Contingency Plan is to be expeditiously carried out whenever there is an emergency that could threaten human health or the environment. Implementing the procedures contained in this plan should effectively mitigate such threats.

The Emergency Coordinator or the Alternate Emergency Coordinator are responsible for implementing the Contingency Plan during an emergency response event; however, initial responders who have been appropriately trained may also implement the plan prior to the arrival of the Emergency or Alternate Emergency Coordinators. Facility personnel will also be familiar with the procedures in this plan to ensure that it is properly implemented.

Copies of the plan are maintained at the SWMF office and will be provided to NMOCD and to local law enforcement and emergency response departments for use during an emergency.

TABLE OF CONTENTS

SECTION I: PURPOSE AND OBJECTIVES (19.15.36.13.N NMAC)

This Contingency Plan describes the actions to be taken by facility personnel in the event of a spill, fire or other response to incident. It includes information necessary to address response situations efficiently and in such a manner as to prevent or minimize hazards to human health and the environment due to fire, explosion or any unplanned sudden or non-sudden release of contaminants or oilfield waste constituents that could threaten fresh water, public health, safety or the environment.

The Contingency Plan is to be immediately carried out whenever there is an emergency that could threaten human health or the environment. Implementing the procedures contained in this plan should effectively mitigate such threats.

SECTION II: GENERAL FACILITY INFORMATION

a. Crowe Blanco Properties, LLC 1015 W. 54th Street, Kansas City, MO 64112
b. Operator: Industrial Ecosystems, Inc. 49 CR 3150 Aztec, NM 87410 (505) 632-1782
c. Physical Address: 7577 US 64, Blanco, NM 87412. Highway 64 near mile marker 75, San Juan County, S-16, T-29N, R-09W, Latitude 36° 43' 22" N Longitude 107° 47' 19" W
d. Mailing address: #49 CR 3150, Aztec, NM 87410
e. Permit #:
f. Key Contacts:

Title	Name	Telephone
Emergency Coordinator	Alberta Pablo	(505) 860-4068
Alternate Emergency Coordinator	Steve Abeyta	(505) 860-3801
Management	Terry Lattin	(505) 860-2885
Office Staff	Marcella Marquez	(505) 632-1782

g. Facility Phone # (505) 632-1782
h. Facility Fax # (505) 632-1876 or (505) 334-1003

SECTION III: DESCRIPTION OF BUSINESS ACTIVITY (19.15.36.13.N.6 NMAC)

The facility is a NMOCD permitted SWMF (landfarm) which provides environmental services to local oilfield companies. The facility accepts Non-Hazardous, RCRA exempt waste(s) generated from oil and gas exploration and production. The primary intent of the facility is to landfarm / remediate oilfield waste.

SECTION IV: WASTE DESCRIPTIONS (19.15.36.13.N.6)

Only Non-Hazardous, RCRA exempt wastes are accepted at the facility. These materials are generated from oil and gas exploration and production (E&P) operations and are usually the by-product of "down-hole" operations.

Waste is delivered in both solid and liquid forms. Solid waste is placed into biopiles and liquid waste is managed in tanks at the "tank battery" area. The "tank battery" area of the facility is provided with a secondary containment system.

The following provides information and descriptions of the most common waste streams handled at the facility and their associated characteristics and/or constituents:

Waste Characterization

Characterization requirements for individual shipments of waste are specified on a waste stream basis. A waste stream is defined as waste material generated from a single site and a single process or an activity that is similar in material, physical form, and constituents. Exempt Oilfield Waste accepted at the facility is initially categorized into three groups that are related to the physical form of the waste.

1. Hydrocarbon Stained Soils and Gravels – Production of hydrocarbon stained soils or gravels includes spillage, line failure, leaking vessels or valves, and the reclamation of production pits. Waste predominantly contaminated by petroleum hydrocarbons.
2. Tank Bottoms – Production of tank bottoms includes tank cleaning operations -cleaning the accumulation of hydrocarbon material and other substances that settle naturally below oil in tanks and receptacles that are used in oils' handling and storing, and which accumulation contains in excess of 2% of BS&W. For lease production and lease storage tanks, tank bottoms shall be limited to that volume of the tank in which it is contained that lies below the bottom of the pipeline outlet to the tank.
3. Drill Cuttings-Production of drill cuttings of rock and other materials removed from the borehole while drilling petroleum wells.

On-Site Generated Wastes

As a result of operating the facility, waste material is generated. A review of the several of the most common wastes generated at the facility is provided below:

- Wastes from Tanks-approximately once every two years, it is necessary to remove the tank bottom sediment consisting of free water, residual oilfield wastes, and other materials such as soot and grit. A vacuum truck is used for this purpose.
- Contaminated Gloves, Rags, Paper, Absorbents, etc.-Contaminated gloves, rags, paper, absorbent and other miscellaneous material such as personal protective equipment is generated by the facility as a result of the management of the oilfield wastes and daily operations.

SECTION V: EMERGENCY COORDINATORS/INITIAL REPONDERS (19.15.36.13.N.3, 19.15.36.13.N.9 & 19.15.36.13.N.10)

The Emergency Coordinator (EC) and Alternate Emergency Coordinators (AECs) are trained to respond in the event of a response situation. The EC and/or the AECs have the authority to call for outside assistance to respond to the emergency and are authorized to commit the facility's resources, equipment and personnel, as necessary, to carry out this Contingency Plan.

At least one EC or AEC is at the facility or on-call and capable of reaching the facility in time to effectively respond to potential response situations. Each EC and AEC is familiar with this Contingency Plan, the operations and activities at the facility, the location and characteristics of wastes handled, the location of facility records, the facility layout, and the location and use of response and spill control equipment.

Personnel discovering an emergency, such as an initial responder (first on-scene) may initiate the Contingency Plan prior to the arrival of the Emergency Coordinator(s).

Table A-1 presents the list of Titles, Names, Location, Address, and the office, mobile and home telephone numbers of the Emergency Response Coordinators. The list will be updated, as necessary. The division's environmental bureau will be promptly notified when any changes are made to the Coordinator(s) and/or their contact information.

TABLE A-1
EMERGENCY RESPONSE COORDINATORS

Title	Name	Location	Address	Telephone
Primary Emergency Coordinator	Alberta Pablo	Main Office	2 Miles N of Hwy. N36 Fruitland, NM 87416	(505) 632-1782 (O) (505) 860-4068 (C) (505) 947-8856 (H)
Alternate Emergency Coordinator	Steve Abeyta	Landfarm	#28 CR 4906 Bloomfield, NM 87413	(505) 632-1782 (O) (505) 860-3801 (C) (505) 632-8880 (H)

The duties of the EC(s) are to assess the situation and take steps necessary to protect human health and the environment. The EC(s) are responsible for the coordination of containment and recovery operations following a response situation. Responsibilities of the Emergency Coordinator(s) include:

- On-site and/or on-call availability;
- Familiarity with this Contingency Plan, the facility layout and operations, waste locations and characteristics, and location and format of records;
- Authority to commit necessary resources;
- Assess the possible or potential hazards to human health or the environment;
- Take the steps necessary to protect human health and the environment;
- Coordinate the response, containment and recovery operations;
- Activate the internal alarms and communication systems;
- Identification and characterization of the release;
- Prevention of spread or recurrence of the emergency;
- Monitor leaks, pressure buildup, gas generation, and rupture of pipes, valves, and other equipment;
- Notify outside emergency responders and state and local agencies;
- Based on the severity of the incident, supervise the evacuation plan, if law enforcement or emergency responders order an evacuation;
- Act as liaison between emergency and state agencies and facility personnel;
- Cleanup provisions;
- Maintenance of emergency equipment;
- Agency notification and coordination arrangements; and
- Incident record keeping.

SECTION VI: IMPLEMENTATION (19.15.36.13.N NMAC)

Any person discovering a situation which may require implementation of the Contingency Plan (e.g., fires, spills, etc.) shall immediately warn others working nearby and immediately notify the Emergency Response Coordinator(s).

The Contingency Plan shall be implemented immediately whenever there is a fire, explosion or release of contaminants or oilfield waste which could threaten fresh water, human health, safety or the environment. The Emergency Coordinator and alternate(s) must be prepared to respond in a technically-effective and time-efficient manner.

SECTION VII: EVACUATION PLAN (19.15.36.13.N.5 NMAC)

In the event that the Emergency Coordinator or initial responder (first on-scene) determines the need to evacuate areas of the facility s/he will use the telephone/PA system and/or two-way radios to signal all non-essential personnel and visitors to evacuate the area and assemble at the appropriate designated assembly point(s). In the event that an evacuation route and/or designated assembly point is blocked by fire/explosion/release or is unsafe, personnel will use one of the other evacuation routes and/or proceed to one of the other designated assembly points which is away from danger. Everyone shall remain at the designated assembly point(s) and await instructions from Emergency Coordinator.

The facility exits are clearly marked and employees are trained and aware of the potential escape routes and emergency evacuation/designated assembly points. Emergency Evacuation Route maps will be posted in locations throughout the facility showing available exits from the area and the direction to the emergency evacuation/designated assembly point(s). (Also refer to Addendum A-Emergency Evacuation Route). Everyone shall remain at the designated assembly point(s) and await instructions from the Emergency Coordinator or from law enforcement or emergency response personnel. The EC will determine if/when there is a need to evacuate the facility.

If the Emergency Coordinator believes that a threat to human health or the environment outside the facility exists, s/he will notify 911, who will notify all of the appropriate agencies. The Emergency Coordinator may recommend to 911 dispatch the public notification proceedings be initiated and will be available to help the appropriate officials decide if evacuation of the neighboring properties is necessary. The evacuation proceedings of neighboring properties will be initiated and coordinated by local law enforcement.

San Juan County has a "Reverse 911 Notification System" to allow rapid notification of the residents and other occupants of potentially affected areas. The Integrated Public Alert & Warning System (IPAWS) will become effective in 2014 which will be used to alert any cells phones within a specific area. Until IPAWS is implemented, residences that only have cellular phones will be notified through door-to-door contact by law enforcement.

Law enforcement will initiate door-to-door notification for nearby residences which have been identified as not having a landline or cellular phone. *During annual training, the EC will obtain information (address, whether or not the residence has a landline or cellular phone) from nearby residences. This information will be updated annually and maintained in this plan.* (See Appendix A-Nearby Residences)

SECTION VIII: IDENTIFICATION OF WASTE (19.15.36.13.N.6 & 19.15.36.13.N.10 NMAC)

Whenever there is a release, fire or explosion, the EC or initial responder must identify the character, source, amount and extent of any released materials and obtain other pertinent information related to the event as expeditiously as possible.

Oilfield Waste

Much of this information can be readily obtained from the facility operating logs (i.e. Material Entry Records and Tank Battery logs). These logs provide information on the type and volume of material brought into the facility and in the tanks located at the "tank battery" area. The logs are maintained at the facility and are updated each operating day.

Chemicals/Fuels/Oils used in the Workplace

The company has a Hazard Communication program in place.

Material Safety Data Sheets
MSDS are obtained for all chemicals/fuels/oils, etc. used on the facility. Material Safety Data Sheets (MSDS's) are written documents which are provided by manufacturers for each hazardous chemical or product that they produce, sell or distribute. Chemical manufacturers and suppliers are mandated by law to provide the MSDS's along with their product to the customer or user. The MSDS contains valuable information about the characteristics, safety and health hazards, protective measures and emergency response procedures for the hazardous chemical or product. Material Safety Data Sheets (MSDS) shall be maintained and kept readily accessible for any new chemicals (except consumer product chemicals) introduced into the workplace. The MSDS should be read and understood by personnel handling the material. The MSDS binder will be kept in the office. *An active inventory list of hazardous chemicals used/stored in the workplace will be compiled and updated as new chemicals are received. These lists will be referenced on the appropriate MSDS sheet and maintained for each job site.*

Container Labeling
Original Containers - Must be labeled to include the chemical or product name and the proper hazard warning to enable the user to immediately understand the material's primary health and/or physical hazard(s). Employers or employees shall not remove or deface labels on containers of hazardous chemicals. Labels will be legible and in English, however, for non-English speaking employees, the information will be relayed to them in their own language.

Secondary Containers – Must be labeled with the chemical name and hazard warning. A recommended practice is to also include the common name of the material such as paint thinner, window cleaner, etc.

Labeling Requirements:

- When two or more labels are required, they will be displayed next to each other;
- Labels will be on a background of contrasting color;
- Labels may not be obscured by markings or attachments;
- Labels must be durable, weather resistant, and able to withstand exposure for 30 days without deterioration or discoloration;
- Labels may be printed on or affixed to a tag when package surfaces are such that labels cannot be affixed.

SECTION IX: ASSESSMENT (19.15.36.13.N.10)

Whenever there is a release, fire or explosion, the EC or initial responder must immediately identify the character, exact source, amount & extent of the released material as follows:

- Character- Due to limited types of wastes and chemicals received and/or stored at the facility, the EC or initial responder will determine the nature of a released material by observation and review of facility records or manifests, container labels, product warning labels and MSDS sheets;
- Exact Source-the EC or initial responder will determine the exact source of the released materials by observation and review of facility records, visual inspection (when safe) and interviews with facility personnel. In the event of a H2S release of 10 ppm or greater, the H2S Alarm System will activate & will indicate which specific sensor has been triggered. Facility personnel can also use hand held gas monitors to determine where the H2S release is coming from;
- Amount-The EC or initial responder will determine the amount of the released materials by observation and review of facility records, taking into account the duration of the release, visual inspection of the impacted area (when safe), interviews with site personnel and/or taking a materials inventory;
- Extent-The EC or initial responder will determine the extent of the released materials by observation and review of facility records, taking into account the duration of the release, and visual inspection of the impacted area (when safe).

The EC or initial responder will also concurrently assess possible hazards to fresh water, human health, safety and/or the environment that may result from a release, fire or explosion by taking into account:

- The type of event;
- The magnitude of the event;
- The amount of released materials;
- The proximity to facility boundaries and surrounding neighbors;
- The potential for fires to spread or contaminant releases to reach groundwater or surface water;
- The progress being made by facility personnel in controlling the release, fire or explosion;
- The direct and indirect effects of the release, fire or explosion (e.g. the potential for any contaminated run-off or toxic, irritating or asphyxiating gases that may be generated)

SECTION X: NOTIFICATION (19.15.36.13.N.9. NMAC)

The facility office is equipped with a variety of fixed and mobile communications equipment (telephone/PA system, fax, cell phones, two-way radios, and computers) to ensure continuous communication with management, responders, authorities, and other interested parties.

In the event of any emergency which poses a hazard to human health and the environment or which could threaten fresh water, public health, safety or the environment, the Emergency Coordinator or initial responder (first person on-scene) will:

- Implement the Contingency Plan;
- Notify personnel and visitors on-site of the situation through the Telephone/PA systems, two-way radios and/or cell phones;
- Supervise the response following the procedures in the Contingency Plan;
- Notify NMOCD and the appropriate emergency, state and local agencies as in Table A-2.

Table A-2 lists emergency agencies and their telephone numbers that may be called in the event of a emergency requiring outside assistance.

TABLE A-2

External Emergency Notification List

Department or Agency	Phone Number	Initial Criteria for Contact
National Response Center	(505) 334-1180	Release of a reportable quantity of contaminants to the environment.
Chemtrec	(800) 262-8200	Hazardous materials & dispatch of HAZMAT response units.
Sheriff Department	911 (505) 334-6622	*Notify of an emergency.
NMOCD-District Office (Aztec) NMOCD-Bureau Chief	(505) 334-6178 (505) 476-3440	Notify if any releases, fire or explosions. Notify if spill/release detrimental to water.
Local Law Enforcement Non-Emergency Dispatch	911 (505) 334-6622	*Notify of an emergency.
Blanco Fire Department	911 (505) 632-8135	*Notify of an emergency.
Emergency Dispatch San Juan Regional Medical Center	911 (505) 609-2000	*Notify of an emergency.

When 911 dispatch is contacted they will notify all of the appropriate agencies.

SECTION XI: CONTROL / RESPONSE / CONTAINMENT (19.15.36.13.N.1, 19.15.36.13.N.6, 19.15.36.13.N.9.a, 19.15.36.13.N.10, 19.15.36.13.N.11 & 19.15.36.13.N.12 NMAC)

Control, response and containment actions to be taken in specific situations are described in this section. Incidents such as a fire, explosion or release of contaminants that could threaten human health or the environment are expeditiously reported to the Emergency Coordinator. Immediately upon discovery of a emergency, the first duty of facility personnel is to ensure safety and to expeditiously take actions to minimize hazards to fresh water, public health, safety and/or the environment.

Quick response to a spill, release, fire or explosion is the primary method by which recurrence or spread can be prevented. Specific actions to prevent the recurrence or spread of spills, releases, fires or explosions are detailed below.

A. Release to Soil & Ground or Surface Waters (Spills)

In the event of a release to the ground, ground water or surface water-facility personnel will immediately take all necessary measures and the following actions to minimize hazards to soil, ground or surface waters, public health, safety and/or the environment:

1. Identify Source of Release
    A. Leaking container
    B. Leaking tank
    C. Ruptured tank
    D. Heavy Equipment fluid leak (oil or transmission fluid, etc.)

2. Actions and Mechanisms to Contain/Control the Release
    A. Leaking Container-Personnel will immediately use absorbent materials around the leaking container in sufficient quantity to absorb and contain/control the leaking material. Personnel will then pack-off the leaking container or transfer the remaining contents of the leaking container to a clean compatible empty drum/container.
    B. Leaking Tank-Personnel will immediately attempt to shut-off the leak and use absorbent materials; shovels and/or heavy equipment (to construct earthen berms) to contain/control the released material. Personnel will then fix the leaking component. Company owned vacuum truck(s) may also be utilized to clean-up the spilled material.
    C. Ruptured Tank-Personnel will utilize heavy equipment to construct earthen berms to contain/control the released material and will then transfer remaining waste into another tank or utilize company owned vacuum or water truck(s) to temporarily hold the waste.
    D. Heavy Equipment fluid leak-Personnel will immediately utilize a drip or oil recovery pan to contain/control the leak, shut-off and correct the source of leak or take equipment to the mechanic for repair.

Notes:

Containers are stored in the Processing Area building which has concrete floors that have been sealed with a coating designed to resist oxidizing agents.

Above ground tanks are located in the Processing Area which has an impermeable secondary containment system (liners & berms), which will contain a volume of at least 1/3 greater than the total volume of the largest tank or all interconnected tanks.

B. Release to Air

In the event of a release of H2S gas-facility personnel will immediately take all necessary measures and the following actions to minimize hazards to public health, safety and/or the environment (also refer to the company H2S Contingency Plan):

1. Identify Source of Release

   A. Tanks-waste stored in tanks waiting to be processed. H2S may be released when waste in tank is agitated, circulated, pumped, flowed or swabbed.

2. Mechanisms to Control H2S Release

   A. Facility personnel will:
      - Refer to the company H2S Contingency Plan;
      - Don appropriate PPE including Respiratory Protection (respiratory protection will be worn by persons previously examined by a physician, fit tested and specifically trained);
      - Monitor H2S levels with personal or hand held gas monitor;
      - Add H2S treating agent to tank(s) to remove H2S gases; and
      - Monitoring for leaks, pressure build-up, gas generation and ruptured valves and eliminate any potential ignition sources to prevent the generation of sulfur dioxide.

C. Explosion

In the event of an explosion, facility personnel will immediately take all necessary measures and the following actions to minimize hazards to fresh water, public health, safety and/or the environment:

1. Identify Source of Explosion

2. Mechanisms to Contain/Control Explosion

   A. Personnel will immediately evacuate the area near the explosion and head to the nearest designated assembly point. In the event that a primary evacuation route and/or designated assembly point is blocked by fire/explosion/release or is unsafe, personnel will use the nearest alternate evacuation route and/or alternate designated assembly point which is away from danger. Personnel shall remain at the designated assembly point(s) and await instructions from Emergency Coordinator;
   B. Personnel will notify the Emergency Coordinator (EC) of the explosion;
   C. The EC will immediately:
      - Notify personnel to evacuate the facility whenever there is the potential for another explosion to occur, the explosion causes a rapidly spreading and/or uncontrollable fire or if there is a potential to release toxic fumes;
      - Contact 911 dispatch and if necessary, notify the National Response Center;
      - The EC shall recommend to 911 dispatch that public notification proceedings be initiated and coordinated by law enforcement if the explosion has caused a rapidly spreading and/or uncontrollable fire, if there is a potential for another explosion to occur or if there is a potential for a off-site release of toxic fumes or gases.
   D. If evacuation of the facility is not necessary and facility personnel (who have been appropriately trained) can safely and effectively perform corrective actions, the following steps are to be taken under the authorization of the EC:
      - Don PPE including Respiratory Protection (if any noxious fumes or odors are noted or if there is the suspicion of toxic gases or mists). Respiratory protection will be worn by persons previously examined by a physician, fit tested and specifically trained;
      - Secure the area to prevent unauthorized entry;
      - Cease process and operations; shut-down equipment, turn off feed lines, turn off auxiliary fuel lines and turn off power supply to the affected area;
      - Initiate measures stop the source of explosion, monitor for leaks, pressure buildup, gas generation, ruptured valves, pipes or other equipment as appropriate;
      - If explosion has occurred where liquids are stored and a spill occurs personnel will commence spill containment/control measures as identified in Section XI-A. Release to Soil & Ground or Surface Waters of this plan.

D. Fires

In the event of a fire, facility personnel will immediately take all necessary measures and the following actions to minimize hazards to fresh water, public health, safety and/or the environment:

1. Identify as a Small or Large Fire:

   A. Small Fire would be a fire which:
      - Can be immediately extinguished and brought under control;
      - Will not cause undue threat to the safety of personnel; and
      - Does not require the assistance of outside emergency response personnel.

   B. Large Fire would be a fire which:
      - Cannot be immediately extinguished or brought under control;
      - Has the potential to become uncontrollable;
      - May cause the release of toxic fumes;
      - May spread and ignite waste materials;
      - Danger exists that an explosion may occur; or an explosion has occurred; or
      - May spread off-site or cause personal injury.

2. Mechanisms to Contain/Control and/or Extinguish Fire:

   A. Small Fire, facility personnel (who have been trained) will immediately :
      - Don PPE;
      - Utilize fire extinguisher(s) to put the fire out before it spreads;
      - Utilize heavy equipment to isolate the fire from biopiles by constructing earthen berms to keep fire from reaching biopile(s) or by relocating biopile(s) away from fire;

   B. Large Fire
      - Facility personnel will immediately evacuate the area near the fire and head to the nearest designated assembly point. In the event that a primary evacuation route and/or designated assembly point is blocked by fire/explosion/release or is unsafe, personnel will use the nearest alternate evacuation route and/or alternate designated assembly point which is away from danger. Personnel shall remain at the designated assembly point(s) and await instructions from Emergency Coordinator.
      - The EC will immediately:
        - Notify personnel to evacuate the facility whenever a fire has become uncontrollable, is rapidly spreading and/or has the potential to cause an explosion;
        - Contact 911 dispatch to notify of the emergency;
        - If there is a potential for the fire to spread off-site or release toxic fumes off-site, the EC shall recommend to 911 dispatch that public notification proceedings be initiated and coordinated by law enforcement.
      - If evacuation of the facility is not necessary and facility personnel (who have been appropriately trained) can safely and effectively perform corrective actions, the following steps are to be taken under the authorization of the EC:
        - Don PPE including Respiratory Protection (if any noxious fumes or odors are noted or if there is the suspicion of toxic gases or mists). Respiratory protection will be worn by persons previously examined by a physician, fit tested and specifically trained;
        - Secure the area to prevent unauthorized entry;
        - Cease process and operations; shut-down equipment, turn off feed lines, turn off auxiliary fuel lines and turn off power supply to the affected area;
        - Monitor for leaks, pressure buildup, gas generation, ruptured valves, pipes or other equipment as appropriate;
        - Utilize fire extinguisher(s) to prevent fire from spreading;
        - Utilize heavy equipment to isolate the fire from biopiles by constructing earthen berms to keep fire from reaching biopile(s) or by relocating biopile(s) away from fire.

SECTION XII: POST EMERGENCY STORAGE/ REMEDIATION / DISPOSAL (19.15.36.13.N.6 & 19.15.36.13.N.12 NMAC)

Immediately after an emergency, facility personnel (who have been appropriately trained) will perform the following treatment, storage, remediation and disposal actions for recovered oilfield waste or other materials resulting from a release, fire or explosion. These actions will be completed under the authorization and direction of the Emergency Coordinator.

1. Spent material/waste resulting from container, fire or explosion containment/control actions (i.e. absorbents, fire extinguisher chemicals):

   Non-Hazardous waste (determined by container labeling, MSDS sheets or by applying generator or process knowledge):

   - Facility personnel will place spent materials into a waste bin/container-different materials will be kept in separate containers;
   - Facility personnel will properly label the waste bin/container-will include a date and description of the non-hazardous waste;
   - Facility personnel will place the waste bin/container in the Processing Area for storage;
   - Waste will be transported off-site to an appropriate disposal facility.

   Listed Hazardous waste (determined by container labeling and/or MSDS sheets):

   - Facility personnel will place the spent materials into a hazardous waste approved waste bin/container-different materials will be kept in separate containers;
   - Facility personnel will label the waste bin/container-will include a date, description of the hazardous waste & proper hazard warnings;
   - Facility personnel will place the waste bin/container in the Processing Area for storage;
   - Facility personnel will immediately contact an outside hazardous waste contractor to pick-up and dispose of the waste accordingly.

2. RCRA Exempt waste mixed with RCRA Exempt waste (determined by facility records and/or by applying generator or process knowledge):

   - Will be segregated and contained in tanks, waste bin/containers or by use of earthen berms;
   - Hydrocarbon impacted solids-as described in Section IV-Waste Descriptions-will be placed into a biopile and remediated on-site, upon meeting paint filter and chloride content testing;
   - Hydrocarbon impacted liquids-as described in Section IV-Waste Descriptions-will be solidified to pass the paint filter testing, placed into a biopile and remediated on-site, upon meeting chloride content testing;
   - Waste not able to meet chloride content requirements will be placed into a tank or waste bin/container and stored in the Processing Area until it is transported off-site with the proper manifest C-138 form by an authorized C-133 hauler (required for liquid waste only) to a permitted Surface Waste Management Facility for disposal.

3. RCRA Exempt waste mixed with RCRA Non-Exempt waste (determined by testing for EPA SW-846 standards for hazardous waste characteristics analysis):

   - Will be segregated and contained in tanks, waste bin/containers, or by use of earthen berms;
   - Will be tested by EPA SW-846 standards for hazardous waste characteristics (Ignitability, Corrosivity, Reactivity & Toxicity) to determine if the waste retains its exempt status or becomes hazardous waste;
   - Hydrocarbon impacted solids NOT exhibiting hazardous characteristics (retaining exempt status) will be placed into a biopile and remediated on-site, upon meeting paint filter and chloride content testing.
   - Hydrocarbon impacted liquids NOT exhibiting hazardous characteristics (retaining exempt status) will be solidified to pass the paint filter test, placed into a biopile and remediated on-site, upon meeting chloride content testing;
   - Waste containing materials other than petroleum hydrocarbons which is not characteristically hazardous will be contained in tanks or waste bin/containers and stored in the Processing Area until it is transported off-site with the proper manifest C-138 form by an authorized C-133 hauler (required for liquid waste only) to a permitted Surface Waste Management facility for disposal or may be disposed of at the local landfill after results have been submitted to the division and approval is obtained in accordance with 19.15.35 NMAC;
   - Waste exhibiting hazardous characteristic loses its exempt status and must be handled as hazardous waste. The waste will be placed in a hazardous waste approved bin/container and stored in the Processing Area. Facility personnel will immediately contact an outside hazardous waste contractor to pick-up and dispose of the waste accordingly.

4. RCRA Exempt waste mixed with Non-Hazardous waste (determined by container labeling, MSDS sheets and/or by applying generator or process knowledge):

   - Will be segregated and contained in tanks, waste bin/containers, or by use of earthen berms;
   - Hydrocarbon impacted solids will be placed into a biopile and remediated on-site, upon meeting paint filter and chloride content testing.
   - Hydrocarbon impacted liquids will be solidified to pass the paint filter test, placed into a biopile and remediated on-site, upon meeting chloride content testing;
   - Waste containing materials other than petroleum hydrocarbons will be contained in waste bin/containers and stored in the Processing Area until it is transported off-site with the proper manifest C-138 form by an authorized C-133 hauler (required for liquid waste only) to a permitted Surface Waste Management facility for disposal or may be disposed of at the local landfill after results have been submitted to the division and approval is obtained in accordance with 19.15.35 NMAC;

5. RCRA Exempt waste mixed with a Listed Hazardous waste (determined by container labeling, MSDS sheets):

   - Will be segregated and placed in a hazardous waste approved bin/container;
   - Facility personnel will label the waste bin/container-will include a date, description of the hazardous waste and proper hazard warnings:
   - Facility personnel will place the bin/containers in the Processing Area for storage;
   - Facility personnel will immediately contact an outside hazardous waste contractor to pick-up and dispose of the waste accordingly.

SECTION XIII: INCOMPATIBLE WASTE (19.15.36.13.N.13 NMAC)

Immediately after an emergency, the Emergency Coordinator will ensure that oilfield waste does not come into contact with any released materials which may be incompatible and will make arrangements for the proper storage and disposal of the materials as follows:

- Ensuring additional materials are not allowed into the facility until s/he has determined that the hazards posed by the response event have been fully remedied;
- Segregate and contain the incompatible materials by:
  - Placing into waste bin/containers;
  - Instruct facility personnel, when necessary, to construct earthen berms to contain or direct incompatible materials away from the biopiles;
  - Instruct facility personnel, when necessary, to relocate biopile(s) upstream to prevent incompatible materials from coming into contact with it;
- The incompatible materials will be tested according to EPA SW-846 standards for hazardous waste characteristics (Ignitability, Corrosivity, Reactivity & Toxicity);
- Materials NOT exhibiting hazardous characteristics will be stored (waste bin/containers) in the Processing Area until it is transported off-site for disposal at a local landfill after results have been submitted to the division and approval is obtained in accordance with 19.15.35 NMAC;
- Materials exhibiting hazardous characteristics will be stored (hazardous waste approved bin/containers) in the Processing Area. Facility personnel will immediately contact a hazardous waste contractor to pick-up and dispose of the waste accordingly.

SECTION XIV: EXPECTED CONTAMINANTS & EXPECTED MEDIA CONTAMINATED (19.15.36.13.N.6 NMAC)

Expected Contaminants Include:

- Total Petroleum Hydrocarbons (TPH)
- Benzene
- BTEX
- Gas Range Organics (GRO)
- Diesel Range Organics (DRO)
- Chlorides
- Heavy Equipment oil/transmission leaks, etc.
- Diesel Fuel
- Acids
- H2S

Expected media contaminated includes:

- Soil
- Ground Water
- Surface Water
- Air

SECTION XV: INCIDENT INVESTIGATION (19.15.36.13.N.6 NMAC)

Investigation during an incident will assist the Emergency Coordinator and/or initial responder with determining the proper response actions to be initiated during the incident.

During an incident, the Emergency Coordinator(s) and/or initial responder will:

- Immediately identify the character, source, amount and extent of the released materials as described in SECTION XI of this plan;
- Assess possible hazards to human health or the environment as described in SECTION XI of this plan;
- Provide for the immediate containment/control, response and remediation or disposal actions for the expected contaminants and expected media contaminated as described in SECTIONS XI, XII, XIII & IV of this plan;

Investigation following an incident will assist the Emergency Coordinator with determining the event and conditions which led to the incident so that corrective and preventative actions can be developed to prevent a reoccurrence.

After an incident has occurred, the Emergency Coordinator will:

- Interview facility personnel and witnesses;
- Establish a timeline for the events and conditions immediately before and after the event;
- Determine the critical factors that led to the incident;
- Gather physical evidence and facts (sketches, diagrams, maps and photographs):
- Interview facility personnel and witnesses;
- Establish a timeline for the events and conditions immediately before and after the event;
- Determine the critical factors that led to the incident;
- Review and analyzing data;
- Determine underlying cause(s) and identifying corrective and preventative measures; and
- Complete incident report with supporting documentation and preventative measures to prevent a similar incident.

SECTION XVI: EMERGENCY EQUIPMENT (19.15.36.13.N.4 NMAC) - Table A-3

EQUIPMENT	AMOUNT/LOCATION(S)	CAPABILITIES/DESCRIPTION
ommunication		
elephone System	Office	Telephones w/loudspeaker/paging systems for internal and external communication.
Cell Phones	Various	Key personnel are provided with cell phones.
2 Way Radio(s)	Office/Processing Area/ Portable Emergency Trailer/ Heavy Equipment	Provides the ability for personnel, truck drivers & equipment operators to communicate at all times.
Alarm System		
H2S Alarm system	Processing Area Building-Storage Room	Activated when H2S sensors detect H2S levels at **10 ppm** or greater.
Smart Sensors	Front Entrance, centrifuge room, offloading area & Processing Area	Fixed point sensors monitor H2S levels in ambient air & triggered when H2S is detected at 10 ppm or greater.
Control Panel(s)	Centrifuge Control Room & Offloading Area	Monitors status of the alarm system and indicates which sensor has been triggered.
Personal Protective Equipment (PPE)		
Gloves	Portable Emergency Trailer & Office	Cotton, leather, chemical resistant.
Eye Protection		Safety glasses, goggles, face shields.
Hearing Protection		Ear plugs.
Head Protection		Hard Hat.
Respiratory Protection		
10 Minute Escape Pack	3-Processing Area 2-Office 2-Portable Emergency Trailer	Provides 10 minutes of compressed air-allows user to escape from hazardous atmosphere.
30 Minute Self Contained Breathing pparatus (SCBA)	1-Processing Area 2-Portable Emergency Trailer	Provides 30 minutes of supplied air-respiratory protection in hazardous environments & may be used for entrance into and/or escape from atmospheres that are immediately dangerous to life or health (IDLH).
Additional 30 Minute SCBA Air Tanks	1-Processing Area 2-Portable Emergency Trailer	
Gas Monitors Portable Four Gas Monitor (OSHA/ANSI approved) which simultaneously detects the presence of combustible gas, oxygen (O2), carbon monoxide (CO), and hydrogen sulfide (H2S)	1-Office 1-Emergency Coordinator Provided to all personnel to use while working on the facility (allows personnel assigned to various activities in this plan to have access to a gas monitor at all times)	**H2S levels detected at 10 ppm**-vibrates, buzzer sounds alternating low/high pitch alarm, "WARNING" light flashes. **H2S levels detected at 20 ppm**-vibrates, buzzer sounds *faster* alternating low/high pitch alarm, "WARNING" light flashes. **TWA (Time Weighted Average) or STEL (Short-term Exposure Limit)**-if concentrations of H2S rise above TWA or STEL-vibrates, buzzer sounds *faster* alternating low/high pitch alarm, "TWA" or "STEL" warning light flashes. **H2S Levels detected at 30 ppm or greater**-vibrates, buzzer sounds faster alternating low/high pitch alarm, "OVER" warning light flashes.
Fire Extinguisher(s)	1-Office, 3-Processing Area, 2-Portable Emergency Trailer	ABC type universal system effective on paper, wood and electrical fires as well as solvents.
Eye Wash Stations	Office, Processing Area	Provides quick flushing of eyes that have been exposed to chemicals.
Emergency Shower	Processing Area	Provides quick washing of body which has been exposed to injurious chemicals.
First Aid Kits (OSHA approved)	Office, Processing Area	To provide immediate care until medical aid arrives.
Sorbent Materials	Processing Area, Portable Emergency Trailer	Soaks up leaked/spilled materials.
aste containers	Processing Area	Containers (drums/barrels) used to store waste from leaking container or to store emergency clean-up materials.
Shovels, Rakes, Squeegees, Brooms	Processing Area, Portable Emergency Trailer	Equipment used to clean-up spills & residue

SECTION XVII: COORDINATION ARRANGEMENTS (19.15.36.13.N.2 NMAC)

The Primary Emergency Coordinator will offer an annual facility walk-through for contractors, state and local law enforcement and emergency response teams to familiarize each agency with:

- The layout and function of the facility;
- The materials handled and associated hazards;
- The locations where facility personnel normally work;
- The entrances, roadways within and possible evacuation routes of the facility; and

During the walk through the Emergency Coordinator(s) will provide copies of the most recent plan and hold a review and discuss coordination of emergency services.

SECTION XVIII: AVAILABILITY AND REVISION OF THE CONTINGENCY PLAN (19.15.36.13.N.7, 19.15.36.13.N.8, 19.15.36.13.N.14 NMAC)

This Contingency Plan will be updated and/or modified any time a subject addressed in the plan materially changes, when there are changes to the facility that may affect the plan, or as necessary to protect public safety.

Copies of this plan and any revisions/modifications will be provided to the individuals listed in Appendix B. In addition, this Contingency Plan is made available to the Managers, Supervisors and Emergency Response personnel as well as to employees working at the facility.

The Emergency Coordinator may amend the plan during an emergency, as necessary, to protect fresh water, public health, safety or the environment.

The Contingency Plan will be reviewed and updated within 5 days whenever:

- The facility's Permit is revised or modified;
- The list or location of emergency equipment changes;
- The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fires, explosions, or releases of contaminants, or changes The response necessary in an emergency;
- The Contingency Plan fails when implemented in an emergency; or
- The names, addresses, or phone numbers of Emergency Coordinators change (NMOCD will also be promptly notified anytime there is a change with the Emergency Coordinator and/or their contact information)

APPENDIX A
Notification of Nearby Residences

The following is a list of nearby residences and establishes what type of communication the residence uses (Landline * Cellular Phone * No Phone)

NAME	ADDRESS (Description of Physical Location)	Landline #	Cell Phone #	No Phone
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐

APPENDIX B

Contingency Plan Distribution List

New Mexico Oil Conservation Division-Santa Fe
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: (505) 476-3480
Fax: (505) 476-3462

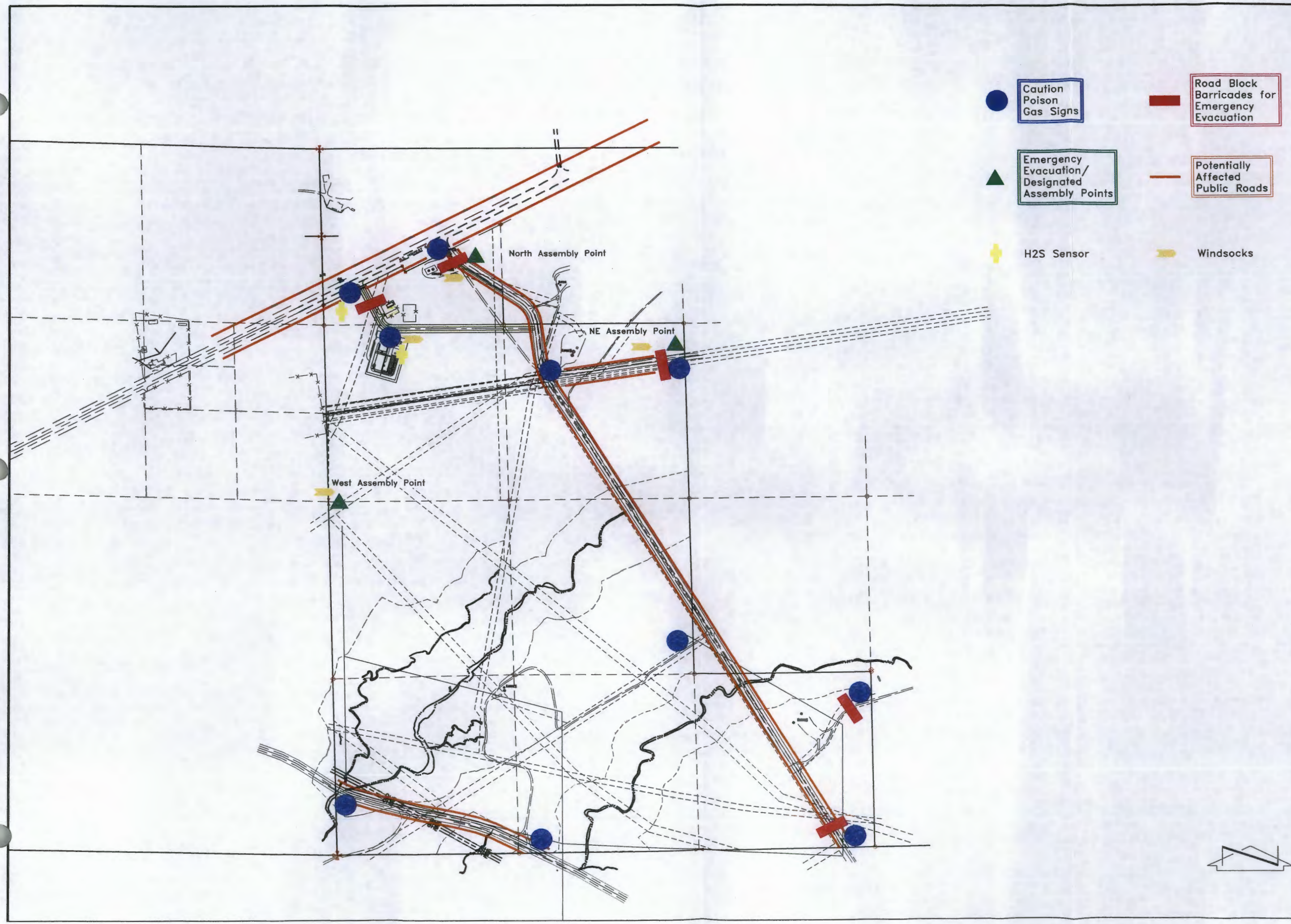
New Mexico Oil Conservation Division-District 3 Office
1000 Rio Brazos Road
Aztec, NM 87410
Phone: (505) 334-6178
Fax: (505) 334-6170

New Mexico State Emergency Response Committee
P.O. Box 27111 (Mail)
13 Bataan Blvd. (Overnight Delivery)
Santa Fe, NM 87502
Phone: (505) 476-0617
Fax: (505) 476-9695

San Juan County Emergency Management
209 S. Oliver
Aztec, NM 87410
Phone: (505) 334-1180
Fax: (505) 334-0915

San Juan County Sheriff's Office
211 S. Oliver
Aztec, NM 87410
Phone: (505) 334-6107

Blanco Fire Department
7372 Hwy. 64
Blanco, NM 87412
Phone: (505) 632-8135



BY	REVISION	DATE

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909 W. APACHE - FARMINGTON, NEW MEXICO 87401 - (505)327-3303

ADDENDUM "A" EMERGENCY EVACUATION ROUTES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
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PROJ. 09467
SCALE:N.T.S.
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ADDENDUM B

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☐ Final Report

Name of Company	Contact
Address	Telephone No.
Facility Name	Facility Type

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Source of Release	Date and Hour of Occurrence	Date and Hour of Discovery
Was Immediate Notice Given? ☐ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☐ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Describe Area Affected and Cleanup Action Taken.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name:	Approved by Environmental Specialist:	
Title:	Approval Date:	Expiration Date:
E-mail Address:	Conditions of Approval:	Attached ☐
Date: Phone:		

ttach Additional Sheets If Necessary

Run On/Off Water Control Plan
(19.15.36.8.C.11 & 19.15.36.13.M)

1.0 PURPOSE

This purpose of this plan is to comply with provisions to control run-on water onto the site and run-off water from the site that complies with the requirements of 19.15.36.13.M NMAC. Run on/off control systems shall prevent flow onto the facility's *active* portions and prevent flow from leaving the facility during the peak discharge from a 25 year storm.

2.0 RUN-ON CONTROL MEASURES

Run-on control measures will be implemented to prevent uncontaminated surface flows from entering the facilities *active* portions by diverting run-on waters around the facility by use of v-ditches, earthen berms or soil swales (Sheet 5 of 15-Retention Dikes & Details-Cross Section E/5-Detail of Earth Berms for Cells & Perimeter, Sheet 15 of 15-Run-On/Off Control Plan & Cell Berm Profiles-Sheets 1-16).

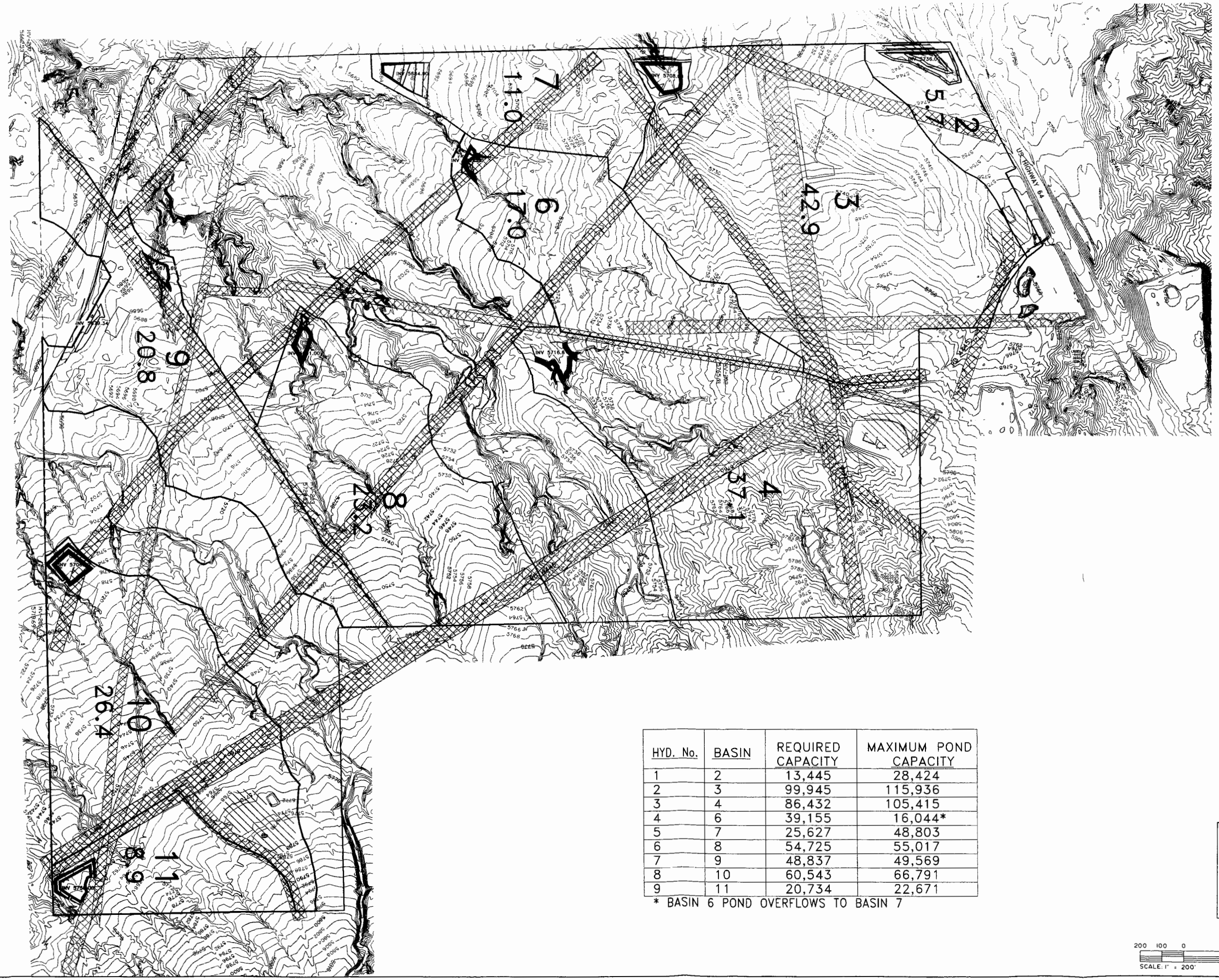
3.0 RUN-OFF CONTROL MEASURES

Run-off control measures will be implemented to prevent discharging potentially contaminated pollutants from the facility's *active* portions to the waters of the state or United States that violates state water quality standards by:

- Installing v-ditches and earth berms prior to site disturbance and construction activities (Sheet 5 of 15-Retention Dikes & Details Sheet 15 of 15-Run-On/Off Control Plan & Cell Berm Profiles-Sheets 1-16);
- Installing silt fences, vegetated buffers, hay or straw bales, slash buffers, mulching, check dams, or compost filter socks for erosion and sediment controls;
- Installing surface water control features including diversion berms;
- Installing earthen berms around each of the active "treatment" landfarm cells; (Sheet 5 of 15-Retention Dikes and Details-Cross Section E/5-Detail of Earth Berms for Cells & Perimeter, Sheet 6 of 15-Cell Map & Cell Berm Profiles-Sheets 1-16);
- Installing retention pond/dikes within each of the bermed active "treatment" cells to contain run-off from the individual "treatment" cells (Sheet 6 of 15-Cell Map & Cell Berm Profiles-Sheets 1-16);
- Installing retention ponds/dikes in specific areas of the facility designed to contain run-off from a 25 year storm event (Sheet 4 of 15-Drainage Basins, Sheet 6 of 15-Cell Map & Sheet 15 of 15-Run-On/Off Control Plan);
- Install a liquids collection system (liner and earth berm) in the "Processing Area" areas to capture stormwater and process wastewater (Sheet C105-Liner Grading & Drainage);
- Storing the manure (used in the bioremediation process) pile(s) in a bermed area (secondary containment) within a bermed cell to prevent run-off (Sheet 5 of 15-Cross Section H/5 Manure Stockpile Containment Detail);
- Storing chemicals in covered and/or lined areas (Sheet C104,-Proposed Site Plan-Hydrofluoric Acid Totes Containment; Elevation; Schematic of Chemical Feed Injection Pump with H2S Breaker Solution Tote, Sheet C107-Foundation Plan-Cross Section 4-Secondary Containment Detail);
- Containing the diesel fuel tank within a metal stock tank in an earthen bermed (secondary containment) vehicle fueling area (Sheet C103-Improvement Plan-Location of Fuel Tank, Sheet C109-Piping Plan-Fueling Tank and Containment);
- Captured stormwater will be transported off-site for disposal to an appropriate facility with the proper manifest forms.

4.0 BEST MANAGEMENT PRACTICES (BMPs)

- Divert clean stormwater (e.g. roof run-off) away from *contaminated* areas and into stormwater retention ponds/dikes;
- Use on-site earth berms and retention ponds/dikes to capture run-off waters;
- Inspect the site often to ensure diversion, retention and erosion control measures are maintained and working properly;
- Store chemicals in areas that have a roof or cover;
- Complete fueling operations, including the transfer of fuel from tanker trucks to the diesel fuel tank, in the earthen bermed fueling area.
- Develop a routine yard and equipment maintenance program to considerably reduce the potential for discharge of sediment to the retention ponds/dikes (wastewater collection and recycling systems) (Refer to the company's Inspection & Maintenance Plan)
- Preserving as much of the natural vegetation as possible;
- Avoid clearing vegetation from sites during snowmelt or heavy rains;



HYD. No.	BASIN	REQUIRED CAPACITY	MAXIMUM POND CAPACITY
1	2	13,445	28,424
2	3	99,945	115,936
3	4	86,432	105,415
4	6	39,155	16,044*
5	7	25,627	48,803
6	8	54,725	55,017
7	9	48,837	49,569
8	10	60,543	66,791
9	11	20,734	22,671

* BASIN 6 POND OVERFLOWS TO BASIN 7

200 100 0 200 400 600
SCALE: 1" = 200'

DATE	REVISION	BY

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DRAINAGE BASINS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
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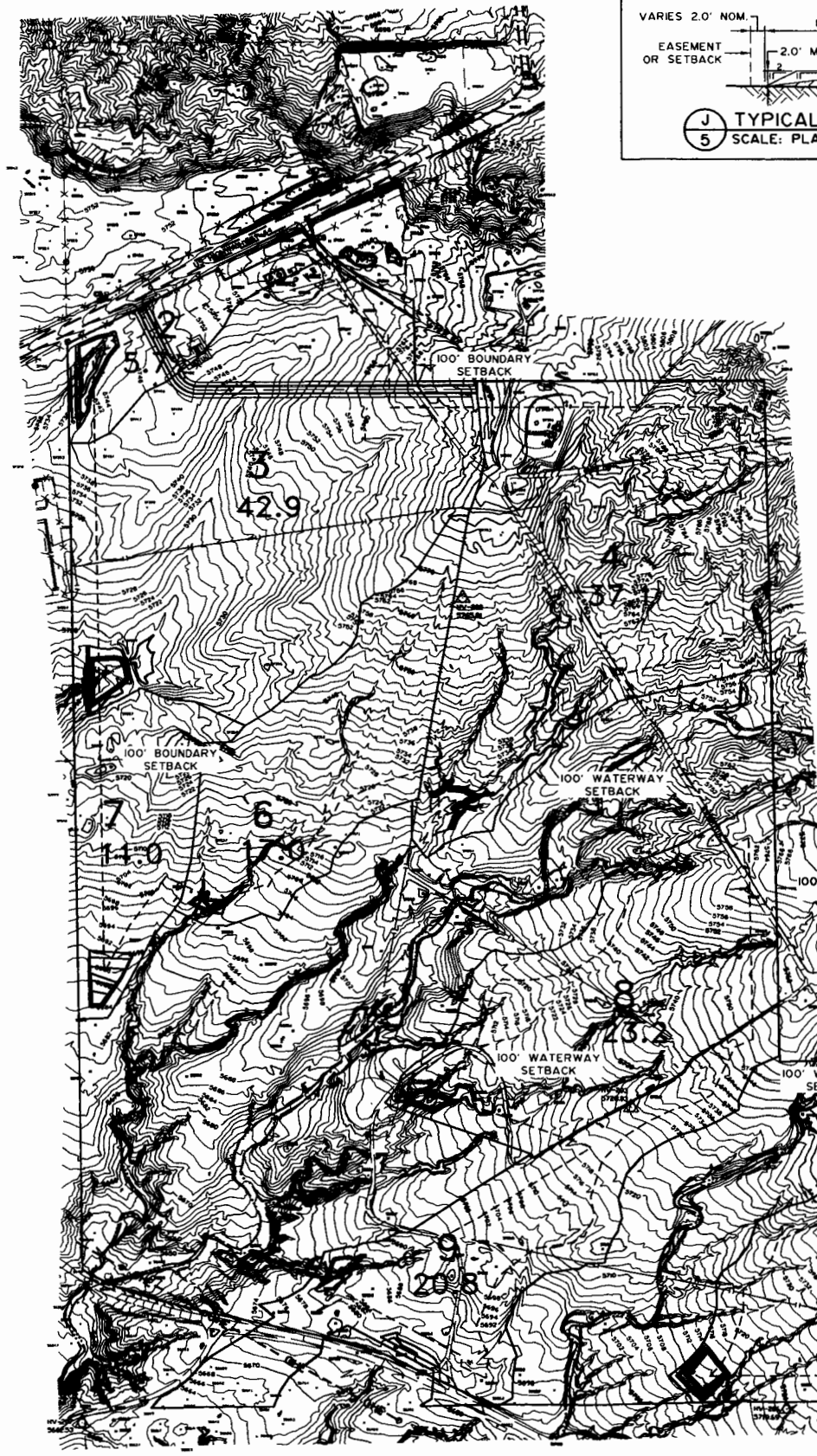
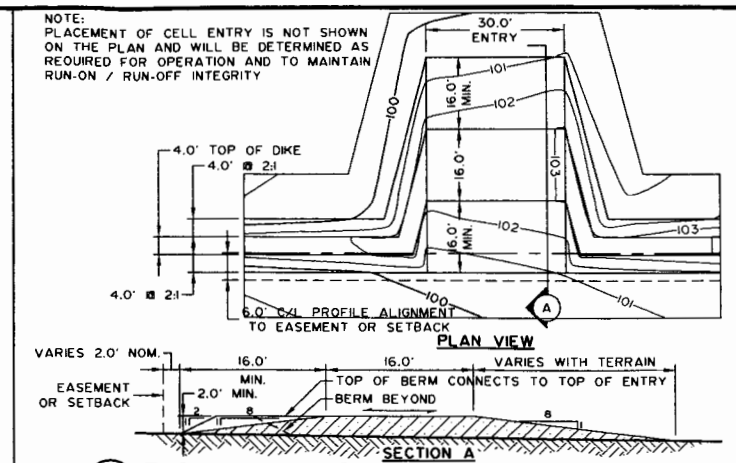
NOTES:

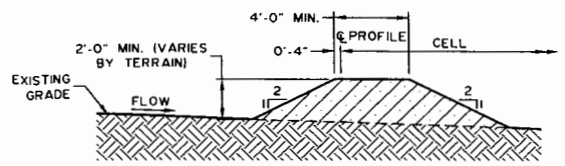
THE DIKES WERE DESIGNED TO RETAIN THE 25 YEAR 1 HOUR STORM.
EACH DIKE HAS 1 FOOT OF FREEBOARD AT THE SPILLWAY OVERFLOW SECTION.
BERMS AND V-DITCHES THAT PROTECT WATERWAYS WILL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR REMEDIATION OF SOILS.
DIKES WILL BE CONSTRUCTED WHEN THE CELLS THAT CONTRIBUTE STORMWATER RUNOFF TO THAT DIKE BECOME ACTIVE.
GATES WILL BE INSTALLED AS NEEDED.
EARTHWORK: PLACE AND COMPACT FILL IN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED DENSITIES THROUGHOUT THE LIFT.
FILL LIFTS SHALL NOT EXCEED 8 INCHES.
MATERIAL SHALL HAVE A MINIMUM OF 95% COMPACTION.



NOTE:
PLACEMENT OF CELL ENTRY IS NOT SHOWN ON THE PLAN AND WILL BE DETERMINED AS REQUIRED FOR OPERATION AND TO MAINTAIN RUN-ON / RUN-OFF INTEGRITY

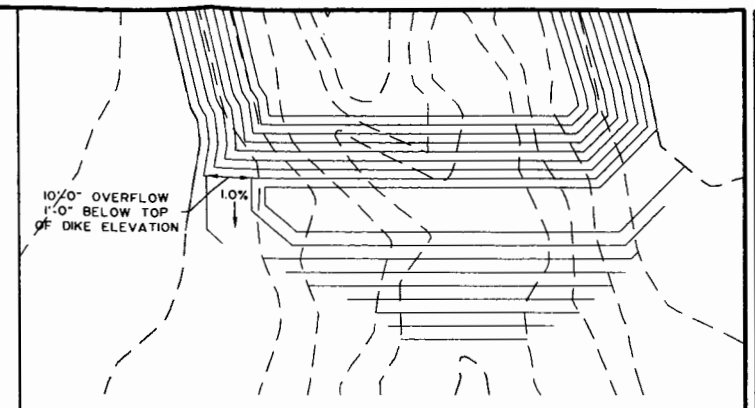


J / 5 TYPICAL CELL ENTRY DETAIL
SCALE: PLAN 1" = 20' - SECTION 1"=10'



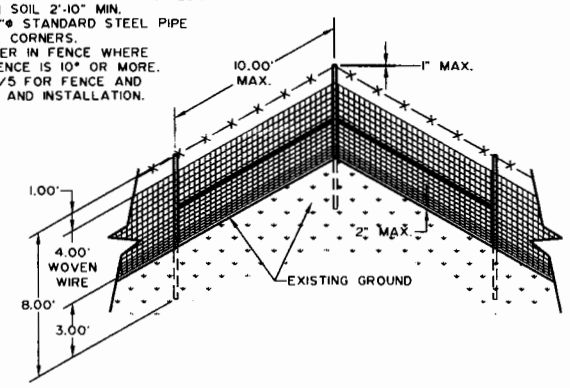
EARTH BERM WITHOUT DITCH
CREATE BERM BY DUMPING MATERIAL ON EXISTING SURFACE TO INTERCEPT RUNOFF WHEN NATURAL GRADES ARE PRESENT TO ENSURE DRAINAGE TO RETENTION AREA.

E / 5 DETAIL OF EARTH BERM FOR CELLS
SCALE 1" = 5'

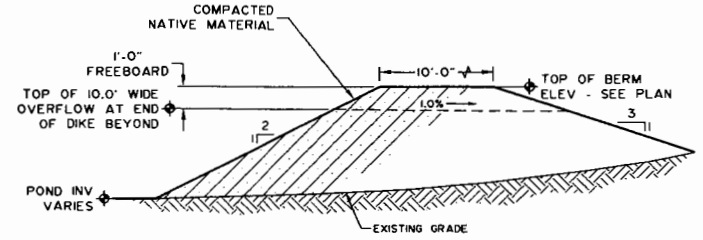


A / 5 TYPICAL OVERFLOW PLAN
SCALE: 1" = 20'

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL CORNERS.
3. INSTALL CORNER IN FENCE WHERE ANGULAR DIFFERENCE IS 10° OR MORE.
4. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.



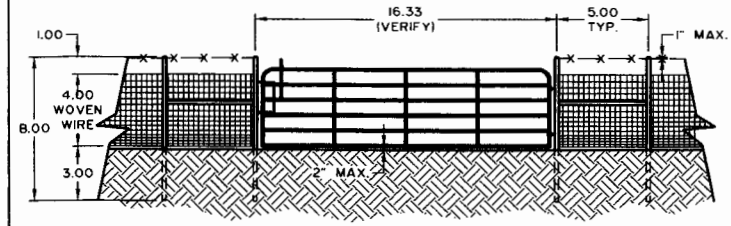
F / 5 FIELD FENCE CORNER POST DETAIL
SCALE 1" = 5'



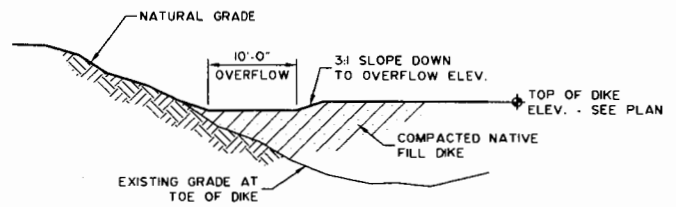
NOTES:
1. DESIGN STORM FOR POND SIZING: 25 YEAR, 1 HOUR
2. MINIMUM DEPTH OF FREEBOARD: 1 FOOT

B / 5 TYPICAL RETENTION POND SLOPE DETAIL
SCALE: 1/4" = 1'-0"

NOTE:
1. USE 4"ø STANDARD STEEL PIPE 8'-0" LONG POST - EMBED IN SOIL 2'-10" MIN.
2. INSTALL 1 - 4"ø STANDARD STEEL PIPE H-BRACE AT ALL GATE OPENINGS.
3. SEE DETAIL D/5 FOR FENCE AND WIRE MATERIALS AND INSTALLATION.
4. GATE TO BE 52" POWDER RIVER CLASSIC GATE WITH HINGE AND LOCKABLE LEVER LATCH.
5. GATE AT ENTRY SHALL BE TWO (2) 16' GATES WITH HINGE AND CENTER LOCKABLE LEVER LATCH.



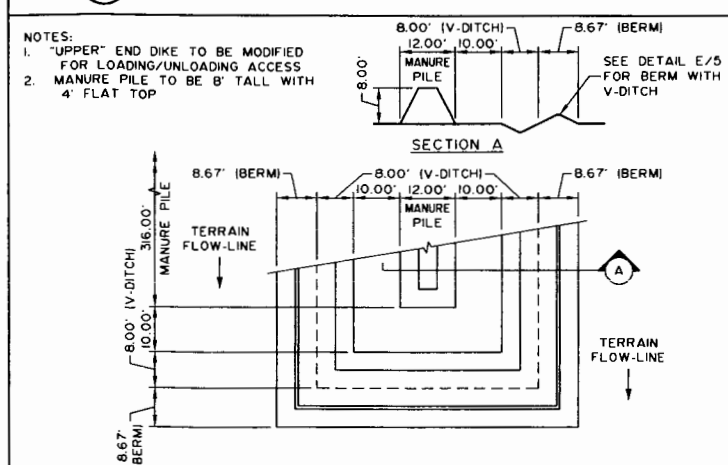
G / 5 FIELD FENCE GATE INSTALLATION DETAIL
SCALE 1" = 5'



NOTE:
OVERFLOW MAY BE PLACED AT EITHER END OF THE RETENTION DIKE - SEE PLAN FOR SUGGESTED LOCATION.

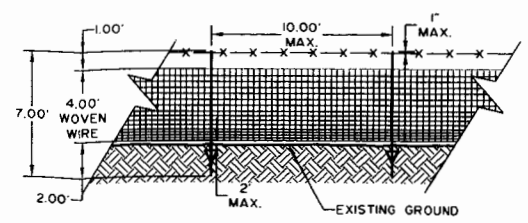
C / 5 DIKE OVERFLOW DETAIL
SCALE: 1" = 10'

NOTES:
1. "UPPER" END DIKE TO BE MODIFIED FOR LOADING/UNLOADING ACCESS
2. MANURE PILE TO BE 8' TALL WITH 4' FLAT TOP



H / 5 MANURE STOCKPILE CONTAINMENT DETAIL
SCALE : N.T.S.

NOTE:
1. USE 7.0' STEEL TEE POST DRIVE 18" TO 24" IN GROUND MAXIMUM 10' APART.
2. USE 4.0' HIGH WOVEN STEEL WIRE FIELD FENCE TIED TO TEE POST AT TOP, BOTTOM AND MIDDLE OF FENCE.
3. INSTALL 1 (ONE) STRAND TWISTED HEAVY GAGE BARBED WIRE TIED AT EACH TEE POST WITHIN 1" OF POST TOP.
4. INSTALL 1 (ONE) 4"ø STANDARD STEEL PIPE POST EVERY 100 (ONE HUNDRED) FEET OF STRAIGHT FENCE.



D / 5 FIELD FENCE AND TEE POST DETAIL
SCALE 1" = 5'

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RETENTION DIKES AND DETAILS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE: 10/25/2013
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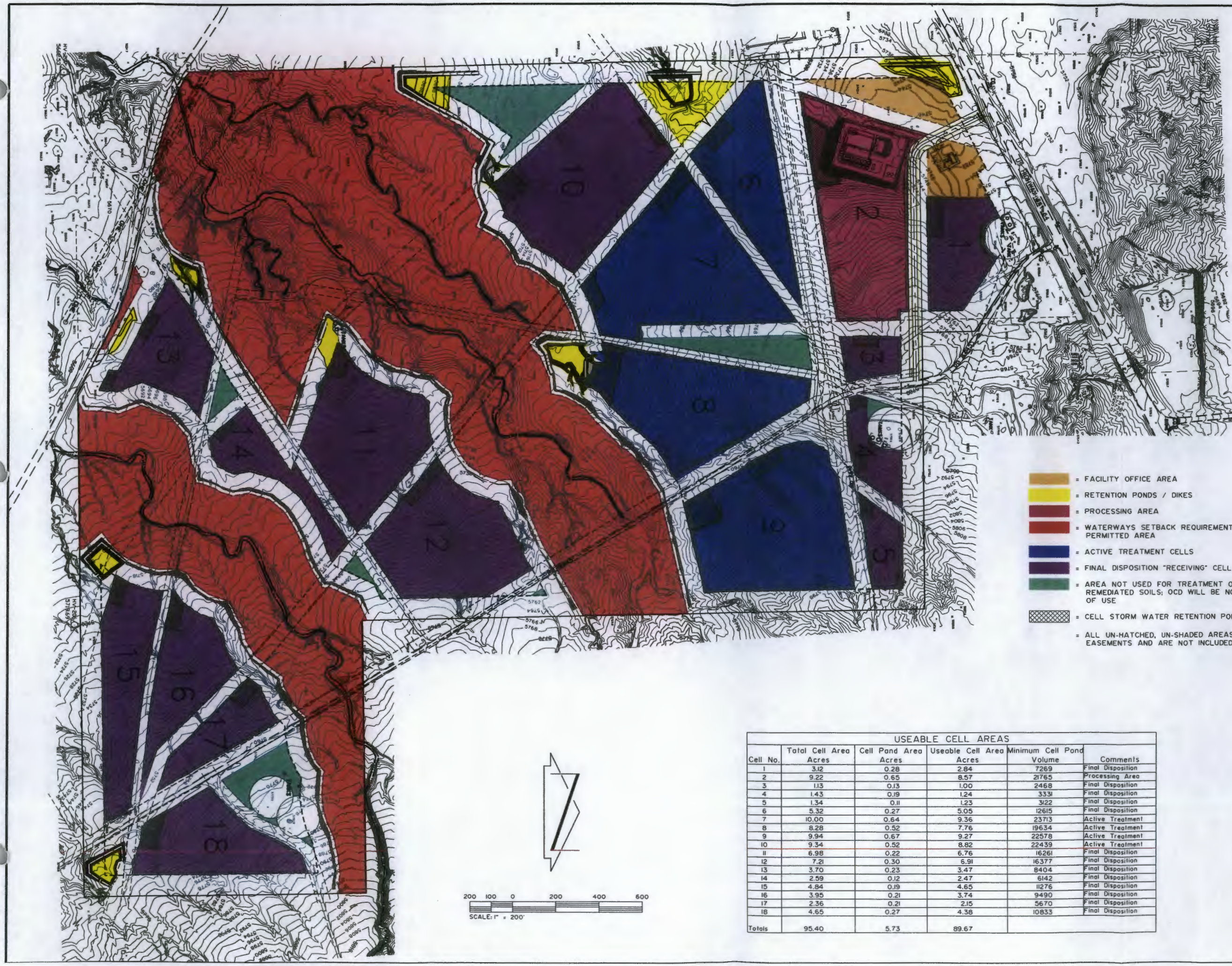
SHEET 5 OF 15



USEABLE CELL AREAS

Cell No.	Total Cell Area Acres	Cell Pond Area Acres	Useable Cell Area Acres	Minimum Cell Pond Volume	Comments
1	3.12	0.28	2.84	7269	Final Disposition
2	9.22	0.65	8.57	21765	Processing Area
3	1.13	0.13	1.00	2468	Final Disposition
4	1.43	0.19	1.24	3331	Final Disposition
5	1.34	0.11	1.23	3122	Final Disposition
6	5.32	0.27	5.05	12615	Final Disposition
7	10.00	0.64	9.36	23713	Active Treatment
8	8.28	0.52	7.76	19634	Active Treatment
9	9.94	0.67	9.27	22578	Active Treatment
10	9.34	0.52	8.82	22439	Active Treatment
11	6.98	0.22	6.76	16261	Final Disposition
12	7.21	0.30	6.91	16377	Final Disposition
13	3.70	0.23	3.47	8404	Final Disposition
14	2.59	0.12	2.47	6142	Final Disposition
15	4.84	0.19	4.65	11276	Final Disposition
16	3.95	0.21	3.74	9490	Final Disposition
17	2.36	0.21	2.15	5670	Final Disposition
18	4.65	0.27	4.38	10833	Final Disposition
Totals	95.40	5.73	89.67		

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CELL MAP
CROWE BLANCO PROPERTY LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1"= 200'
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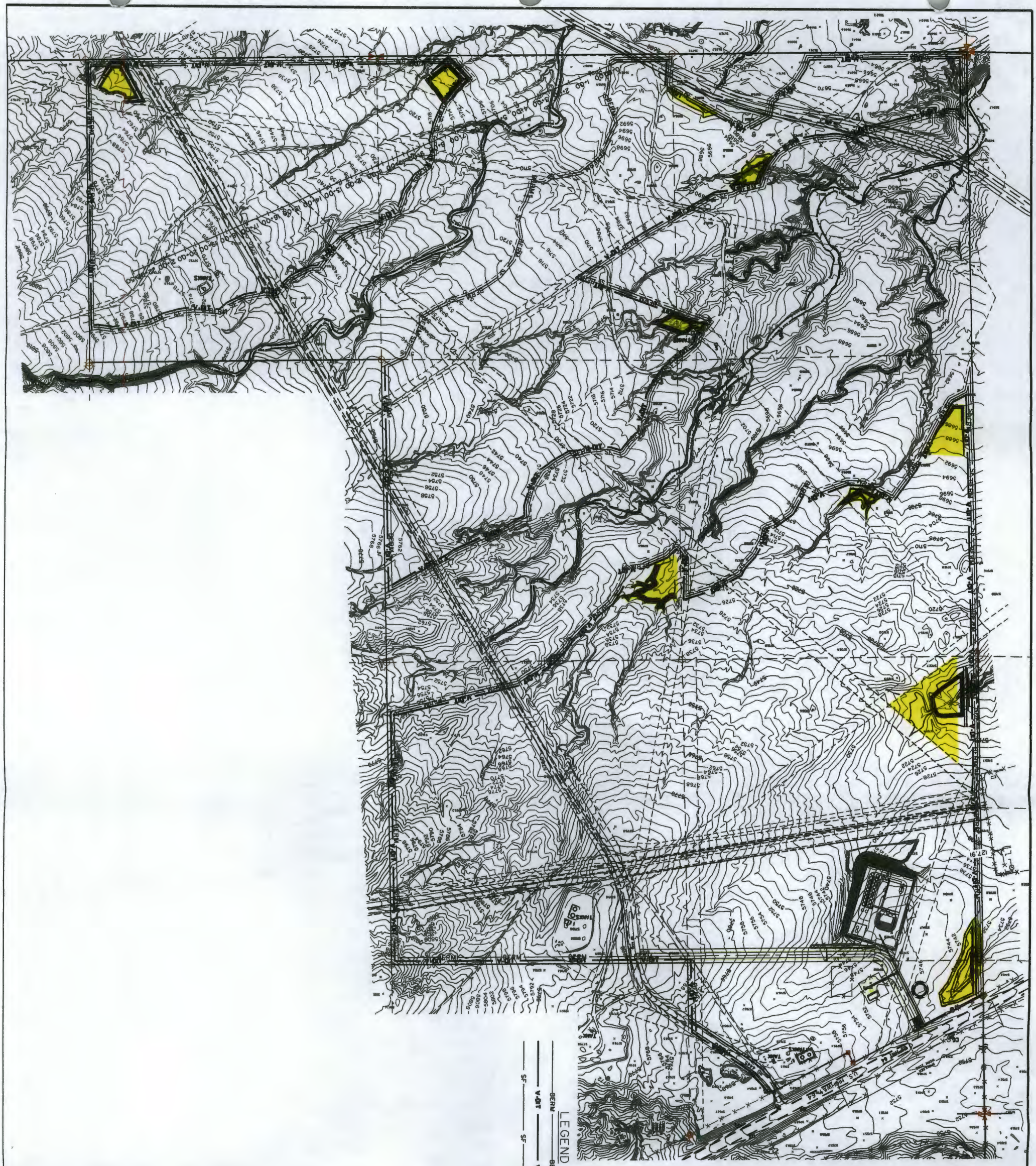


RUN-ON/OFF CONTROL PLAN
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467SET
SHEET 15 OF 15

NEW MEXICO PROFESSIONAL ENGINEER
RICHARD P. CHENEY
NO. 3684
10/25/13

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

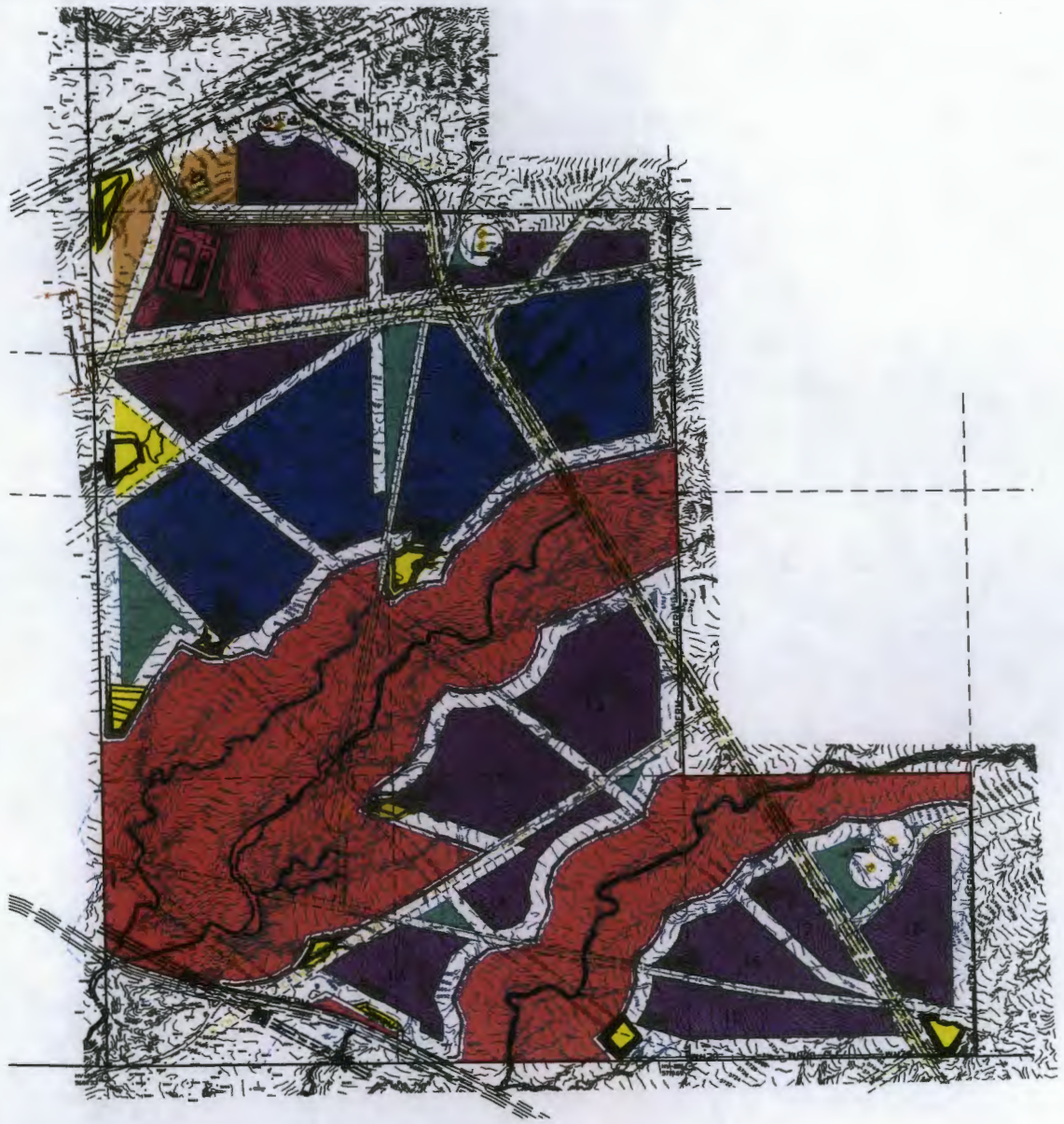
PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467sel.dwg

CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS, INC.

BLANCO, SAN JUAN COUNTY, NEW MEXICO

CELL BERM PROFILES



SHEET INDEX

BERM CROSSING ON PUBLIC ACCESS NOTE:

ALL BERMS THAT CROSS PUBLIC ACCESS SHALL HAVE APPROACHES THAT DO NOT EXCEED 5.0% GRADE TO THE TOP OF BERMS. THE BERMS SHALL BE WIDENED IN PLACES THAT THE BERM HEIGHT EXCEEDS 3.0' ACROSS THE PUBLIC ACCESS TO ENSURE A SMOOTH TRANSITION OVER THE BERM WITHOUT CREATING A HIGH CENTER CONDITION. THE CONSTRUCTION OF THE APPROACHES SHALL VARY IN LENGTH DEPENDING ON THE HEIGHT OF EACH BERM CROSSING.

SCALE: 1" = 300'

300 150 0 300 600 900

SCALE IN FEET

- FACILITY OFFICE AREA
- RETENTION PONDS / DIKES
- PROCESSING AREA
- WATERWAYS SETBACK REQUIREMENTS / NOT PART OF PERMITTED AREA
- ACTIVE "TREATMENT" CELLS
- FINAL DISPOSITION "RECEIVING" CELLS
- AREA NOT USED FOR TREATMENT OR FINAL DISPOSITION OF REMEDIATED SOILS; OCD WILL BE NOTIFIED PRIOR TO CHANGE OF USE
- CELL STORM WATER RETENTION POND
- ALL UN-HATCHED, UN-SHADED AREAS ARE SETBACKS AND/OR EASEMENTS AND ARE NOT INCLUDED IN TREATMENT CELLS

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
209 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

PRINTED: October 18, 2013
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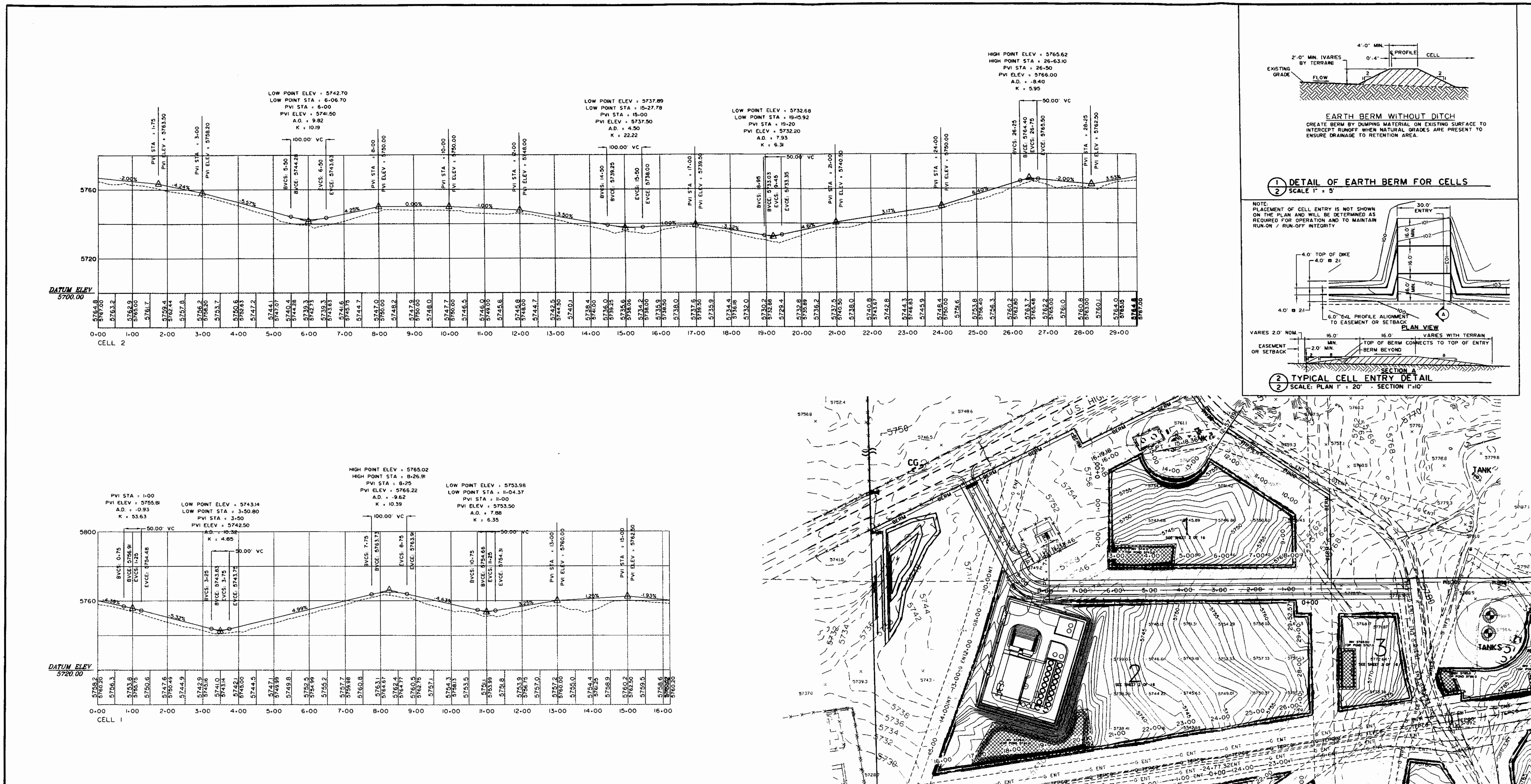

DATE | REVISION | BY

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS

BERM MINUS ONE - BERM ZERO - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE:10/25/
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SCALE: 1"=100' 1"=20'
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16

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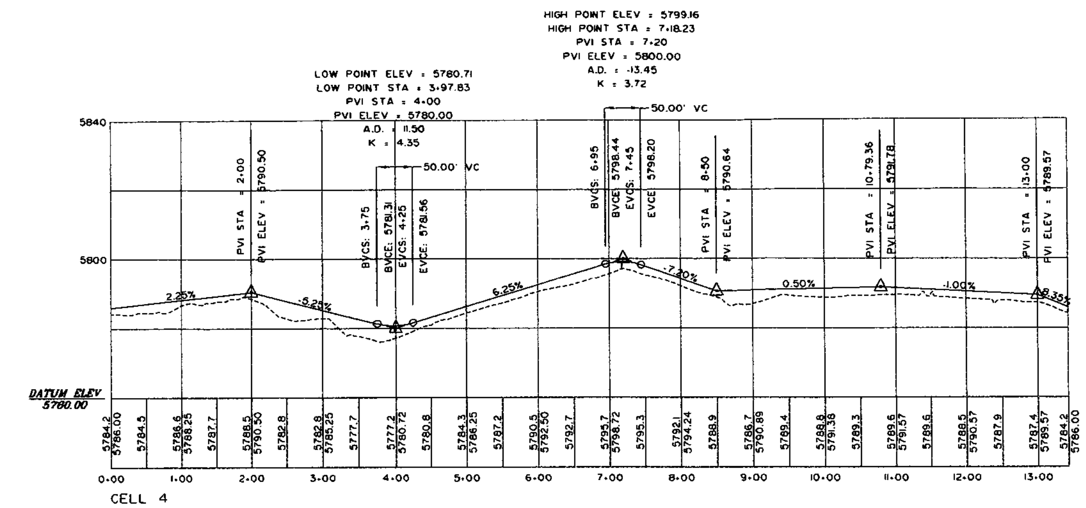

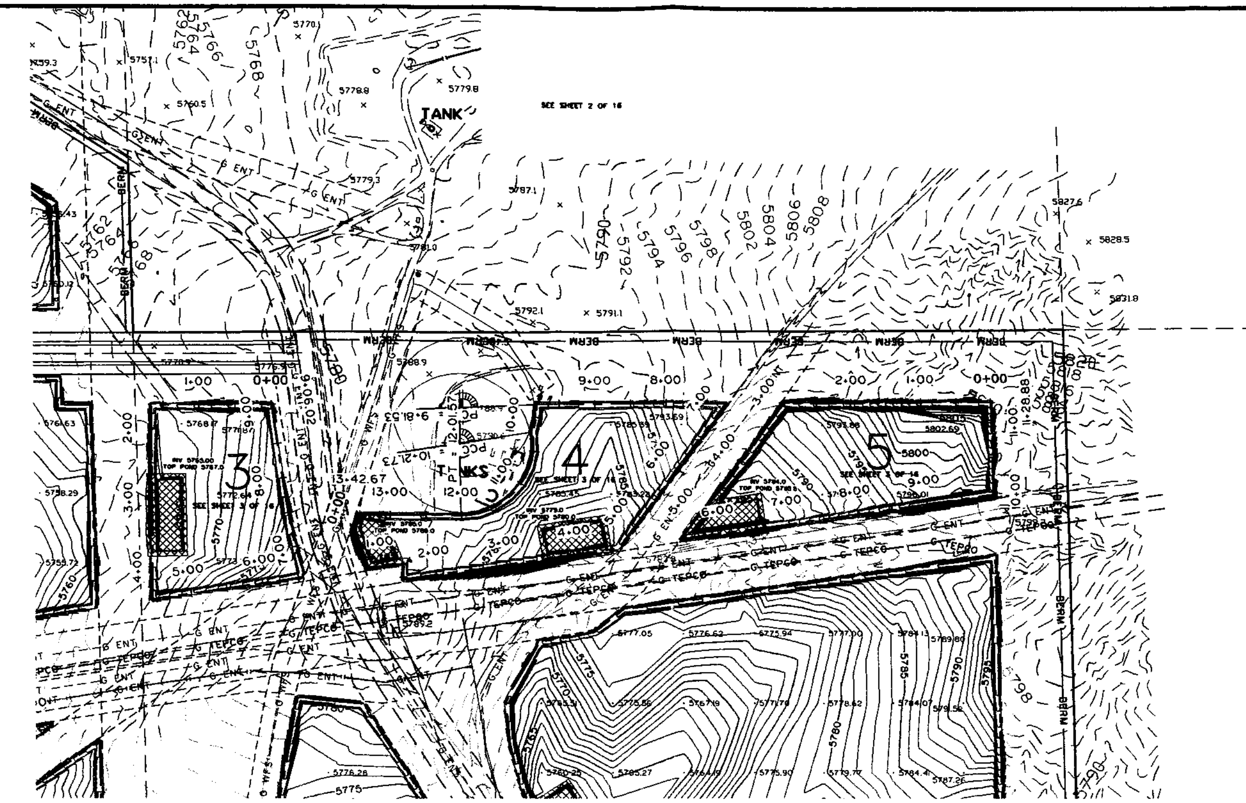

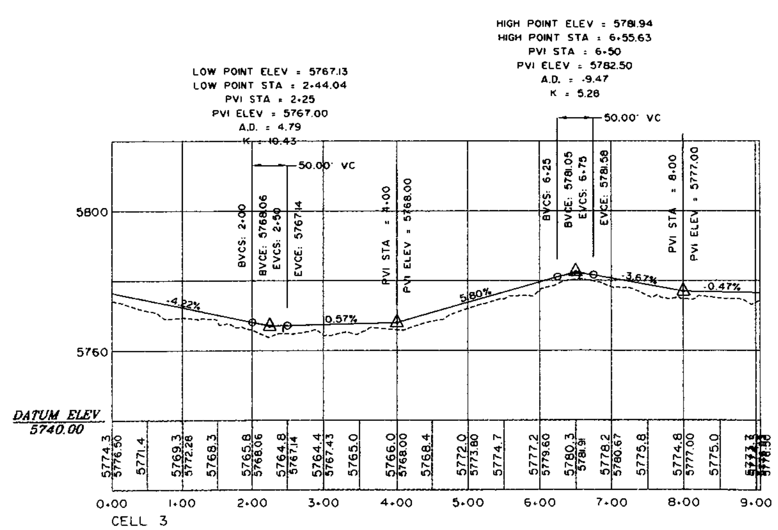

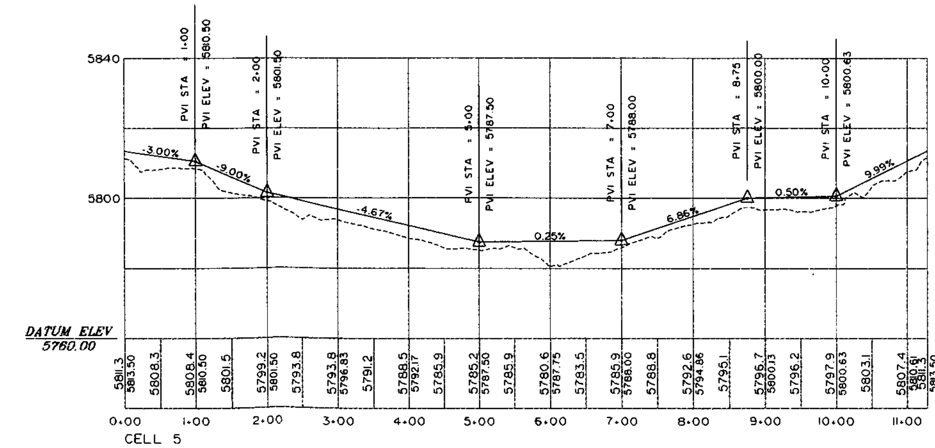

DATE	REVISION	BY

CHENEY·WALTERS·ECHOLS INC.

BERM ONE BERM TWO – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE:10/2
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PROJ. 094
SCALE:1"=
FILE:0956780
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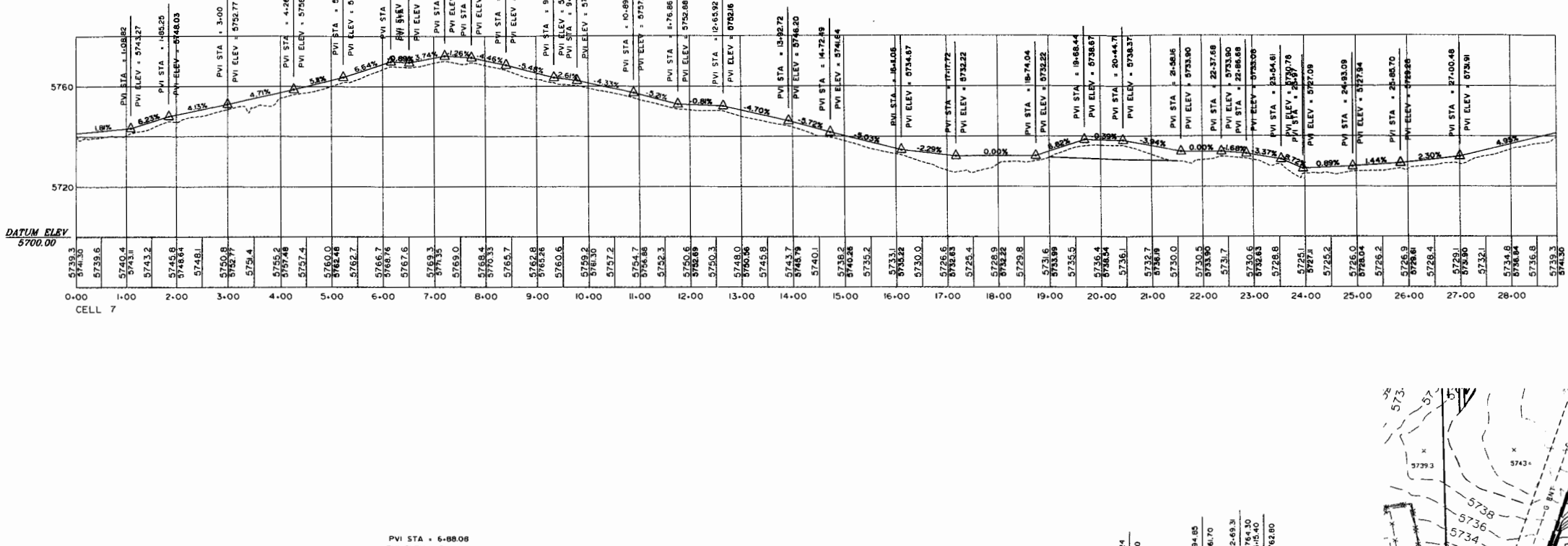
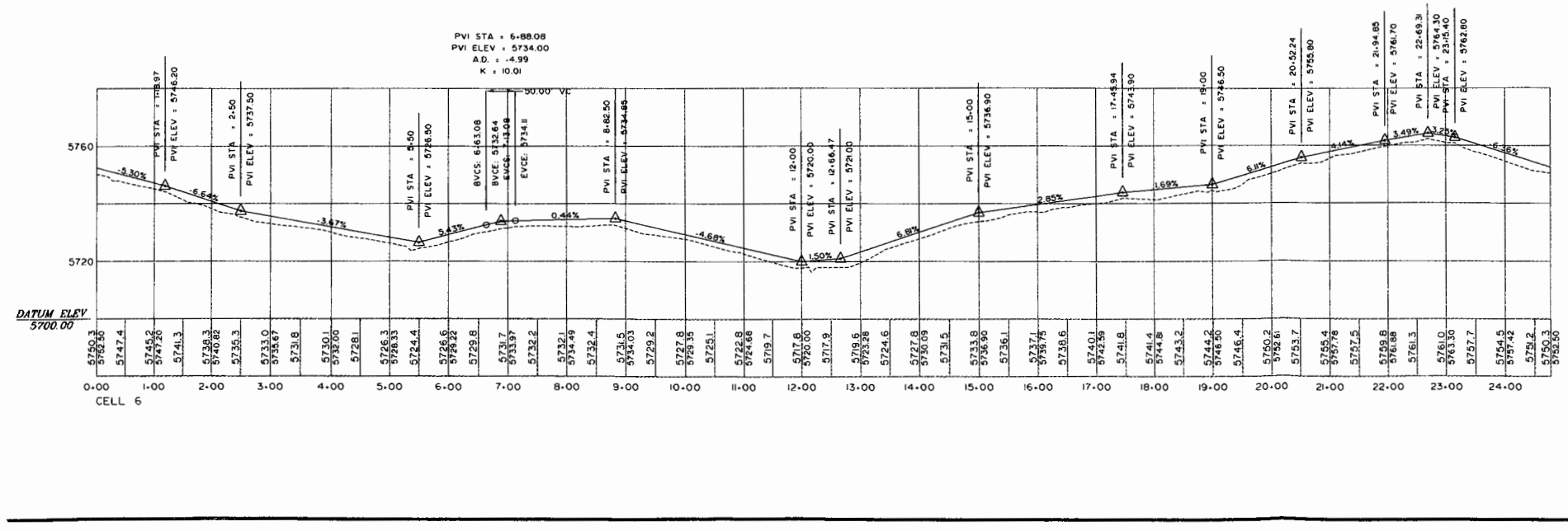
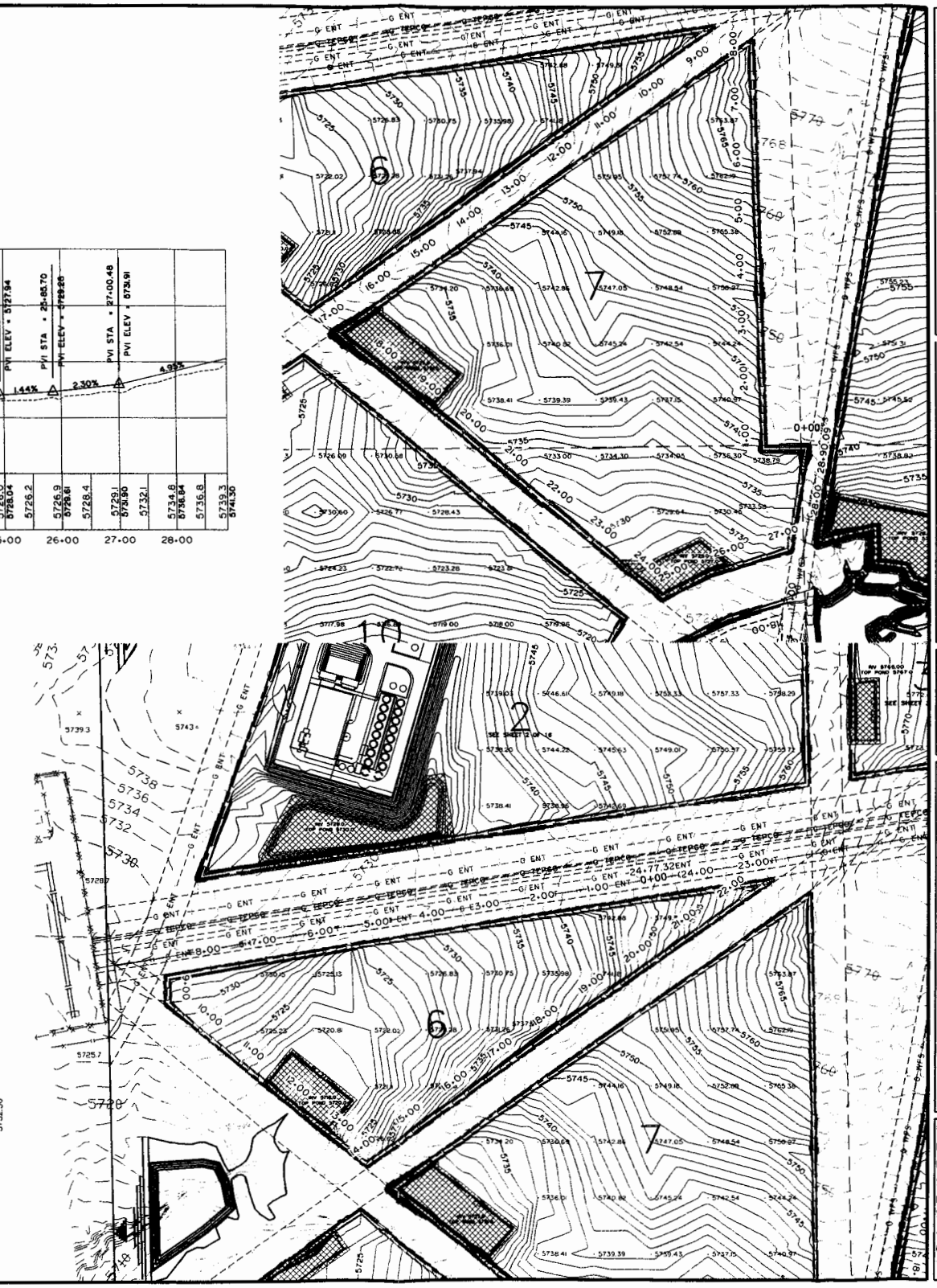
16







CHELEY·WALTERS·FOLKOLS
ENGINEERS · SURVEYORS

BY	REVISION	DATE

BERM THREE BERM FOUR – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE:10/25/
DRAWN BY: L
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SCALE: 1"=10
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4
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16

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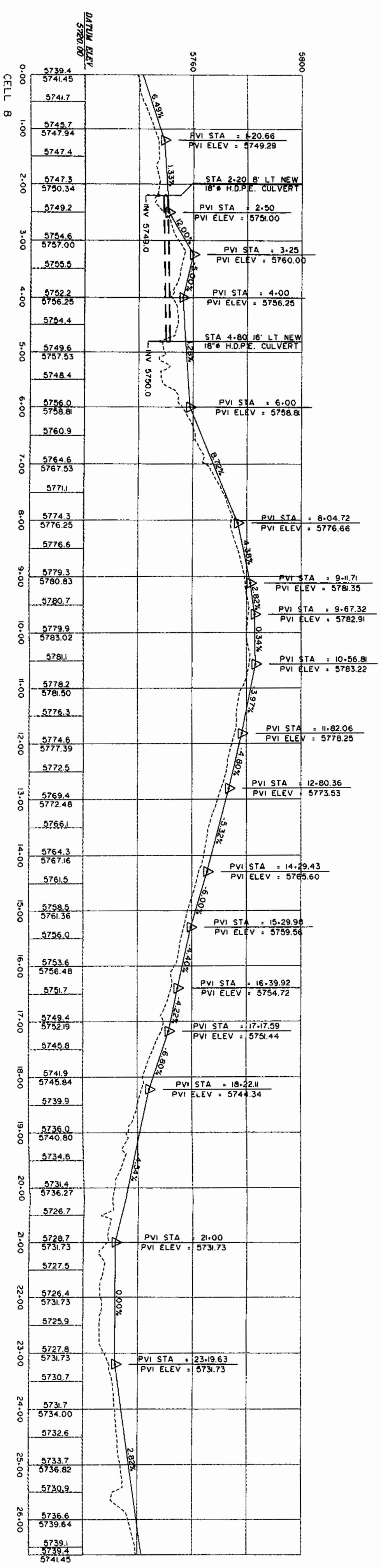

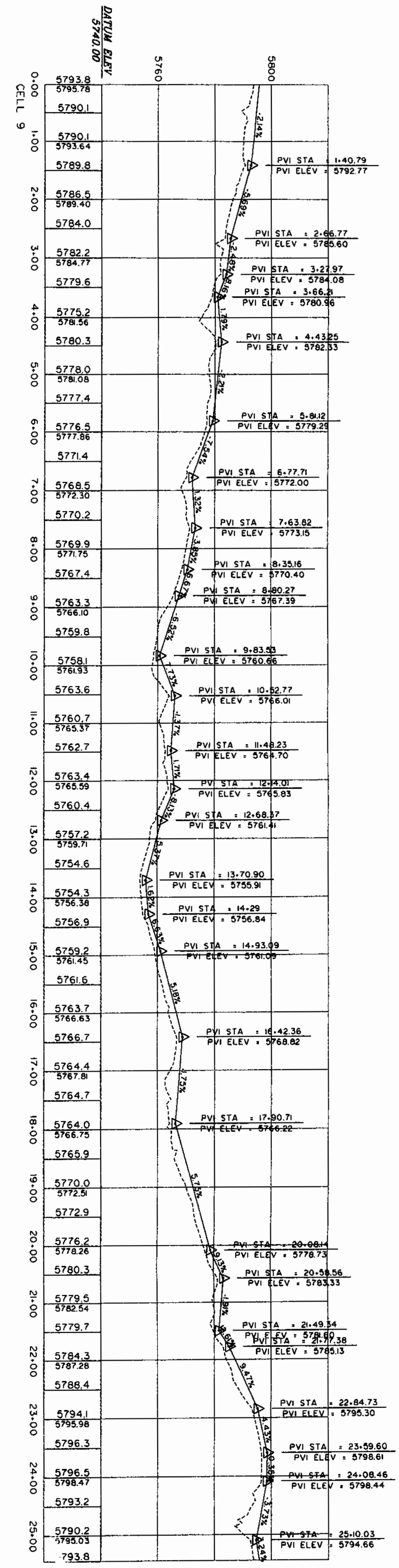

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CROWE BLANCO PROPERTIES, LLC

DATE:10/2
DRAWN BY:
PROJ. 094
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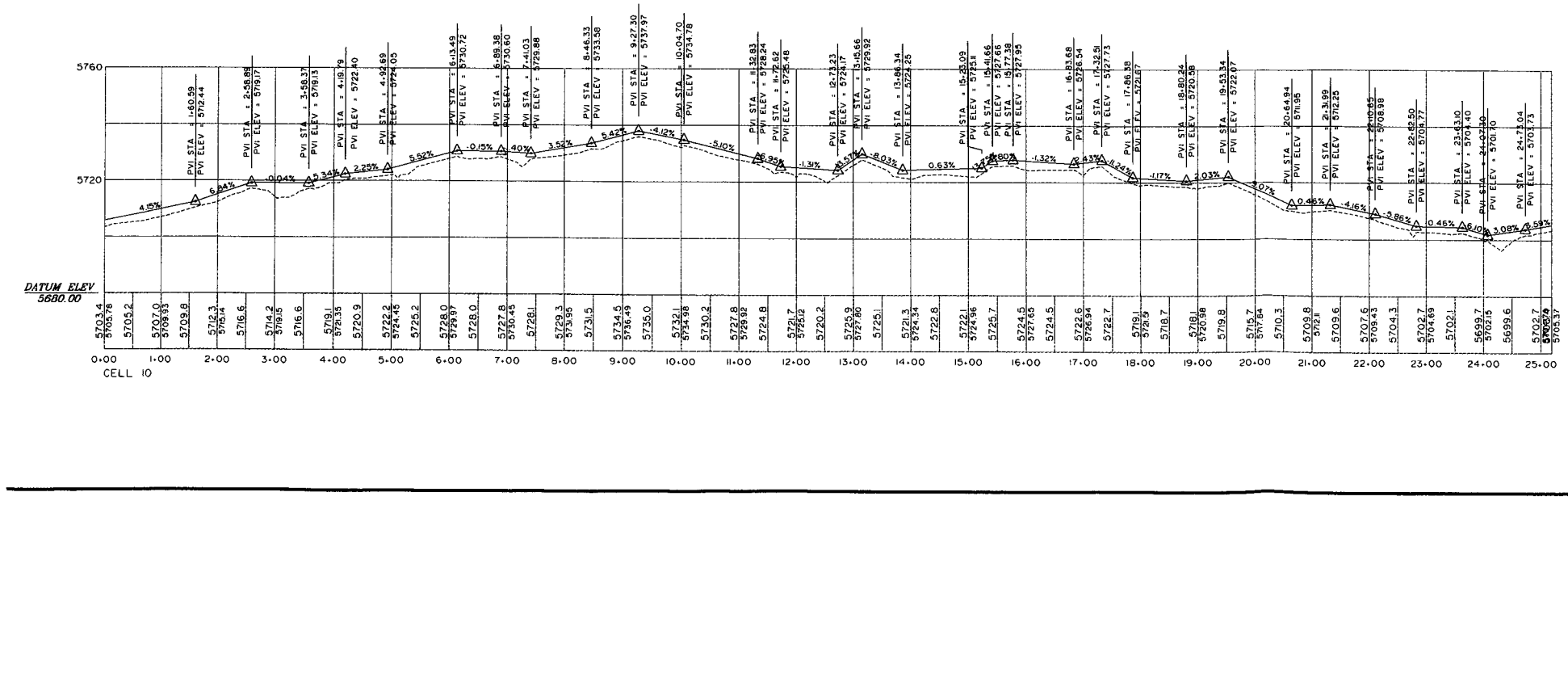
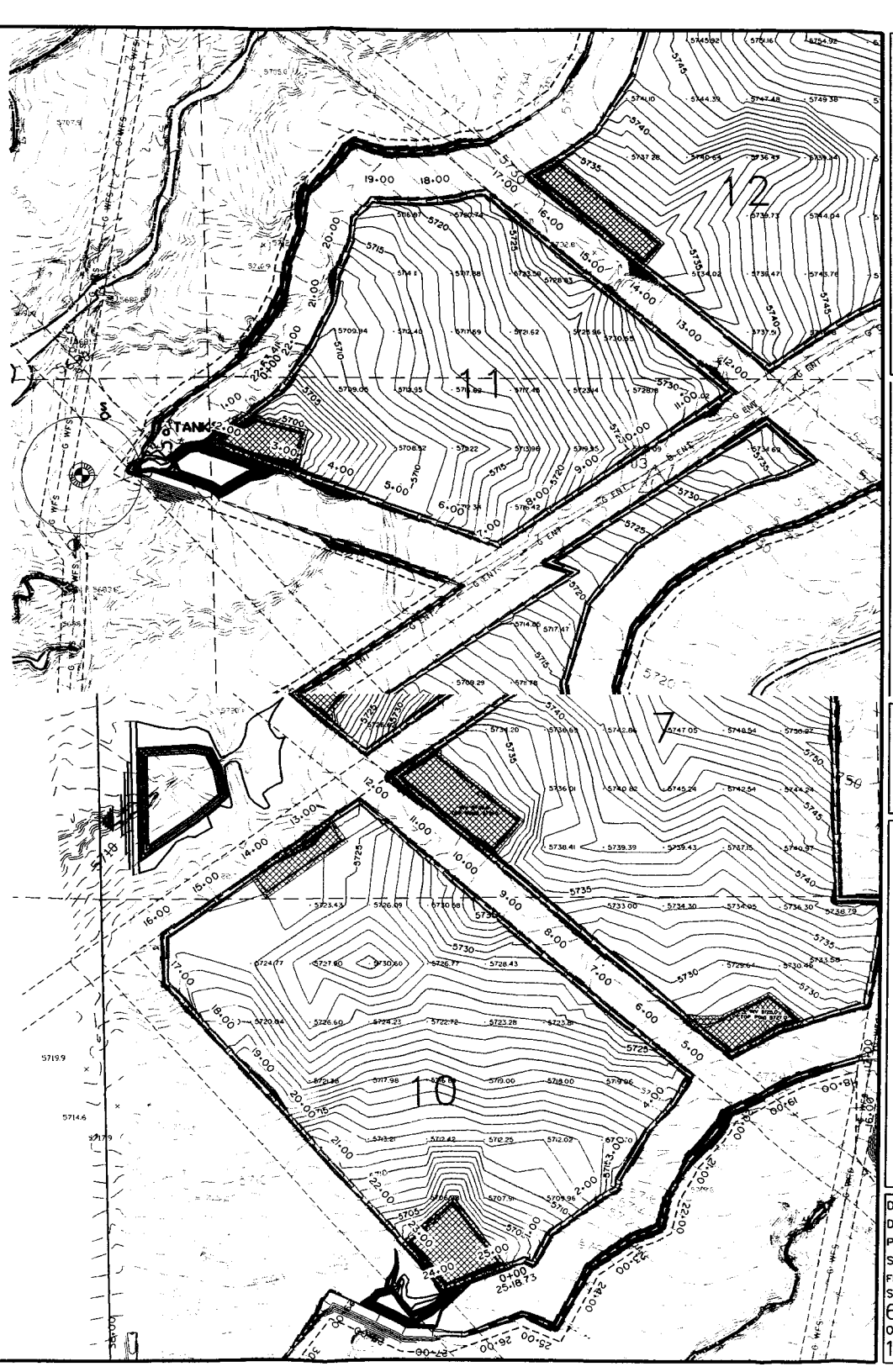
SHEET 5 OF 16

...EY·WALTERS·ECHOLS INC.

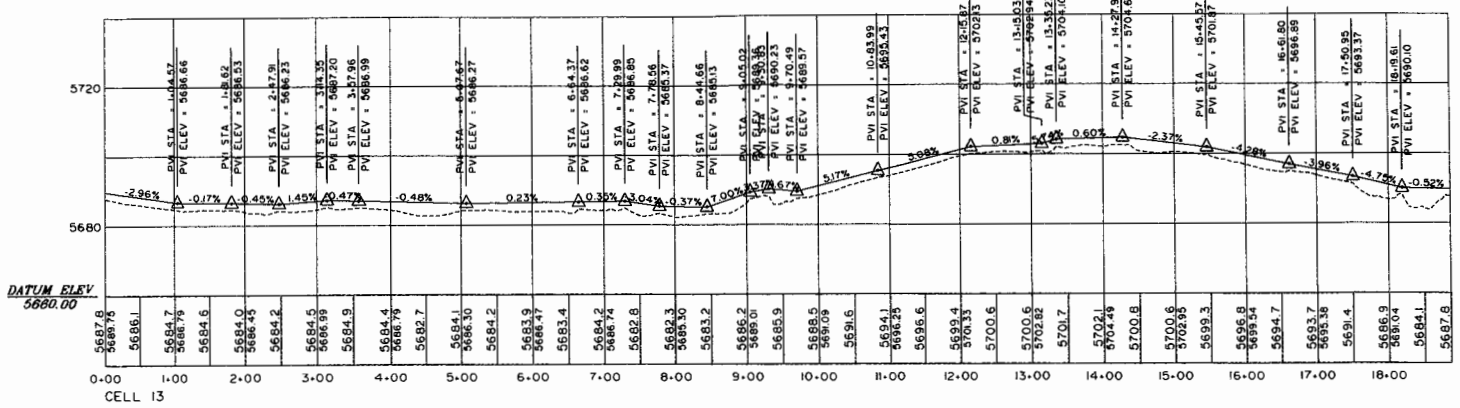
DATE	REVISION	BY

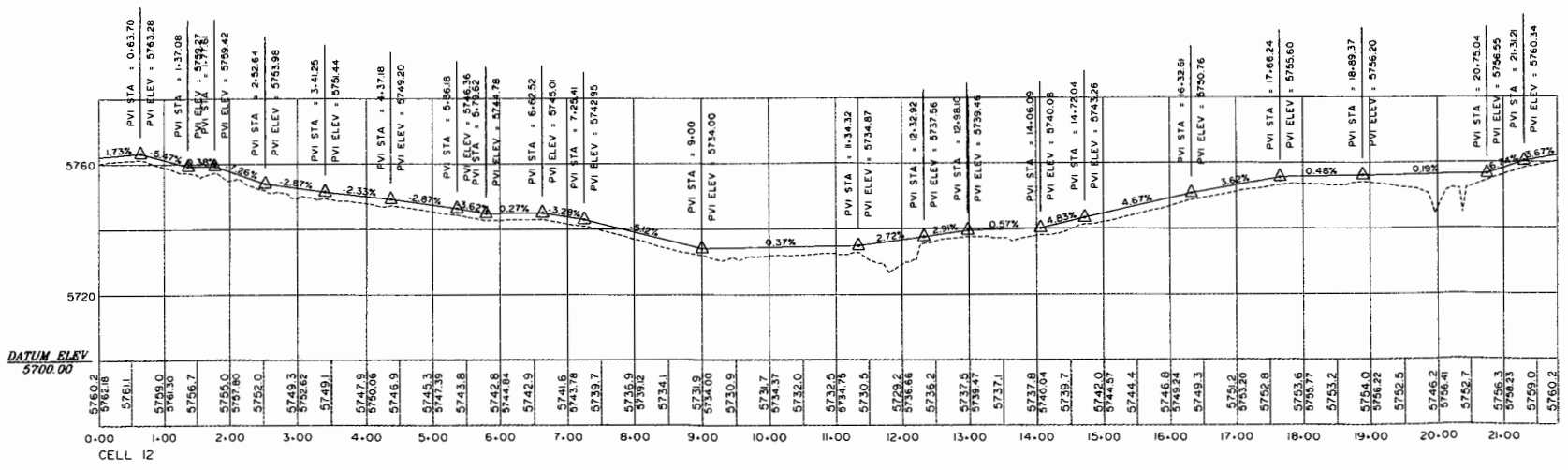




CHENEY · WALTERS · ECHOLS
ENGINEERS · SURVEYORS

BY	DATE	REVISION





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REVISION

DATE

CHEEV·WALTERS·ECHOLS

BERM C – BERM D – CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE:10/2
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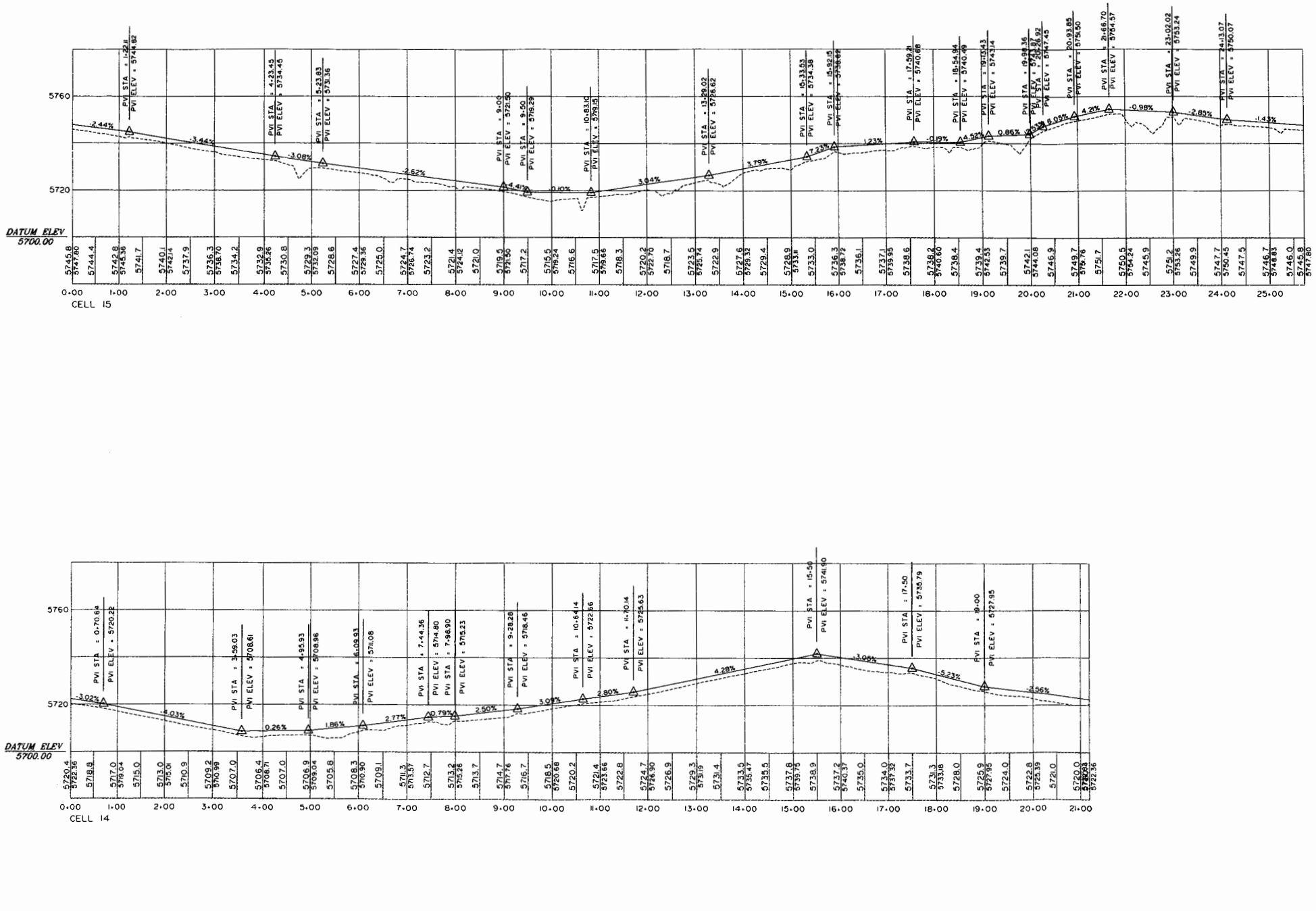

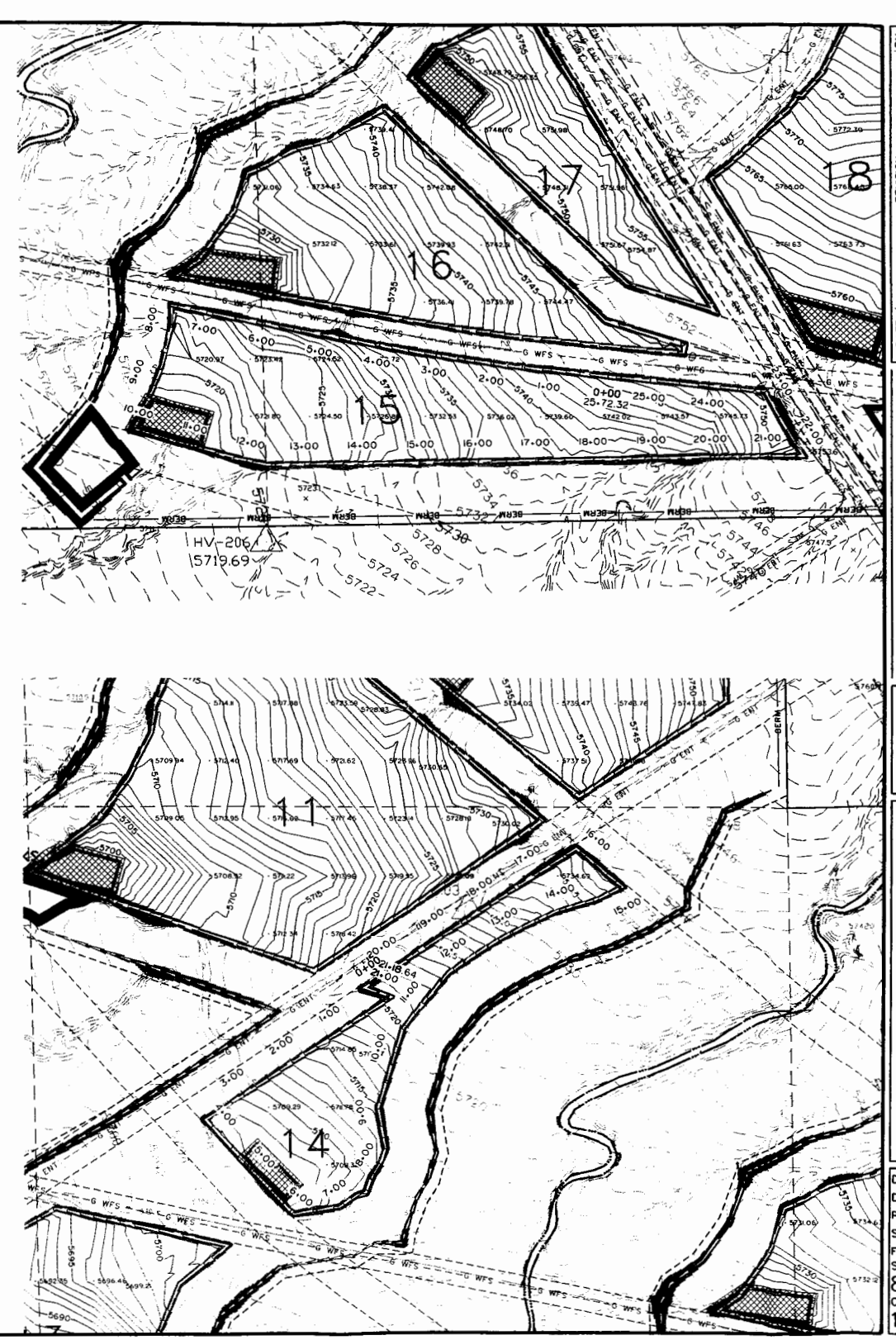

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REVISION
DATE

CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

BERM E - BERM F - BERM G - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE: 10/25/
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SCALE: 1"=100
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8
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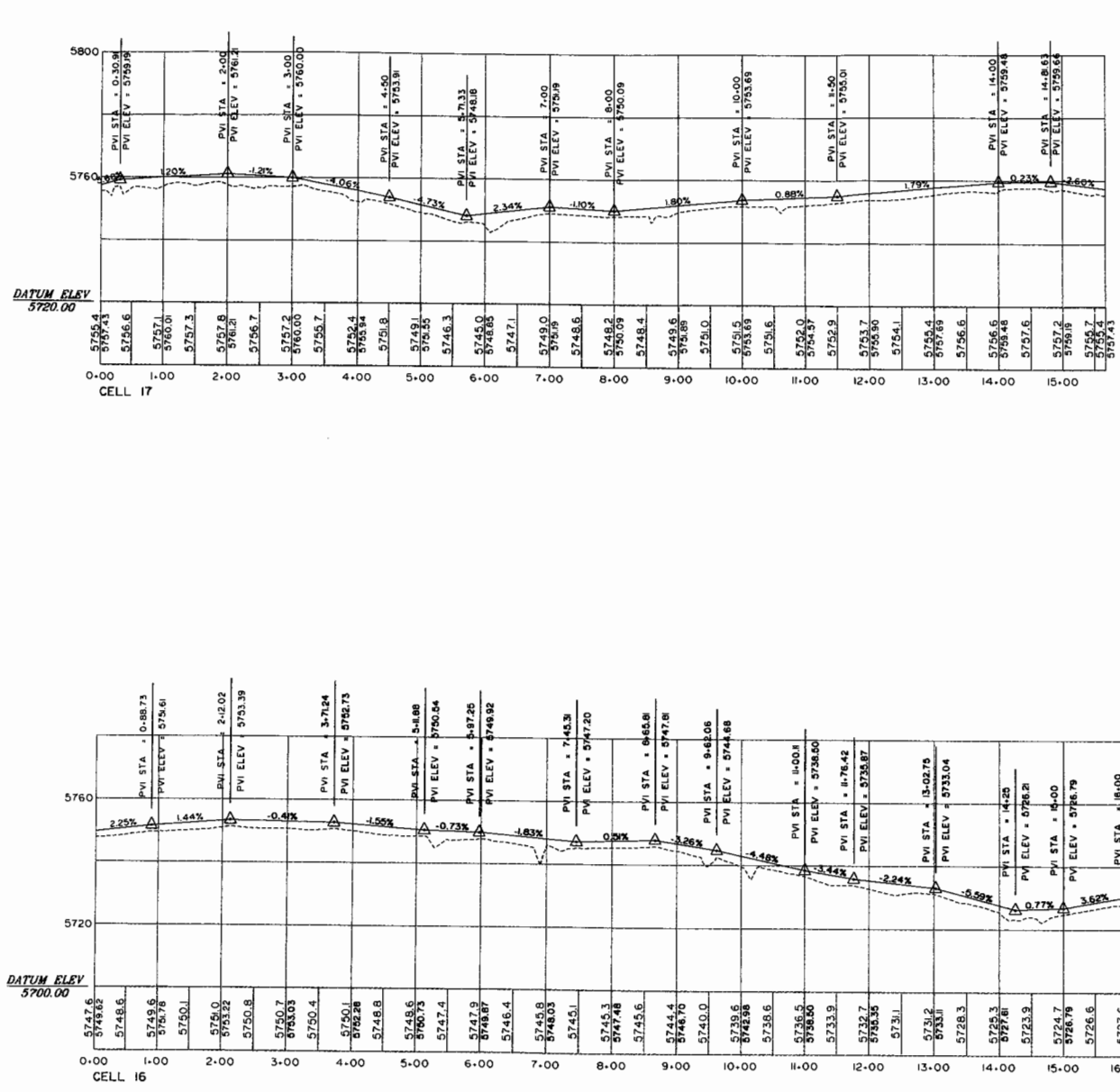
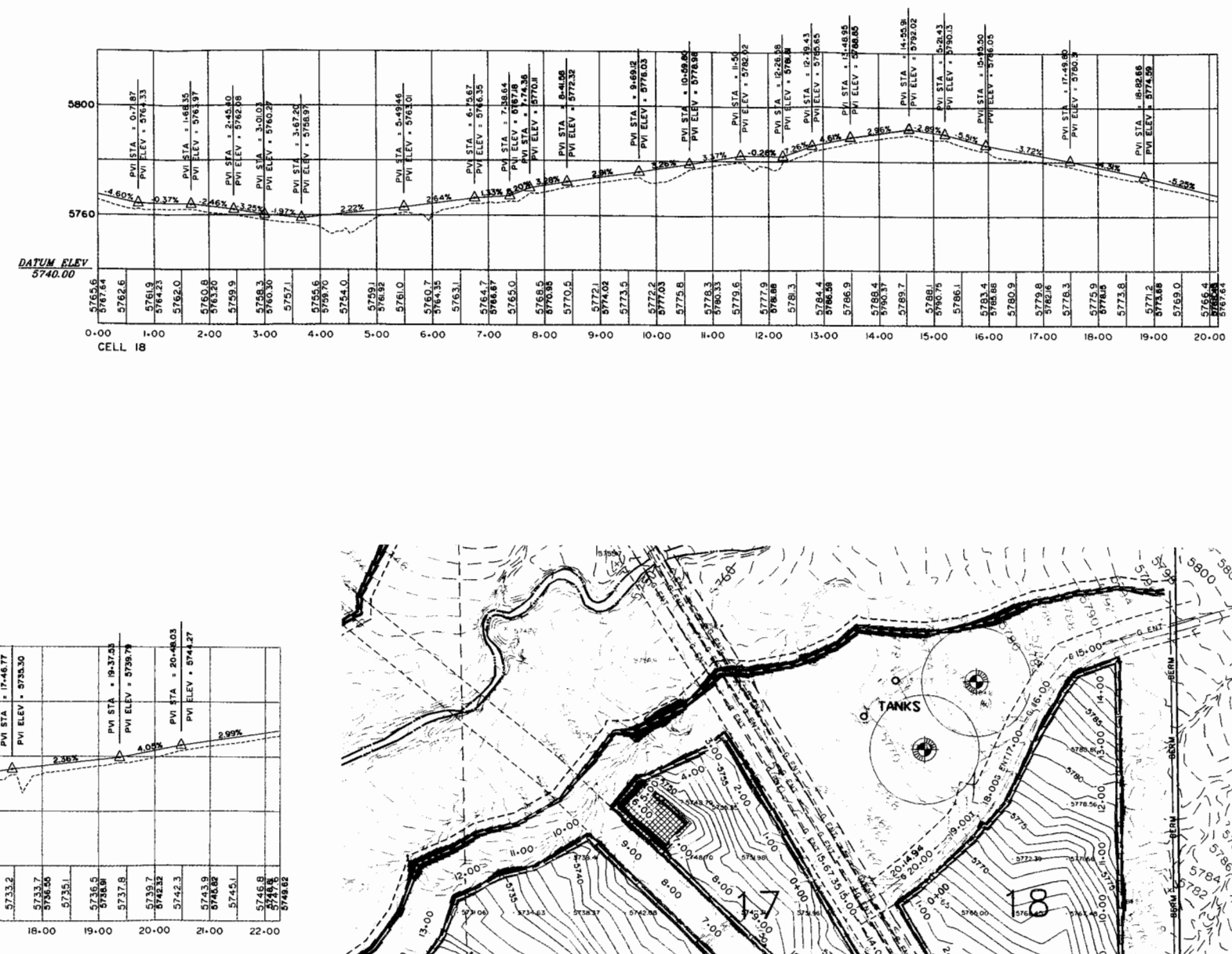
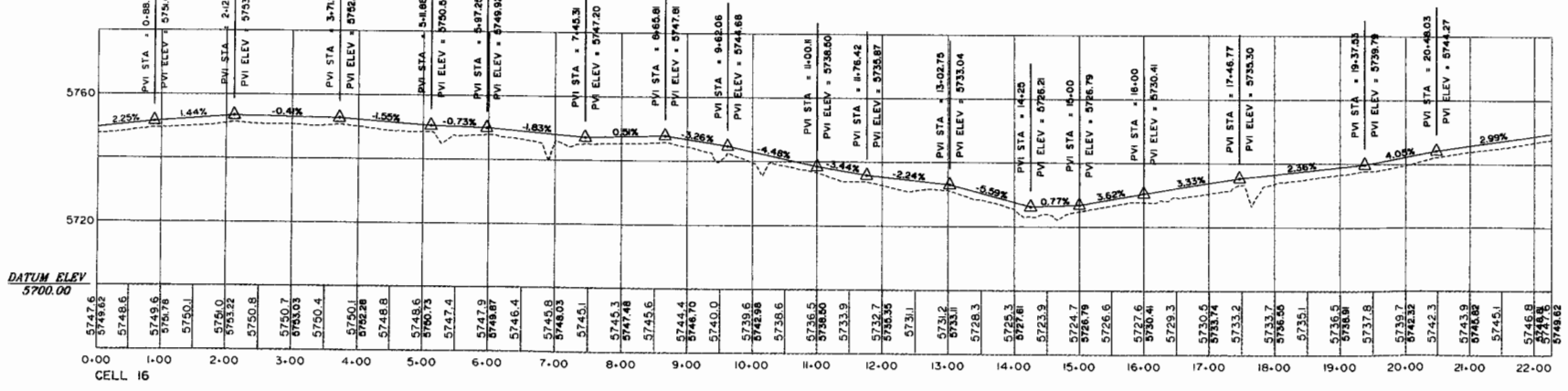
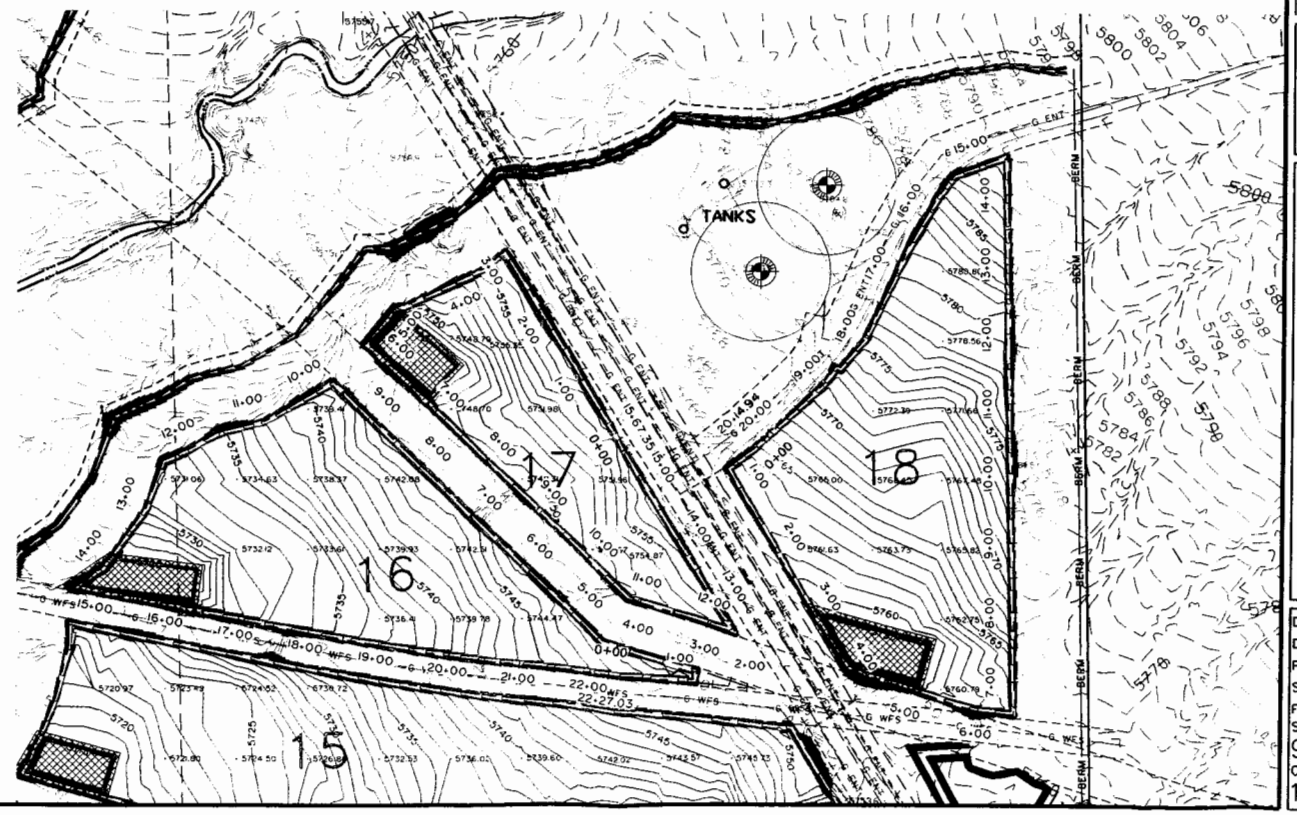
16









BY	REVISION	DATE

CHENEY·WALTERS·ECHOLS

BERM E - BERM F - BERM G - CELL PROFILES
CROWE BLANCO PROPERTIES, LLC

DATE: 10/2
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SCALE: 1" =
FILE: 0946
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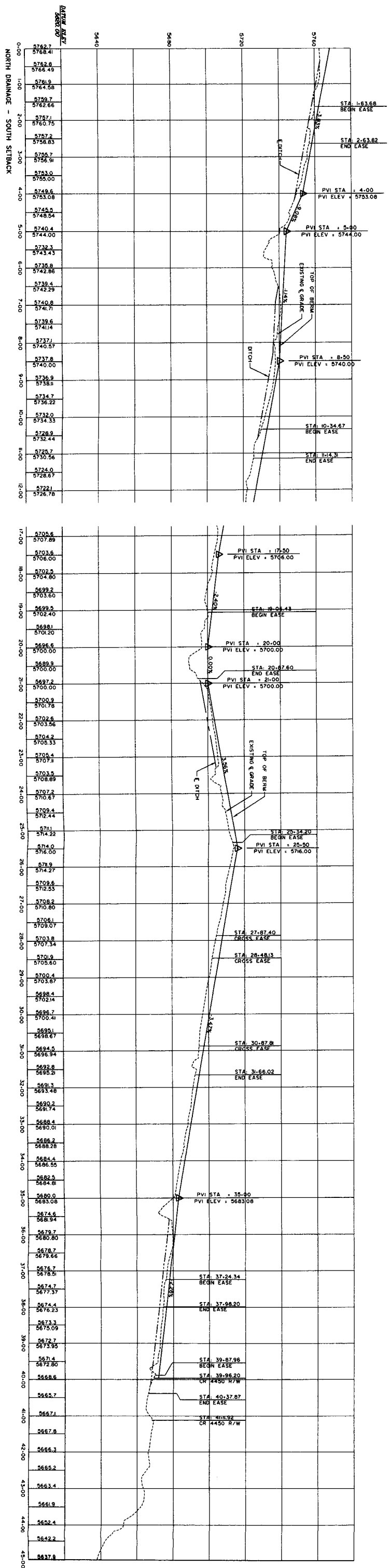

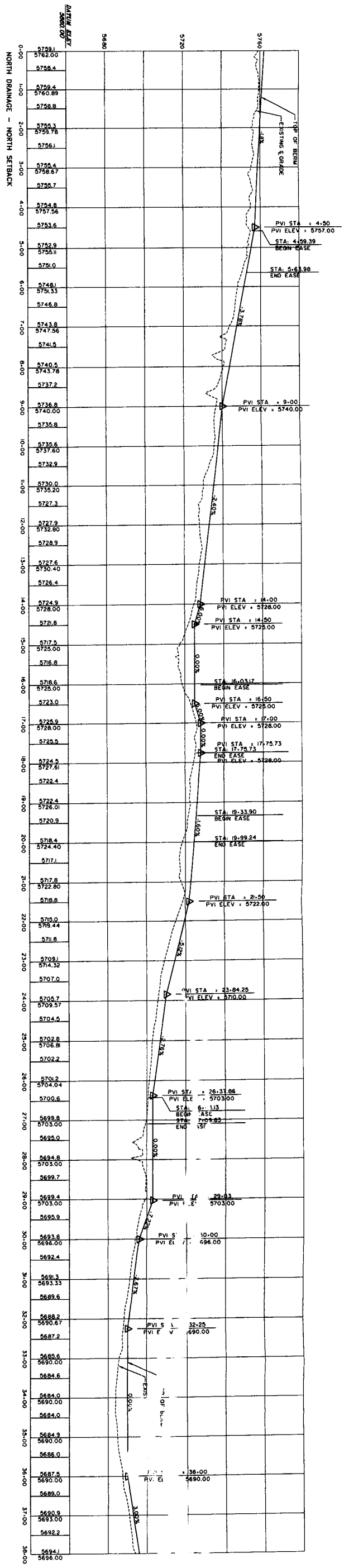

NORTH DRAINAGE SETBACK BERM PROFILES
CROWE BLANCO PROPERTIES, LLC

OPERATED BY: INDUSTRIAL ECOSYSTEMS, INC.

CHENEY-WALTERS-ECHOLS
ENGINEERS · SURVEYORS

DATE	REVISION	BY

DATE: 10/25/
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PROJ. 0946
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FILE:
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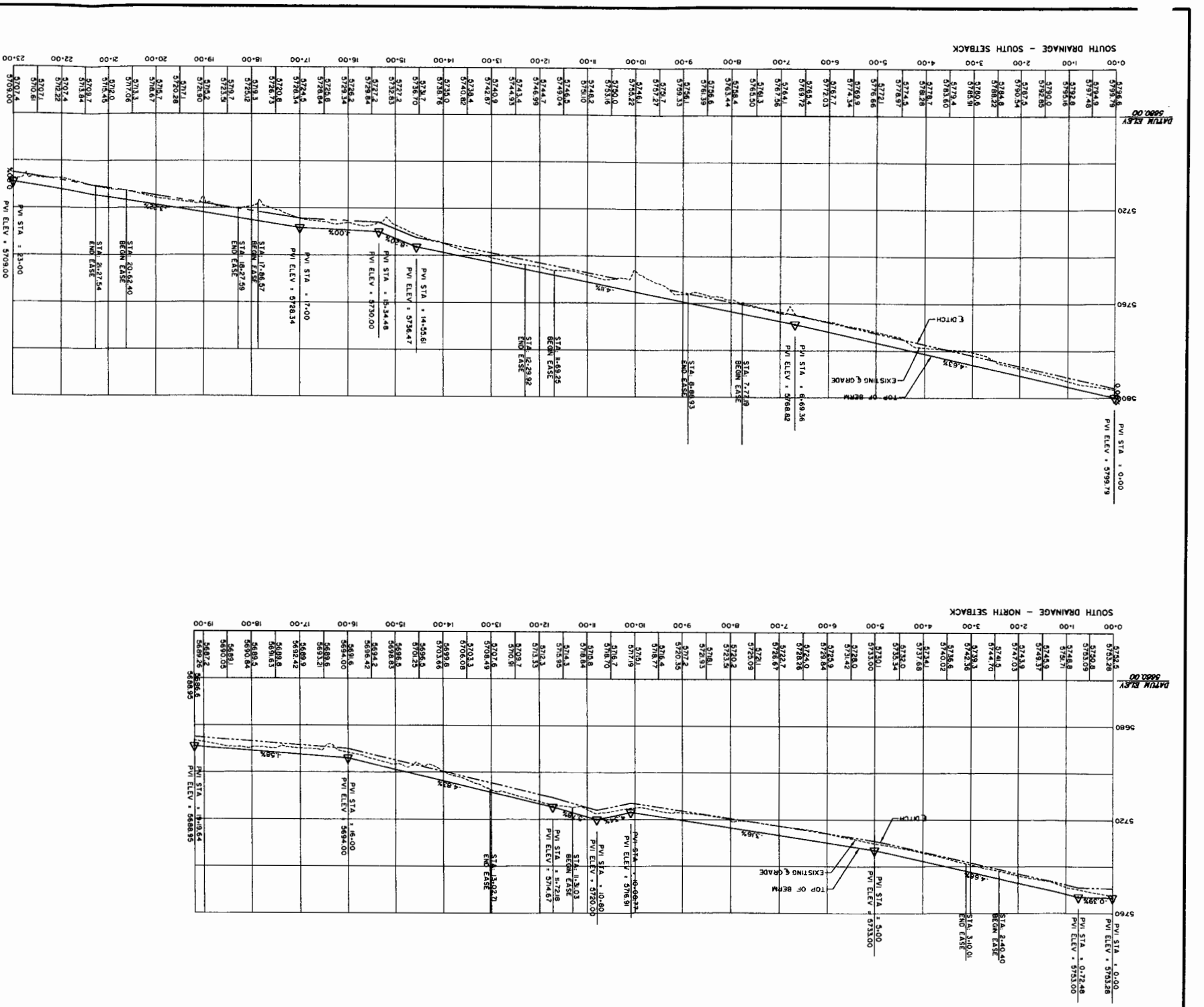

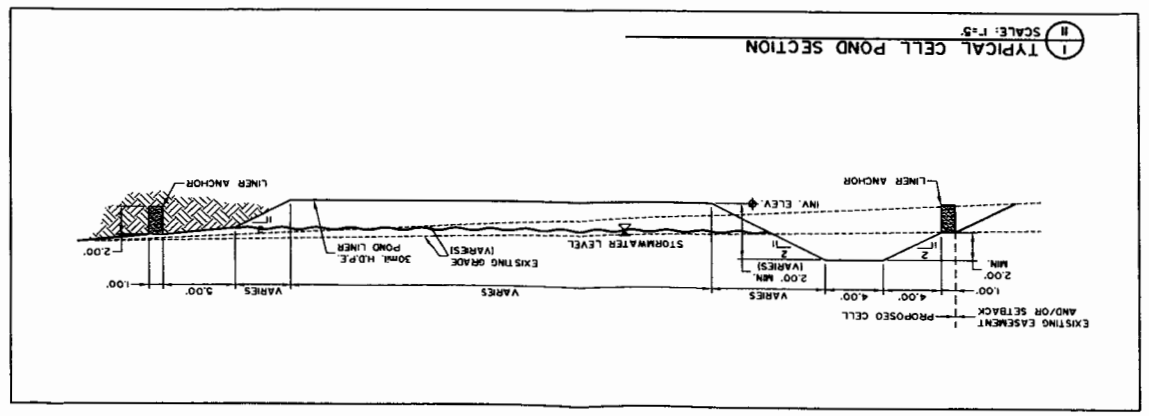

CHEVEY·WALTERS·ECHOLS

BY	REVISION	DATE

SOUTH DRAINAGE SETBACK BERM PROFILES
CROWE BLANCO PROPERTIES, LLC

DRAWN BY:
PROJ. 0946
SCALE:
FILE:0946BER
SHEET
11 OF 16

11.17

KEY MAP
SCALE: 1" = 1000'

SEE SHEET 2 OF 16

SEE SHEET 3 OF 16

INSET

SEE SHEET 3 OF 16

SEE SHEET 2 OF 16

SEE SHEET 3 OF 16

SEE SHEET 3 OF 16

INV 5728.0
TOP POND 5730.0

INV 5765.00
TOP POND 5767.0

INV 5784.0
TOP POND 5786.0

INV 5779.0
TOP POND 5780.0

INV 5785.0
TOP POND 5786.0

INV 5764.0
TOP POND 5785.5

SCALE: 1" = 50'
50 25 0 50 100 150
SCALE IN FEET

BY	REVISION	DATE

CIVIL · WALTERS · ECHOLS, INC.
ENGINEERS · SURVEYORS

LARGE SCALE CELL MAP – CELLS 1-5
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS, INC

DATE: 10/25/
DRAWN BY: L
PROJ. 09467
SCALE: 1"=50
FILE: 09467BOMP
SHEET 12 OF 16

11.18

KEY MAP
SCALE: 1" = 1000'

SCALE: 1" = 50'
SCALE IN FEET

BY	REVISION	DATE

CRENEY·WALTERS·ECHOLS
ENGINEERS·SURVEYORS

LARGE SCALE CELL MAP – CELLS 6-8
CROWE BLANCO PROPERTIES, LLC

DATE: 10/25
DRAWN BY:
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FILE: 0946780M
SHEET 13 OF 16

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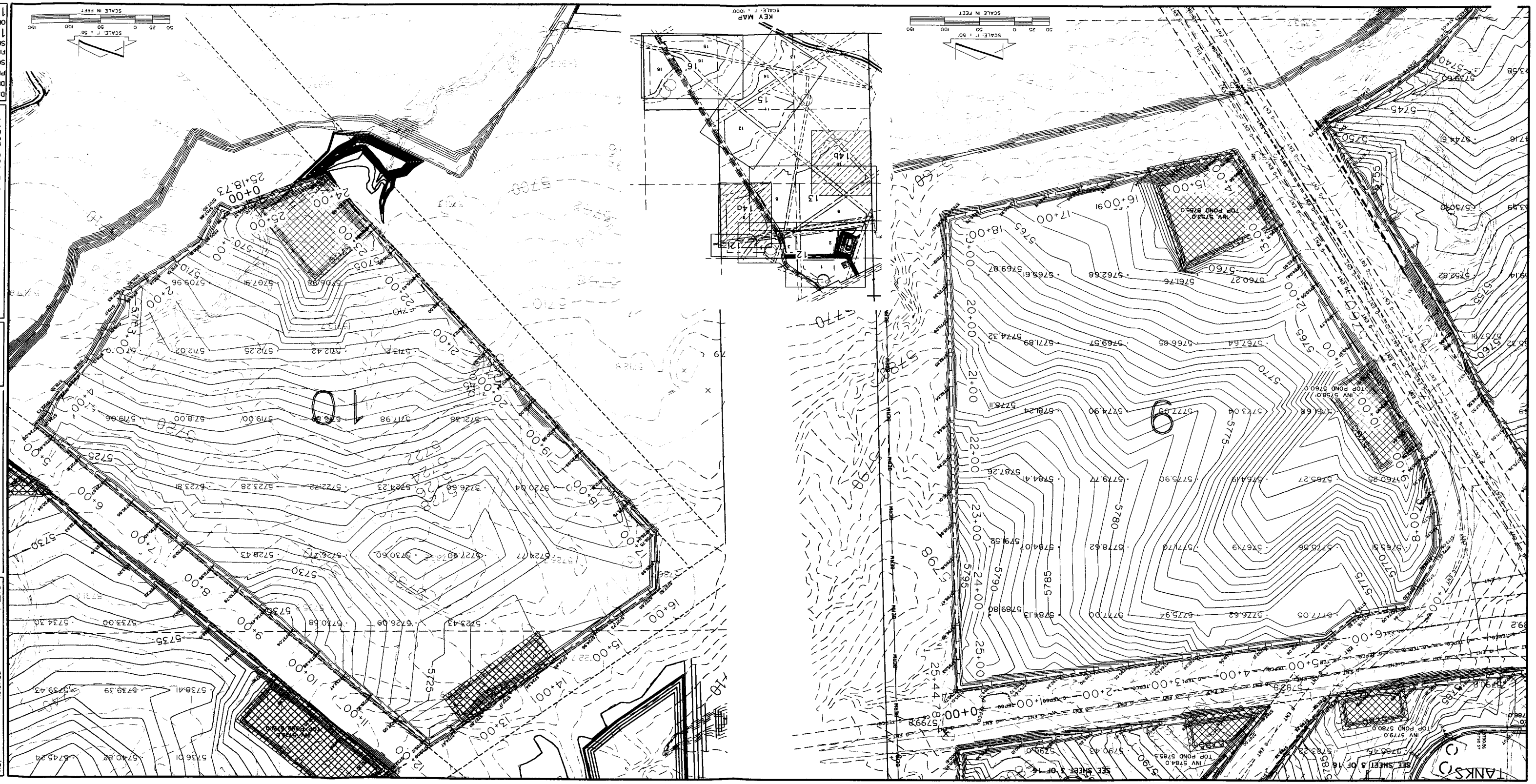

LARGE SCALE CELL MAP - CELLS 9-10
CROWE BLANCO PROPERTIES, LLC

CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

DATE	REVISION	BY

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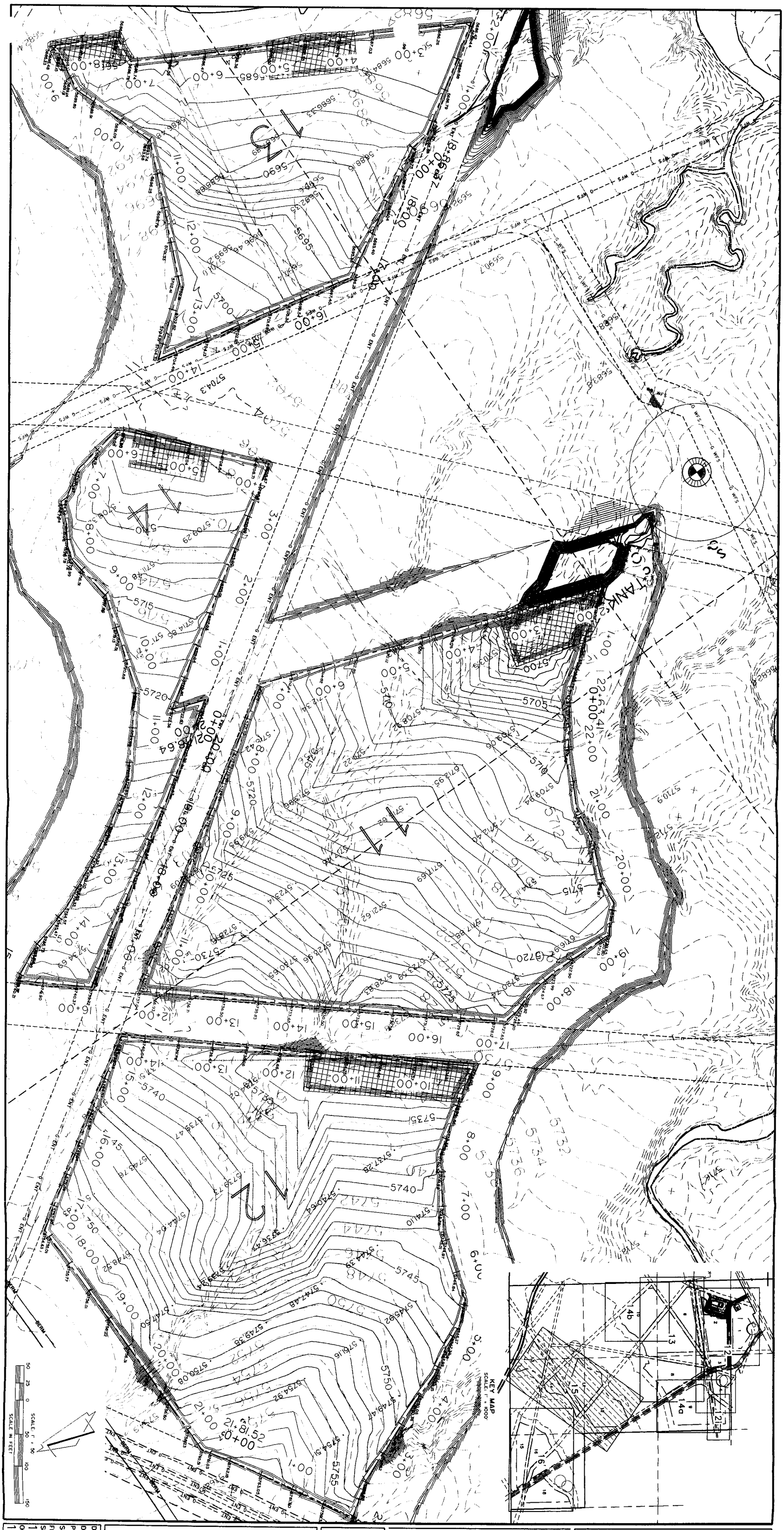

LARGE SCALE CELL MAP – CELLS 11-14
CROWE BLANCO PROPERTIES, LLC

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS

DATE	REVISION	BY

DATE:10/25/
DRAWN BY:
PROJ. 0946
SCALE: 1"=50'
FILE:0946ROOM
SHEET
15
OF
16

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TANKS

KEY MAP
SCALE: 1" = 1000'

SCALE: 1" = 50'
50 25 0 50 100 150
SCALE IN FEET

BY	DATE	REVISION

CHENEY·WALTERS·ECHOLS
ENGINEERS · SURVEYORS

LARGE SCALE CELL MAP – CELLS 15-18
CROWE BLANCO PROPERTIES, LLC

DATE: 10/25
DRAWN BY:
PROJ. 0946
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SHEET 16 OF 16

DRAINAGE PLAN

INDUSTRIAL ECOSYSTEMS, INC.
BLANCO LAND FARM

The attached maps, table, and graphs represent the Drainage Plan prepared for the above referenced facility.

The calculations were prepared utilizing SCSTR55 methods and also utilizing the point precipitation frequency estimates from the NOAA Atlas 14 for Bloomfield, NM. Calculations were prepared based on a 25 year 1 hour rain storm. The drawings indicate the location of berms, v-ditches, and dykes designed to protect the major waterways. In addition, the 200' setback was maintained from the major waterways.

In addition to the drainage study, we have included the Construction Storm Water Protection Plan as part of this report and drawings.

CHENEY-WALTERS-ECHOLS, INC.
909 W. APACHE
FARMINGTON, NM 87401
(505) 327-3303

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Return period (yrs)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	9.09	1	44	13,445	25	----	------	------	BASIN 2
2	SCS Runoff	53.79	1	50	99,945	25	----	------	------	BASIN 3
3	SCS Runoff	53.15	1	46	86,432	25	----	------	------	Basin 4
4	SCS Runoff	25.50	1	45	39,155	25	----	------	------	Basin 6
5	SCS Runoff	22.51	1	38	25,627	25	----	------	------	Basin 7
6	SCS Runoff	37.00	1	44	54,725	25	----	------	------	Basin 8
7	SCS Runoff	25.10	1	51	48,837	25	----	------	------	Basin 9
8	SCS Runoff	46.85	1	41	60,543	25	----	------	------	Basin 10
9	SCS Runoff	18.21	1	38	20,734	25	----	------	------	Basin 11

Proj. file: 09467 DRN3.GPW | IDF file: BLANCO2.IDF | Run date: 10-29-2013

Hydrograph Summary Report

Hyd No.	Hydrograph Type (origin)	Peak Flow (cfs)	Time Interval (min)	Time to Peak (min)	Volume (cuft)	Return Period (yrs)	Inflow hyd (s)	Maximum Elevation (ft)	Maximum Storage (cuft)	Hydrograph Description
1	SCS Runoff	9.09	1	44	13,445	25	---	---	28,424	Basin 2
2	SCS Runoff	53.79	1	50	99,945	25	---	---	115,936	Basin 3
3	SCS Runoff	53.15	1	46	86,432	25	---	---	105,415	Basin 4
4	SCS Runoff	21.3	1	41	39,155	25	---	---	16,044	Basin 6
5	SCS Runoff	22.50	1	38	25,627	25	---	---	48,803	Basin 7
6	SCS Runoff	36.99	1	44	54,725	25	---	---	55,017	Basin 8
7	SCS Runoff	25.10	1	51	48,837	25	---	---	49,569	Basin 9
8	SCS Runoff	46.85	1	41	60,543	25	---	---	66,791	Basin 10
9	SCS Runoff	18.21	1	38	20,734	25	---	---	22,671	Basin 11

Project File: 09467drn.xls

Hydrograph Plot

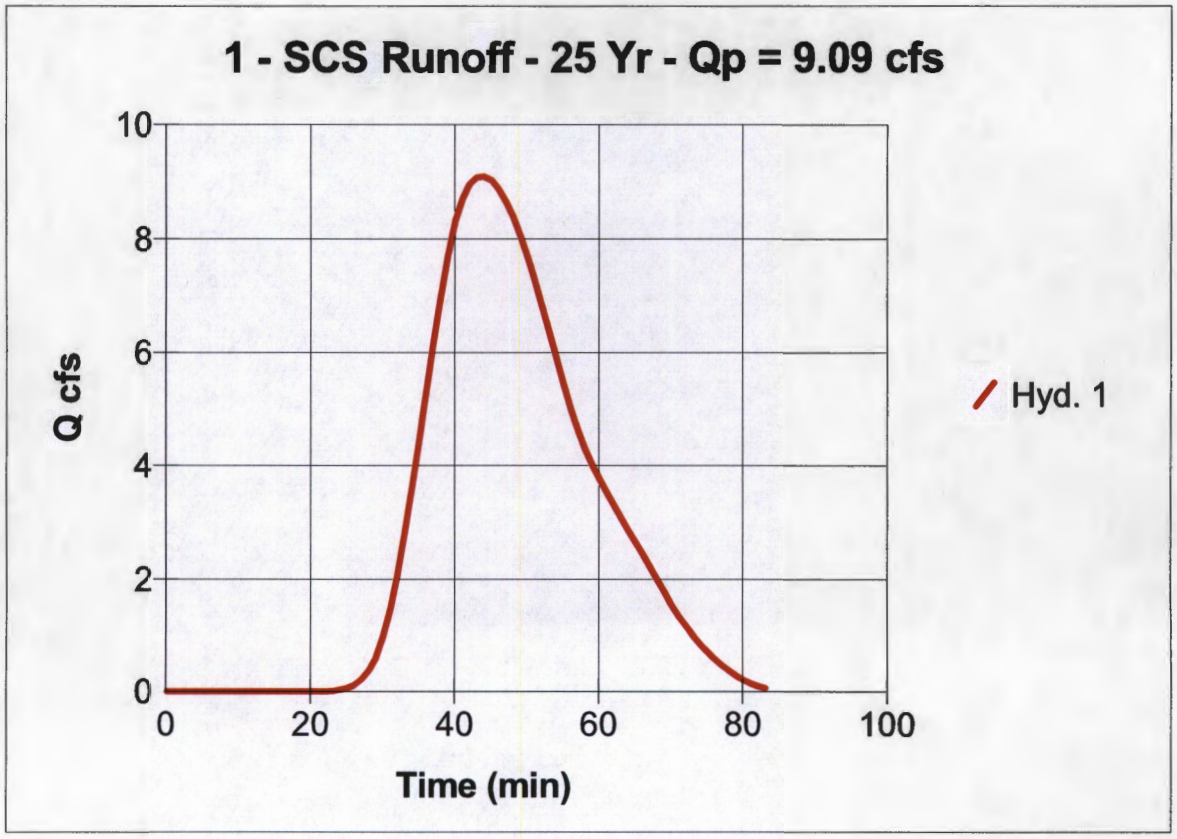
English

Hyd. No. 1

BASIN 2

Hydrograph type	= SCS Runoff	Peak discharge	= 9.09 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 5.70 ac	Curve number	= 86
Basin Slope	= 2.8 %	Hydraulic length	= 985 ft
Tc method	= LAG	Time of conc. (Tc)	= 15.3 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 13,445 cuft



Hydrograph Plot

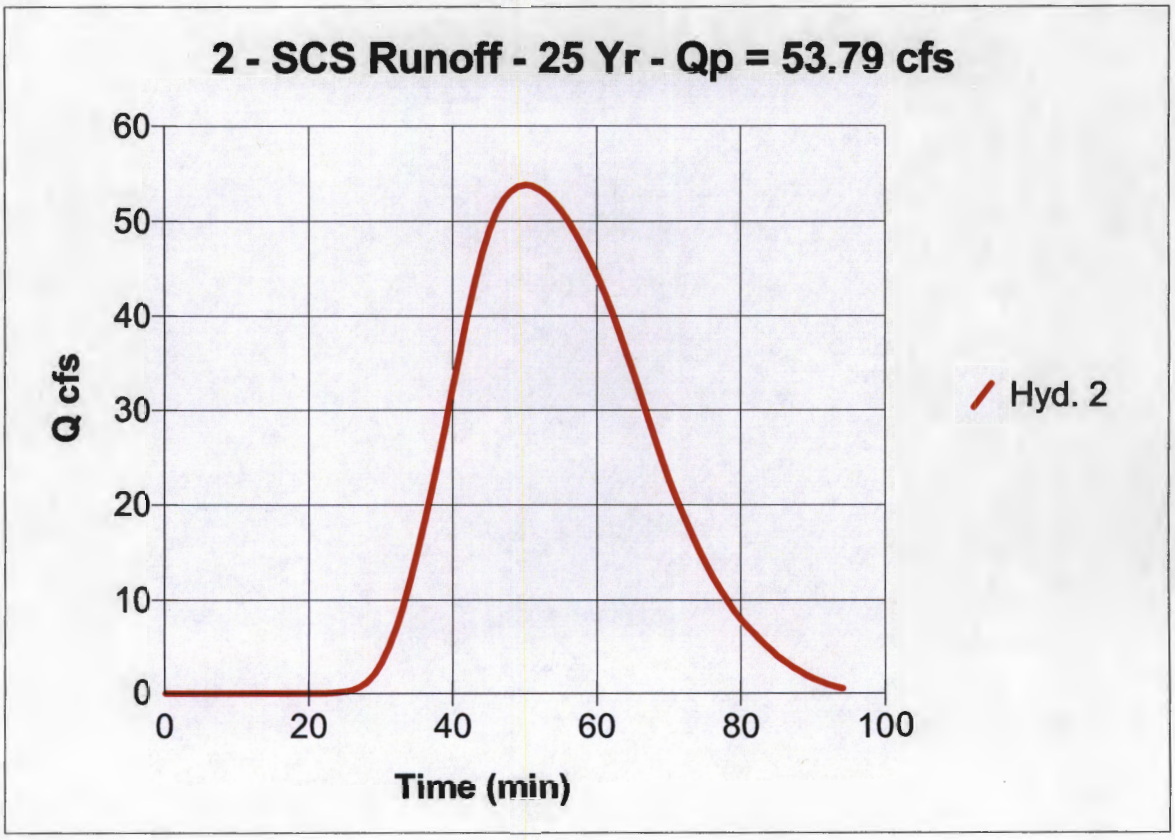
English

Hyd. No. 2

BASIN 3

Hydrograph type	= SCS Runoff	Peak discharge	= 53.79 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 42.90 ac	Curve number	= 86
Basin Slope	= 2.4 %	Hydraulic length	= 1608 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.5 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 99,945 cuft



Hydrograph Plot

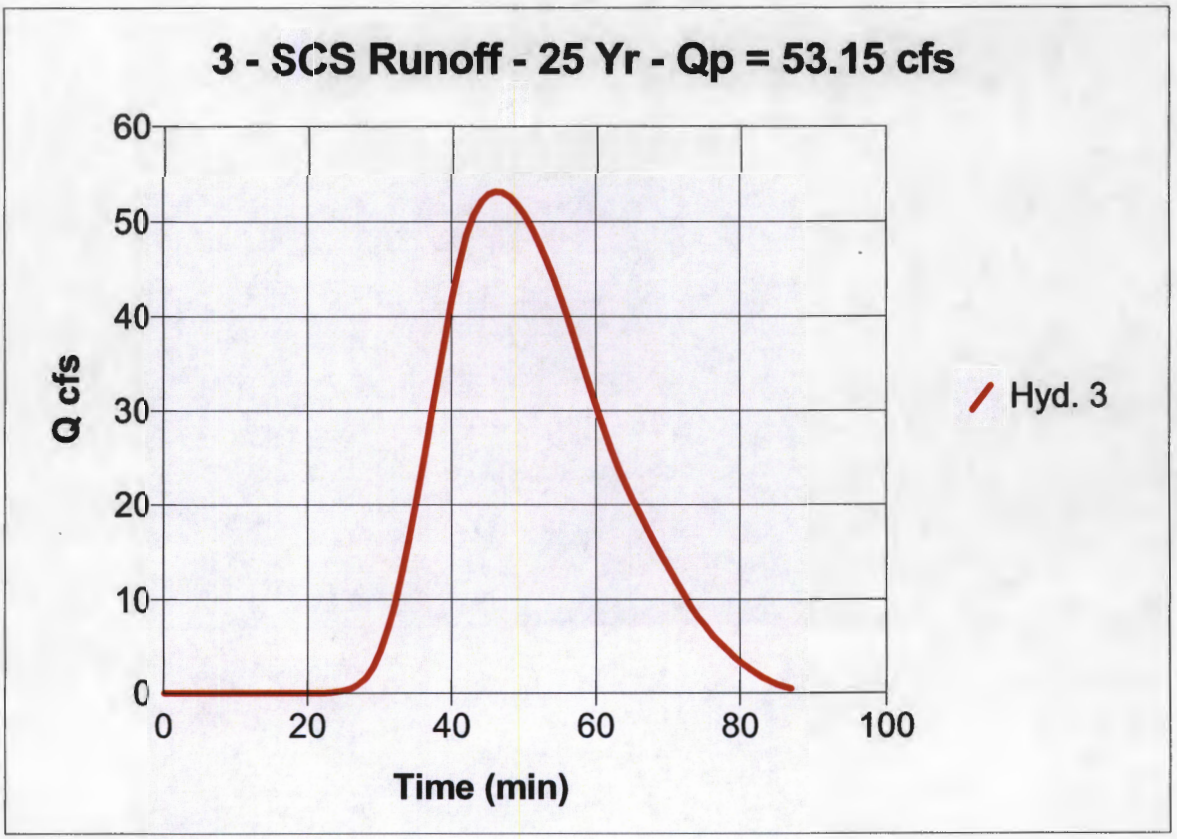
English

Hyd. No. 3

Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 53.15 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 37.10 ac	Curve number	= 86
Basin Slope	= 3.9 %	Hydraulic length	= 1673 ft
Tc method	= LAG	Time of conc. (Tc)	= 19.9 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 86,432 cuft



Hydrograph Plot

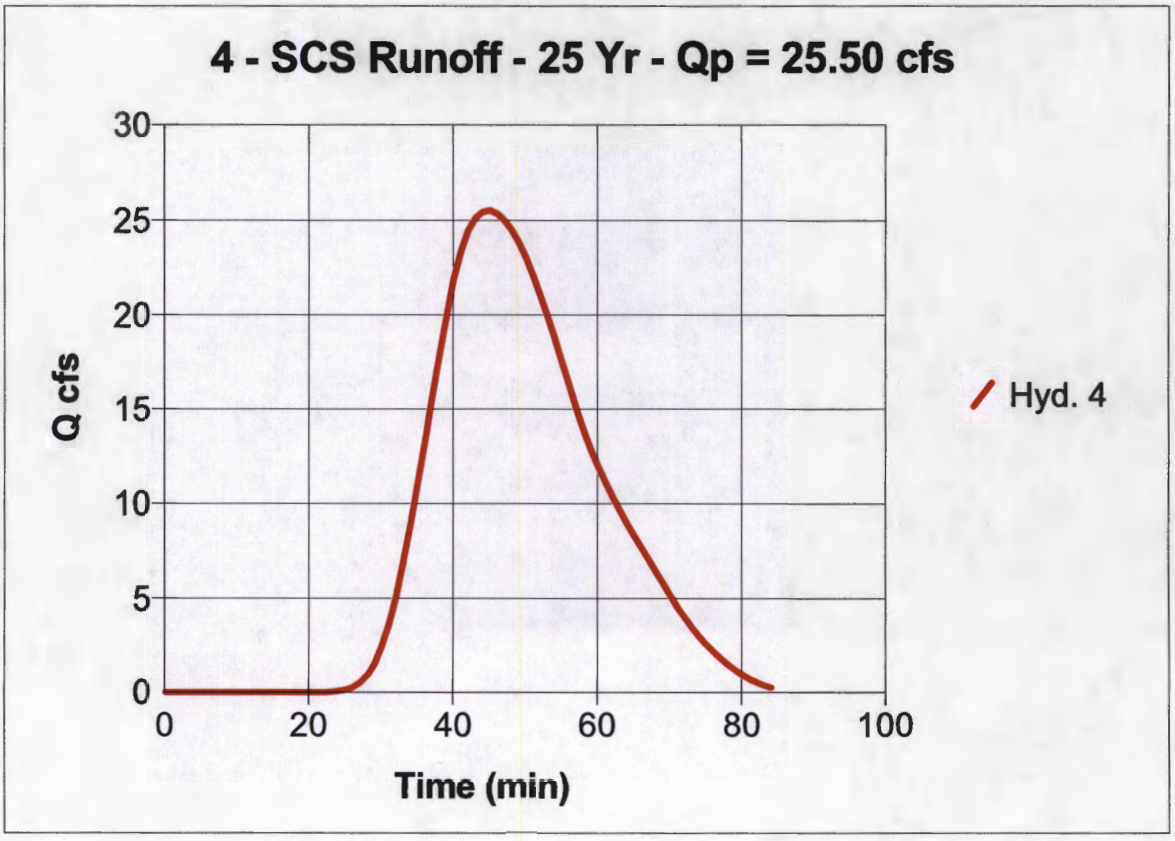
English

Hyd. No. 4

Basin 6

Hydrograph type	= SCS Runoff	Peak discharge	= 25.50 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 17.00 ac	Curve number	= 86
Basin Slope	= 4.7 %	Hydraulic length	= 1623 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.7 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 39,155 cuft



Hydrograph Plot

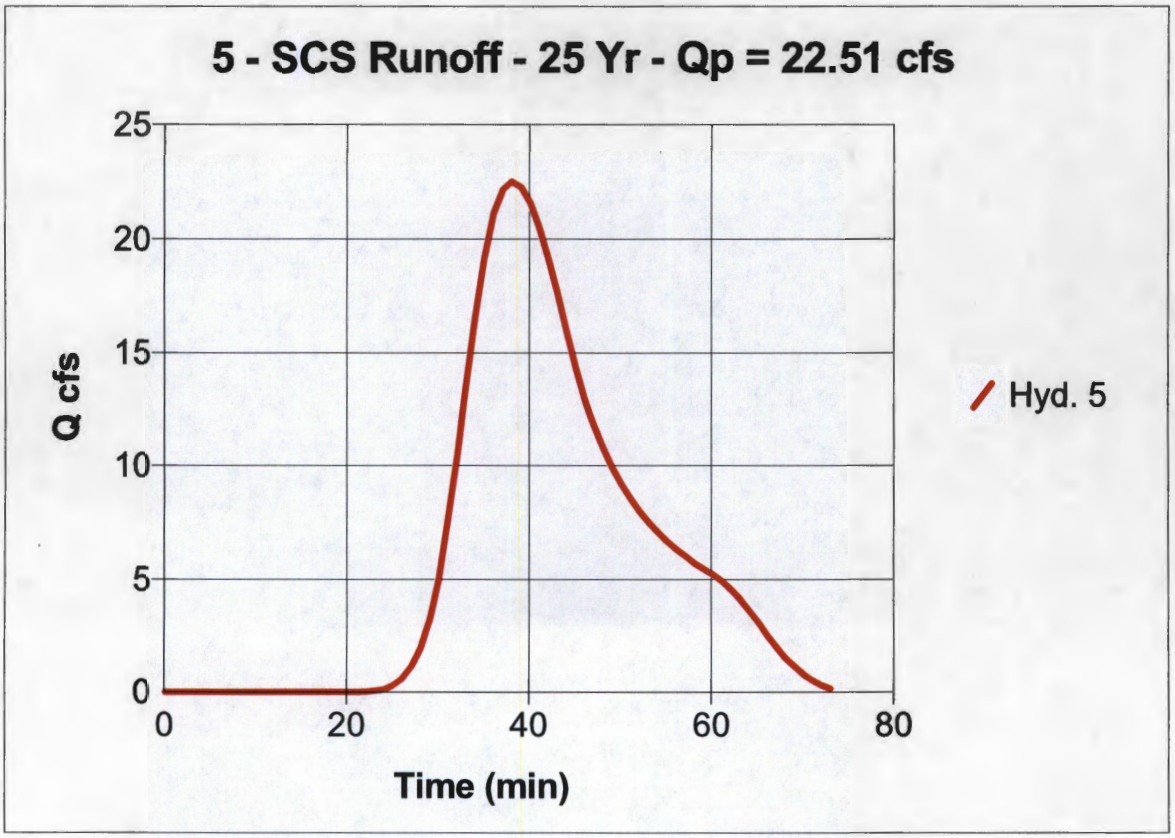
English

Hyd. No. 5

Basin 7

Hydrograph type	= SCS Runoff	Peak discharge	= 22.51 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 11.00 ac	Curve number	= 86
Basin Slope	= 5.2 %	Hydraulic length	= 733 ft
Tc method	= LAG	Time of conc. (Tc)	= 8.9 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 25,627 cuft



Hydrograph Plot

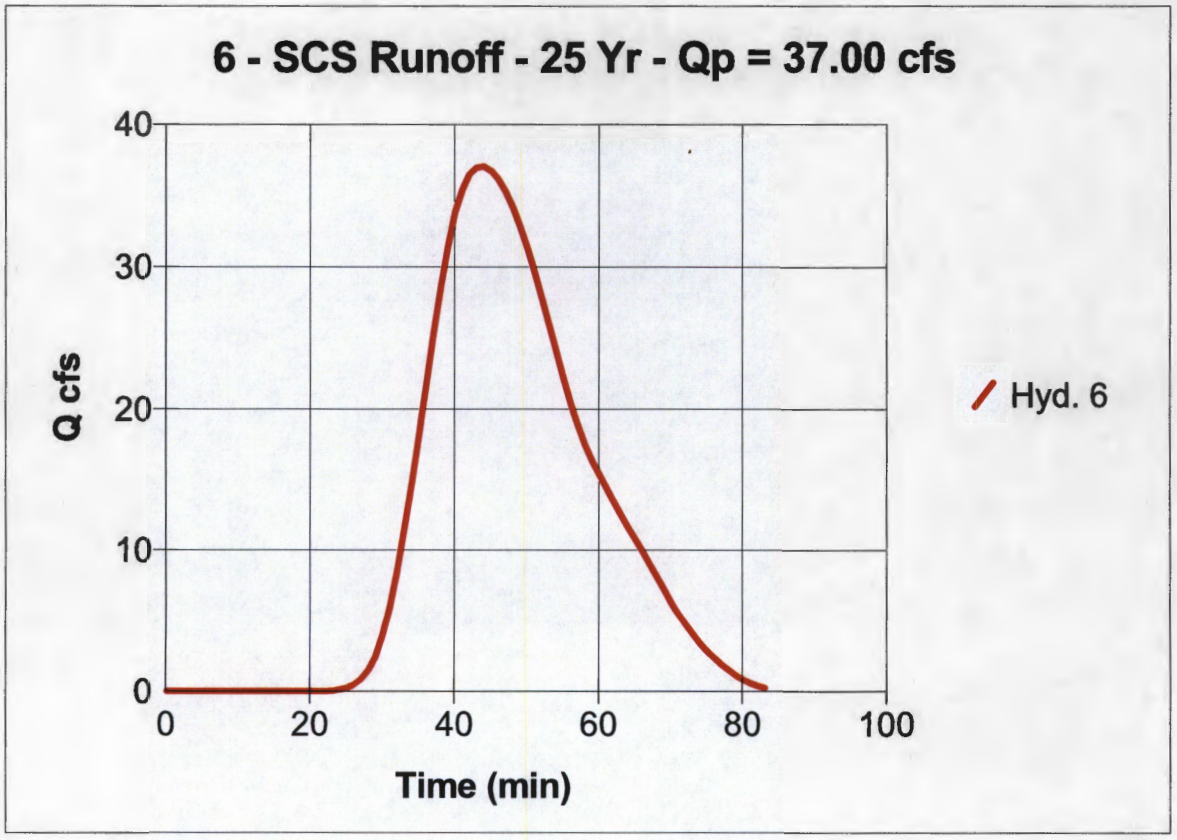
English

Hyd. No. 6

Basin 8

Hydrograph type	= SCS Runoff	Peak discharge	= 37.00 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 23.20 ac	Curve number	= 86
Basin Slope	= 3.9 %	Hydraulic length	= 1326 ft
Tc method	= LAG	Time of conc. (Tc)	= 16.5 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 54,725 cuft



Hydrograph Plot

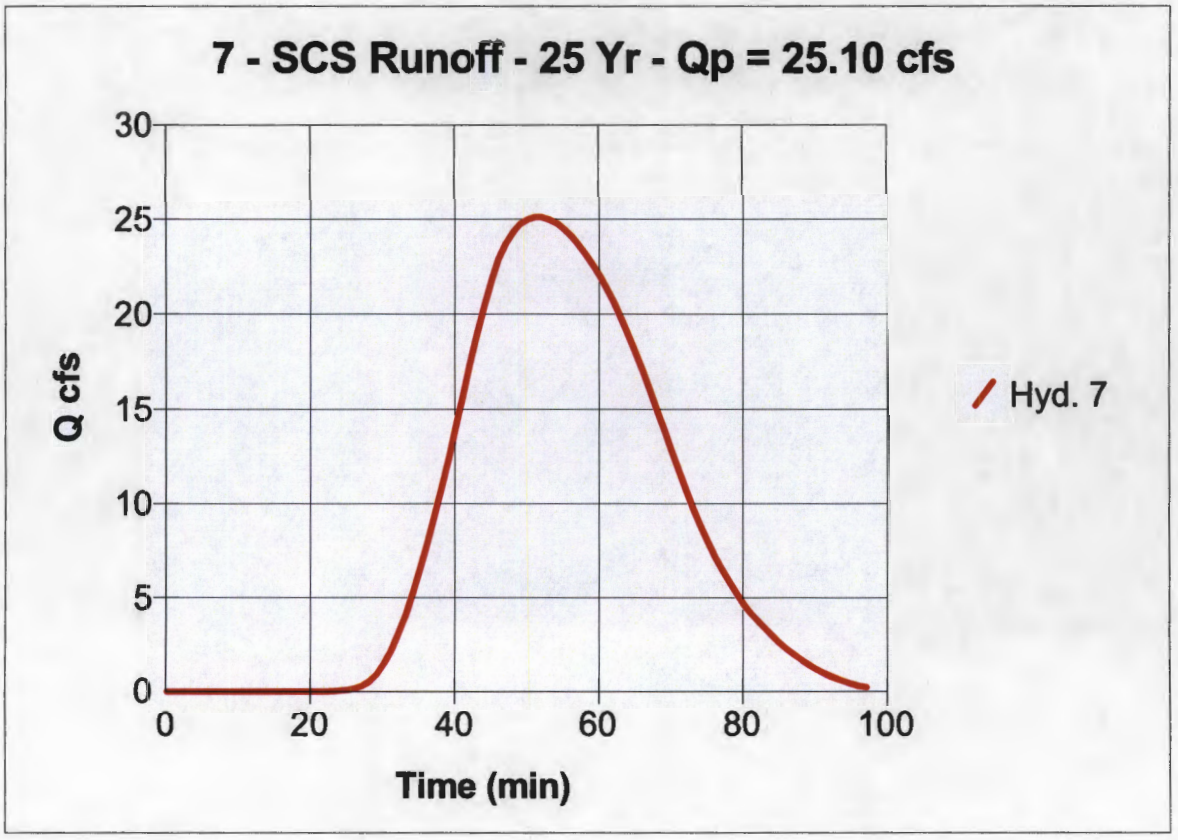
English

Hyd. No. 7

Basin 9

Hydrograph type	= SCS Runoff	Peak discharge	= 25.10 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 20.80 ac	Curve number	= 86
Basin Slope	= 3.6 %	Hydraulic length	= 2288 ft
Tc method	= LAG	Time of conc. (Tc)	= 26.6 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 48,837 cuft



Hydrograph Plot

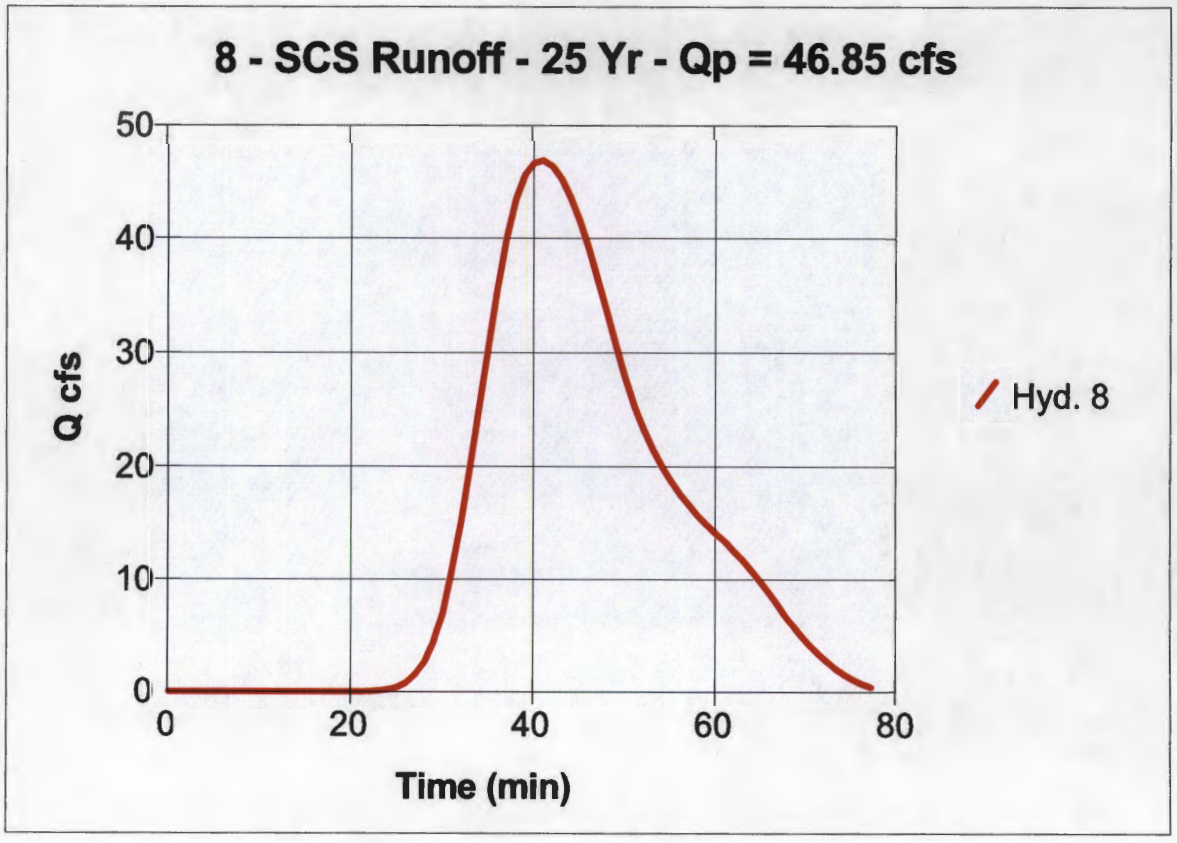
English

Hyd. No. 8

Basin 10

Hydrograph type	= SCS Runoff	Peak discharge	= 46.85 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 26.40 ac	Curve number	= 86
Basin Slope	= 4.4 %	Hydraulic length	= 1085 ft
Tc method	= LAG	Time of conc. (Tc)	= 13.2 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 60,543 cuft



Hydrograph Plot

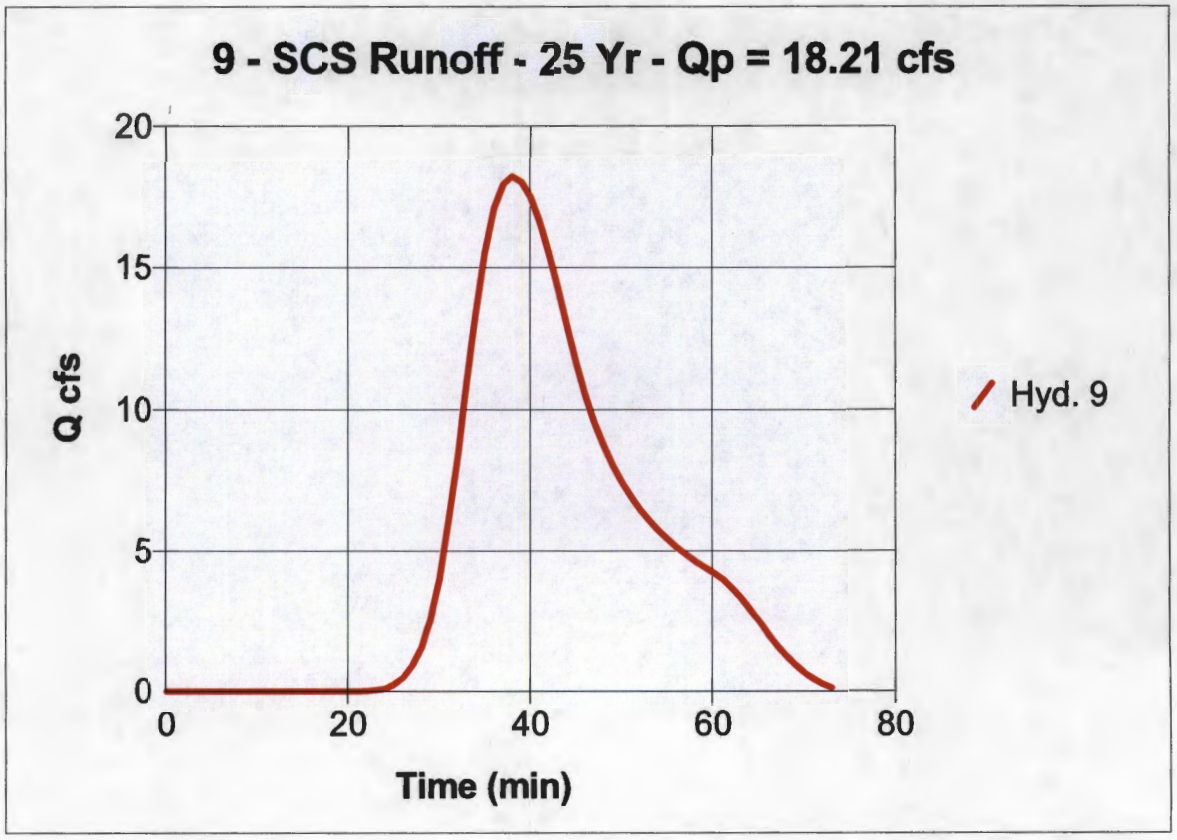
English

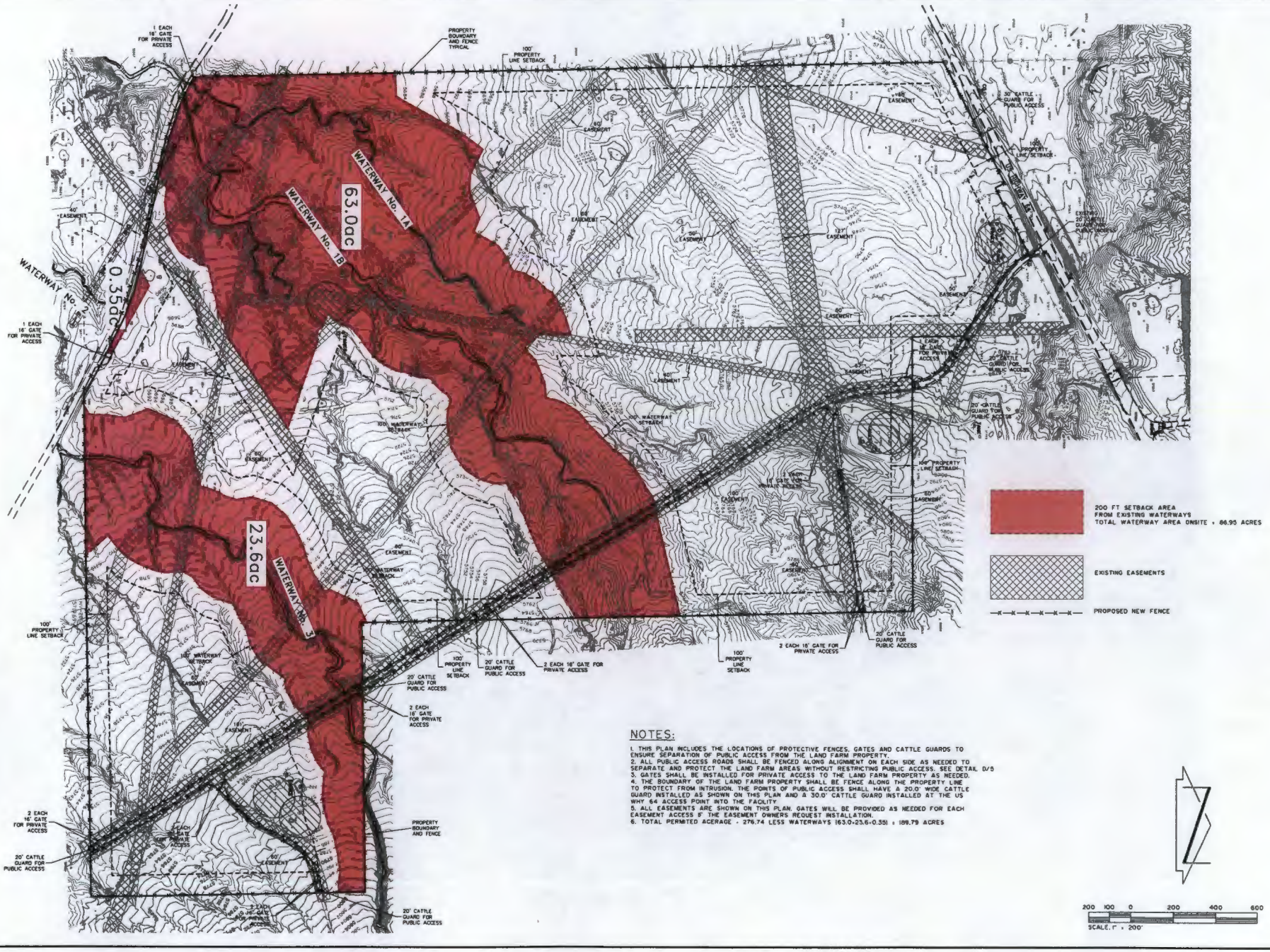
Hyd. No. 9

Basin 11

Hydrograph type	= SCS Runoff	Peak discharge	= 18.21 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 8.90 ac	Curve number	= 86
Basin Slope	= 3.6 %	Hydraulic length	= 673 ft
Tc method	= LAG	Time of conc. (Tc)	= 10 min
Total precip.	= 1.72 in	Distribution	= Synthetic
Storm duration	= 1 hrs	Shape factor	= 484

Total Volume = 20,734 cuft





11.35

DATE	REVISION	BY

PRINTED: October 29, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\09467drn3.dwg

CHENEY-WALTERS-ECHOLS
ENGINEERS • SURVEYORS
900 W. APACHE • FARMINGTON, NEW MEXICO 87401 • (505)327-3583

ON-SITE WATERWAYS AND SETBACKS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1"=200'
FILE:09467DRN3
SHEET
3
OF
15

DRAINAGE BASINS
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

DATE:10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE:1" = 200'
FILE:09467DRN3
SHEET
4
OF
15

CHENEY·WALTERS·ECHOLS, INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

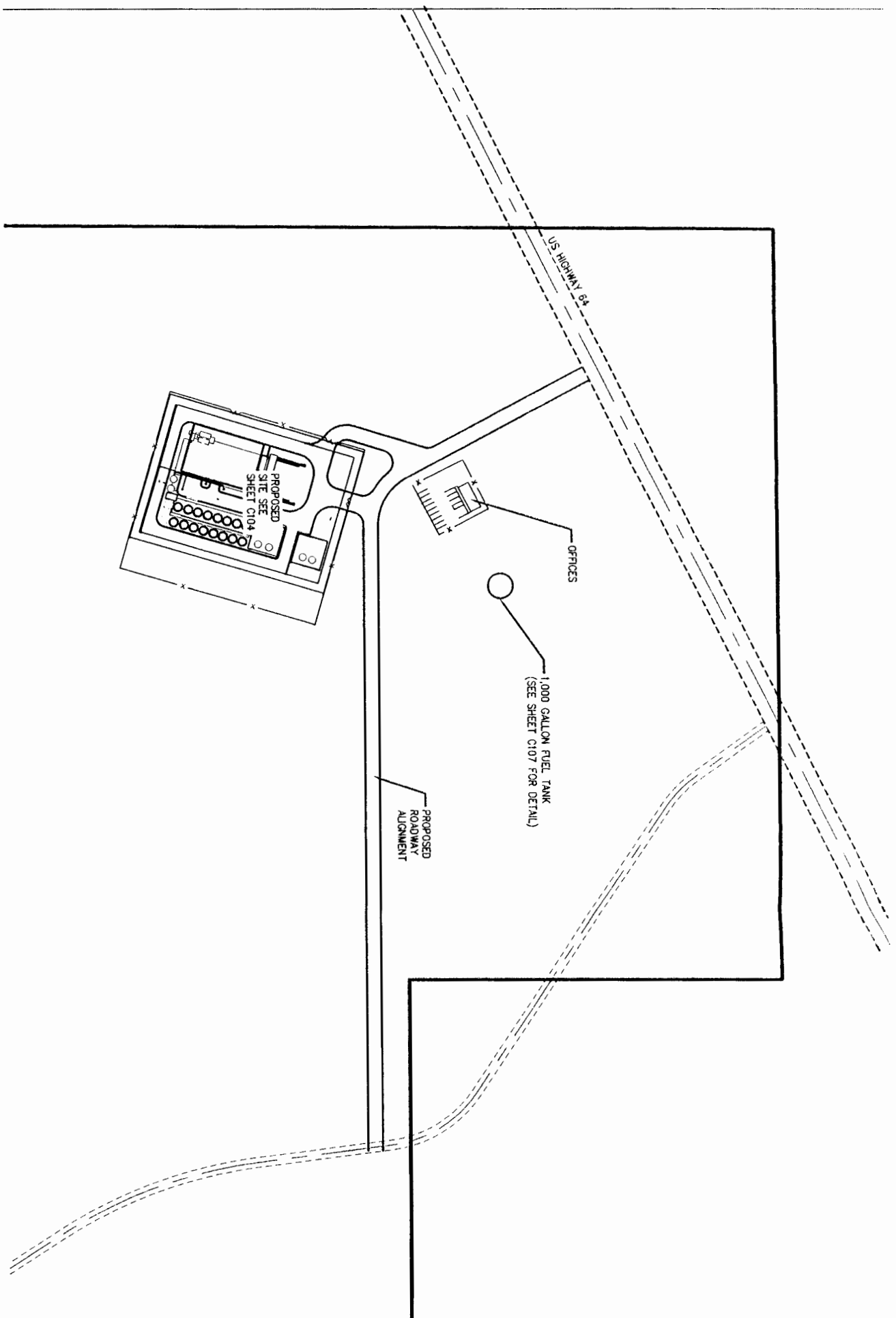
DATE	REVISION	BY

PRINTED: October 29, 2013
FILE: D:\DRAWINGS\LEH\2009\09467\09467dm3.dwg

SCALE: 1" = 200'

HYD. No.	BASIN	REQUIRED CAPACITY	MAXIMUM POND CAPACITY
1	2	13,445	28,424
2	3	99,945	115,936
3	4	86,432	105,415
4	6	39,155	16,044*
5	7	25,627	48,803
6	8	54,725	55,017
7	9	48,837	49,569
8	10	60,543	66,791
9	11	20,734	22,671

* BASIN 6 POND OVERFLOWS TO BASIN 7



PROFESSIONAL ENGINEER
DOUGLAS W. MAZE
NEW MEXICO
13692
11.4.12

SCALE: 1"=100'

Designed	DWM	THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED	
Drawn	DJB		
Checked	DWM		

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FARMINGTON, NM 87401
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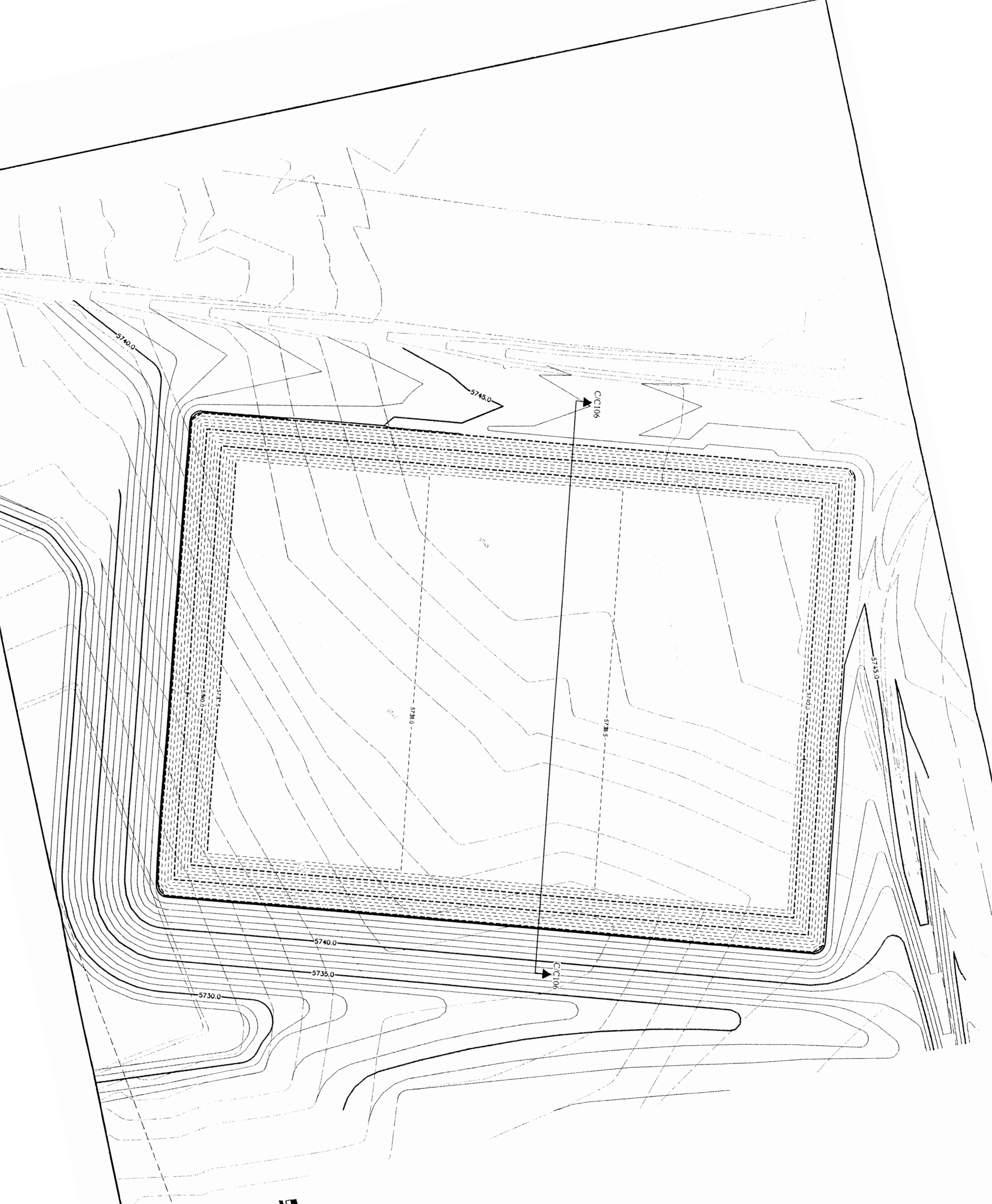
Engineering Environmental Surveying

Date: AUGUST, 2011
Scale: Horiz. 1"=100' Vert. N/A
Project No: 5119829
Sheet: C103

INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
IMPROVEMENT PLAN

Revision	Date	Description	By	Chk'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	


5740.0
5745.0
C/C106
5738.0
5738.5
5740.0
5745.0
5740.0
5735.0
5730.0
C/C106
CONTOUR INTERVAL 1'
SCALE: 1"=20'
NOTE: THE 12" SAND LAYER IS LOCATED TO WARN CONTRACTORS AND THE OPERATOR THAT WHEN DIGGING THEY ARE CLOSE TO THE HDPE LINER. ALL PERSONNEL SHOULD BE NOTIFIED OF THIS PARAMETER.
PROFESSIONAL ENGINEER
DOUGLAS M. MAZE
NEW MEXICO
11.4.2013
Designed DWM
Drawn DJB
SMA
Engineering
Environmental
Surveying
SOUDER, MILLER & ASSOCIATES
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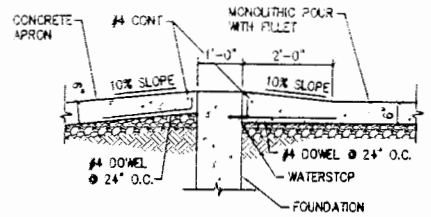
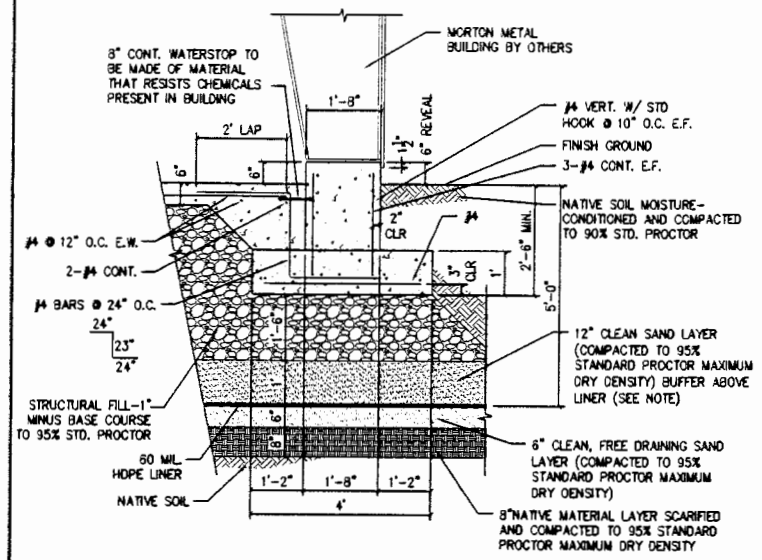
INDUSTRIAL ECOSYSTEMS INC
SAN JUAN COUNTY, NM
CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
LINER GRADING AND DRAINAGE
Revision
Date
11.38



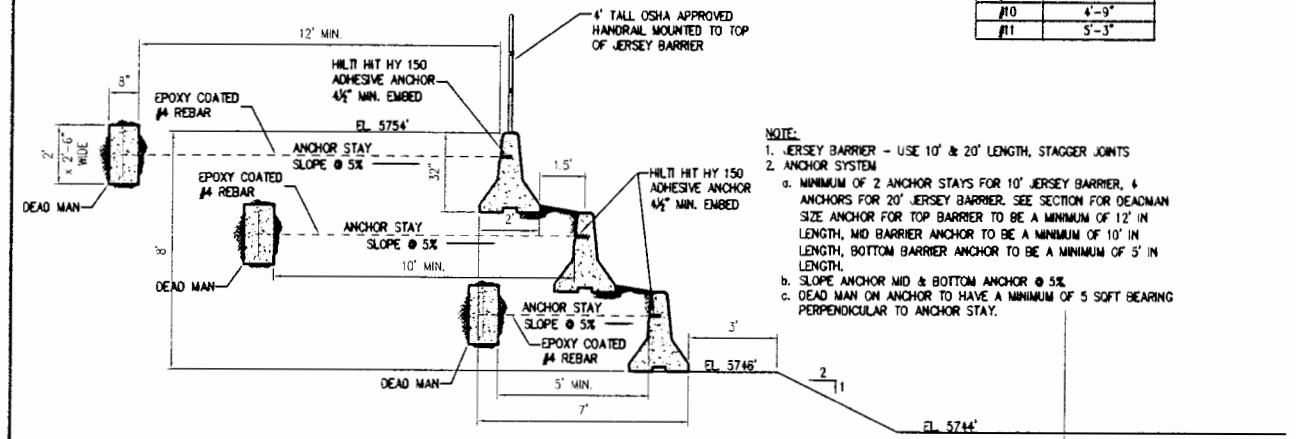
1 / C107 RAMP DETAIL

SCALE: 1/2"=1'-0"



2 / C107 PERIMETER FOOTING DETAIL

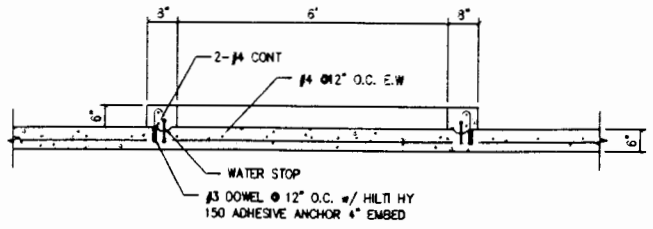
SCALE: 1/2"=1'-0"



NOTE:
1. JERSEY BARRIER - USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
   a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
   b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%
   c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SQFT BEARING PERPENDICULAR TO ANCHOR STAY.

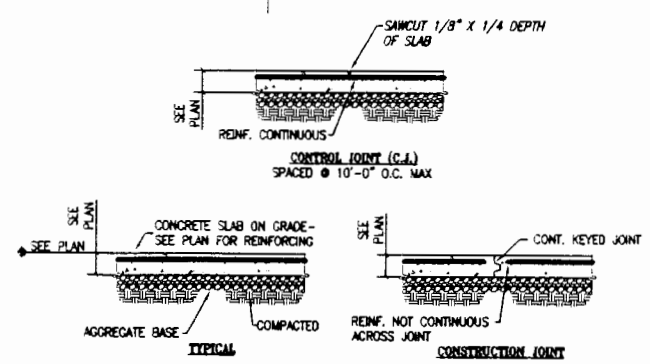
3 / C107 JERSEY BARRIER DETAIL

NOT TO SCALE



4 / C107 SECONDARY CONTAINMENT DETAIL

SCALE: 1/2"=1'-0"



5 / C107 SLAB JOINTS

NOT TO SCALE

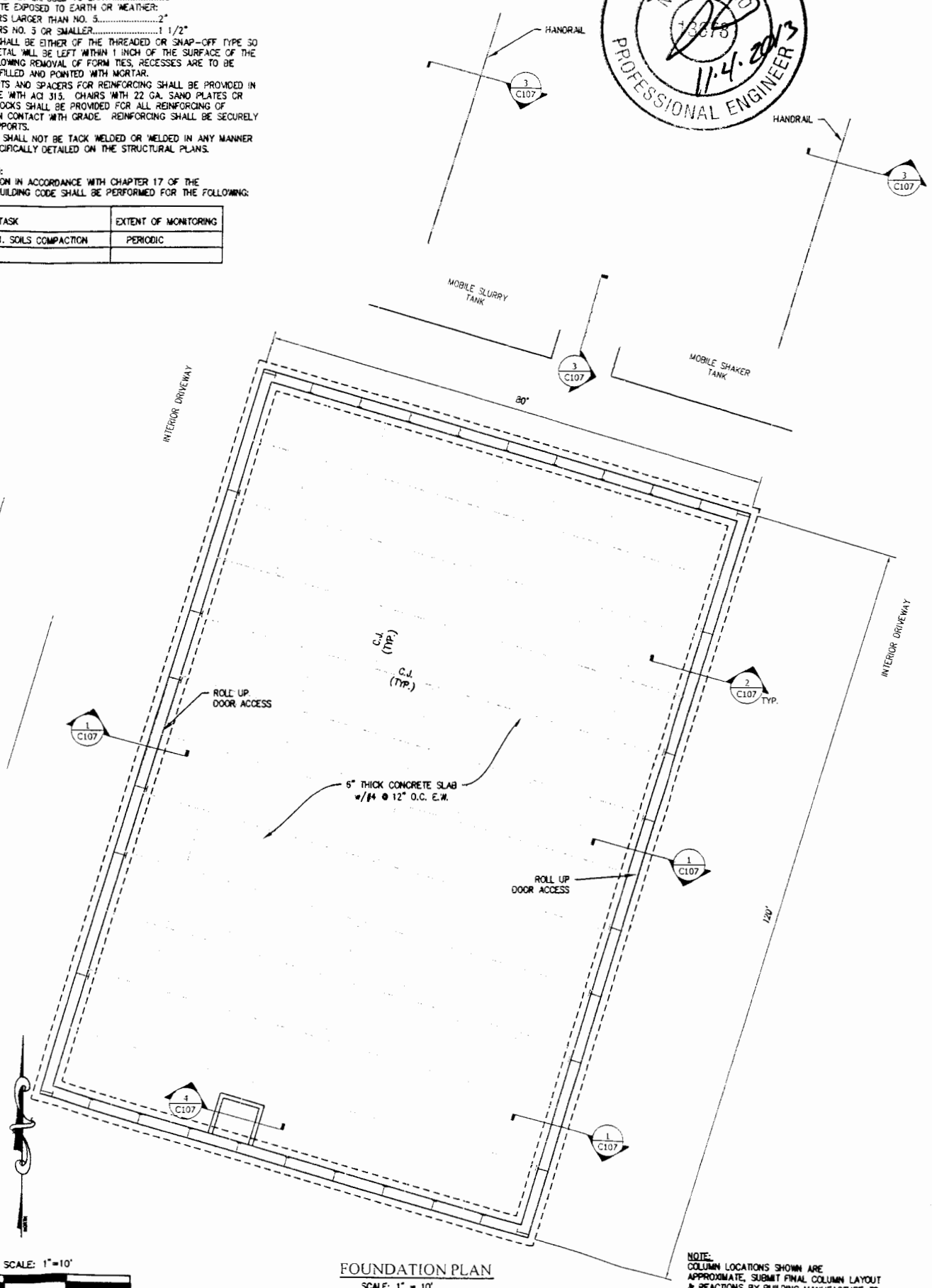
GENERAL STRUCTURAL NOTES

1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2009 EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318
2. DESIGN CRITERIA:
   A. VERTICAL:
      ROOF SNOW 25 PSF
   B. HORIZONTAL:
      (1) WIND*
         BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
         EXPOSURE "C"
      (2) SEISMIC*
         SITE CLASS "D"
3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
   E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.
4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMALWEIGHT CONCRETE:
         A. F'C = 3000 PSI @ 28 DAYS
      (4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

      (4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
      (5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
         A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
         B. CONCRETE EXPOSED TO EARTH OR WEATHER:
            1. BARS LARGER THAN NO. 5.....2"
            2. BARS NO. 5 OR SMALLER.....1 1/2"
      (6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
      (7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.
5. SPECIAL INSPECTION:
   A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC



SCALE: 1"=10'

FOUNDATION PLAN

SCALE: 1" = 10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE. SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

DOUGLAS W. MAZE
NEW MEXICO
13018
11.4.2013
PROFESSIONAL ENGINEER

Revision	Date	By	Description

SAN JUAN COUNTY, NM

INDUSTRIAL ECOSYSTEMS INC.

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
FOUNDATION PLAN

SOUDER, MILLER & ASSOCIATES
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FARMINGTON, NM 87401
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Carlsbad, Hobbs, Roswell, Ruidoso, Santa Fe, Taos, NM
SMA Engineering Environmental Surveying

Designed	Drawn	Checked
GYQ	DJB	DWM

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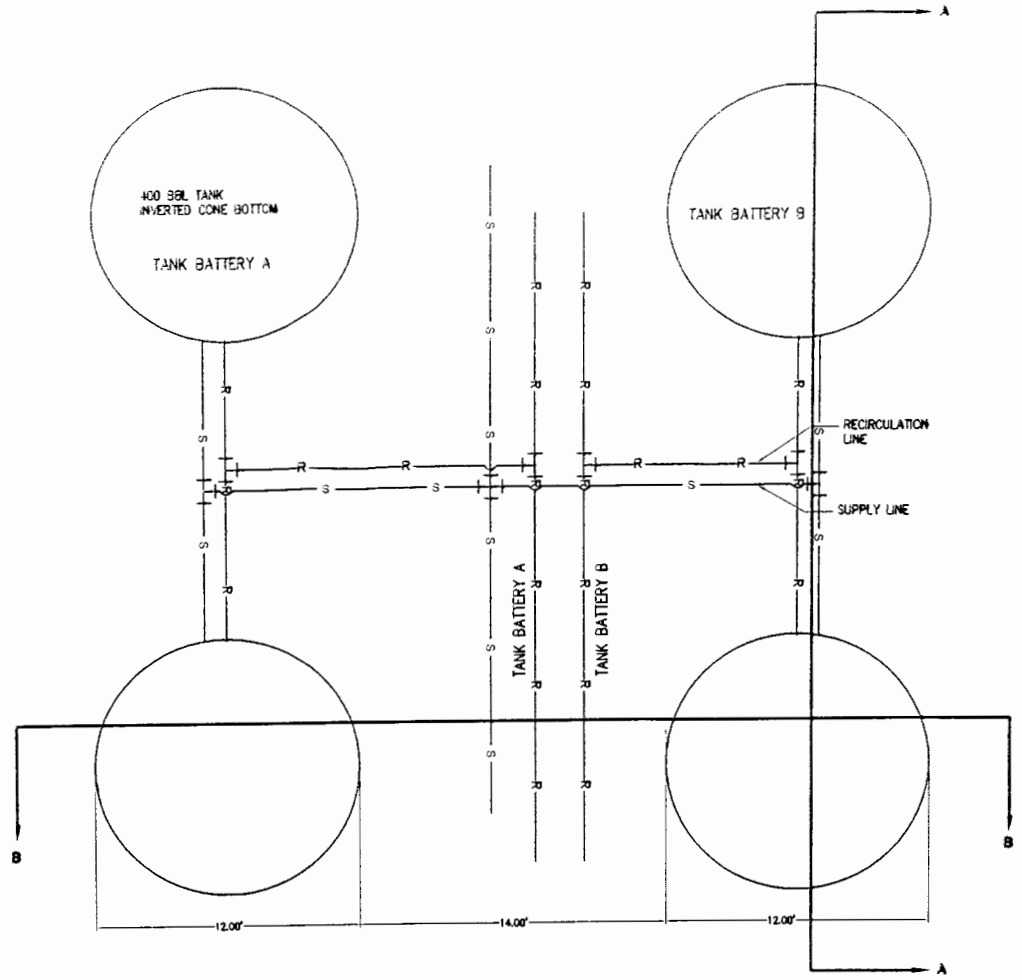
Date: AUGUST, 2011

Scale: Horiz. AS NOTED
Vert. N/A

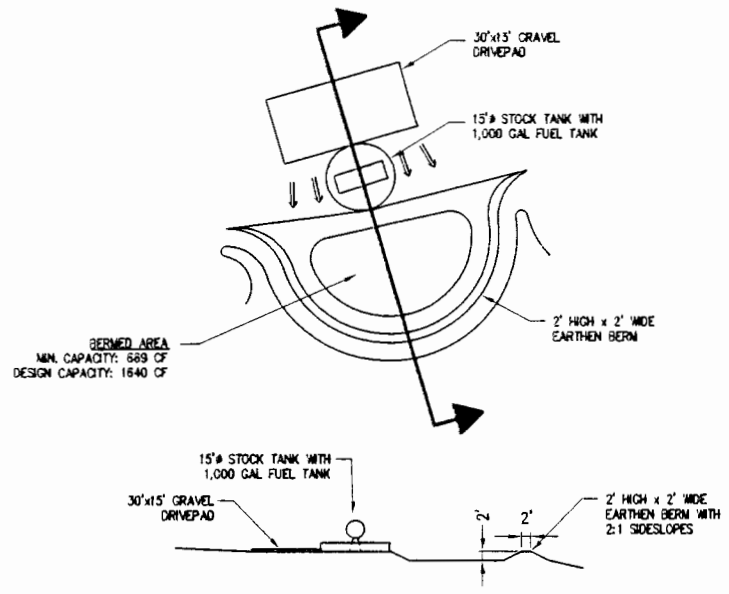
Project No: 5119829

Sheet: C107

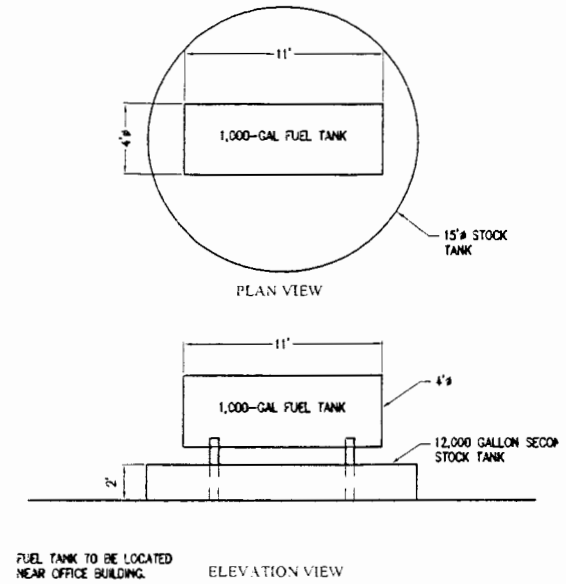
11.39



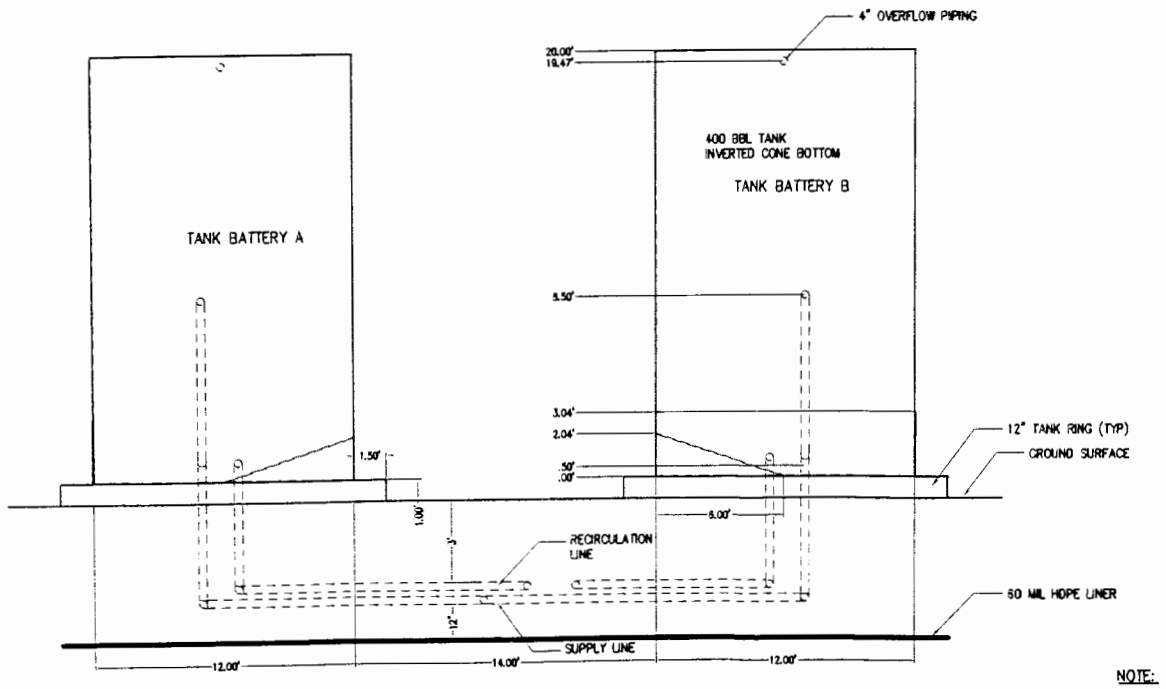
RECEIVING TANK TYPICAL PIPING
NOT TO SCALE



FUELING TANK & CONTAINMENT DRAINAGE
NOT TO SCALE

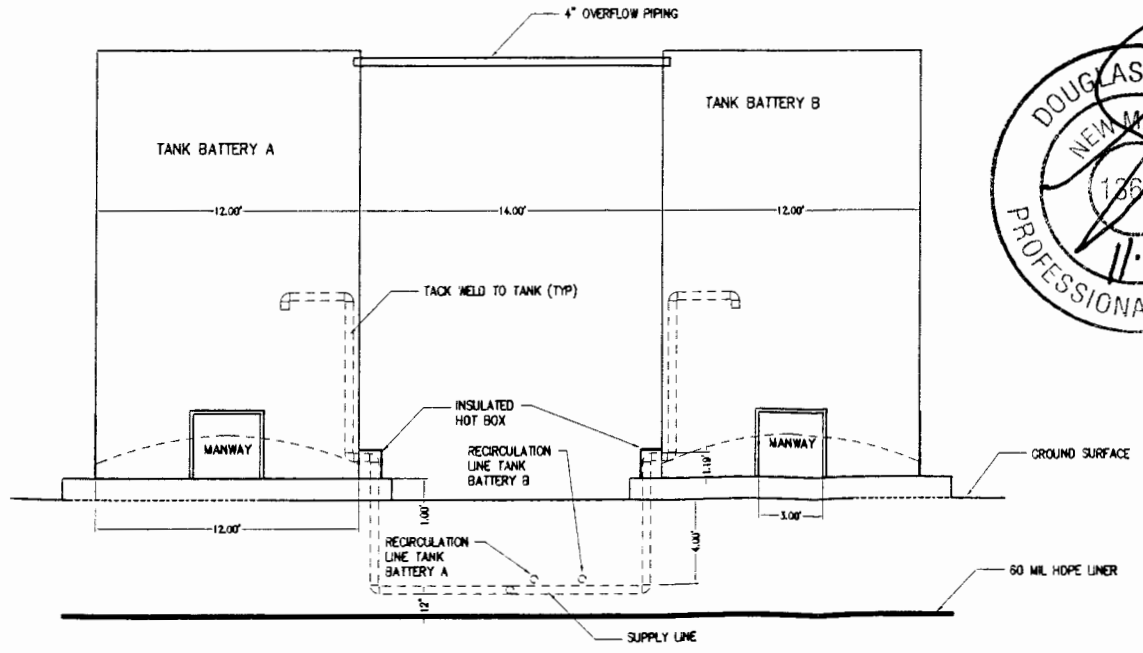


FUELING TANK & CONTAINMENT
NOT TO SCALE



ELEVATION SECTION A-A
NOT TO SCALE

NOTE: SEE SECTION C-C, SHEET C105 FOR TYPICAL SITE CROSS-SECTION



ELEVATION SECTION B-B
NOT TO SCALE

DOUGLAS W. MAZE
NEW MEXICO
13676
11.4.2013
PROFESSIONAL ENGINEER

Revision	Date	Description	By	Check
1	4/2012	OCD REVIEW COMMENTS	LMM	
2	2/2013	REMOVE SEPTIC TANK & RELOCATE BLDG SIZE	LMM	

INDUSTRIAL ECOSYSTEMS INC. — SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PIPING PLAN

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SMA
Engineering
Environmental
Surveying
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Designed	Drawn	Checked
DWM	DJB	DWM

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Date: AUGUST, 2011
Scale: Horiz NTS, Vert N/A
Project No: 5119829
Sheet: C109

BEST MANAGEMENT PRACTICE GUIDELINE (19.15.36.8.C.14)

1. Crowe Blanco Properties, LLC / Industrial Ecosystems, Inc. Environmental Best Practice Guideline

Our environmental best practice guideline is simply undertaking day-to-day land farming activities in a way that is least likely to harm the environment. That is, the procedures and practices outlined in this document are 'best' for the environment and are preferred to certain existing procedures and practices that may create more waste and/or cause more pollution.

We are committed to ensuring our business activities are conducted in a manner that protects the environment and people who are impacted by our operations while also preserving, conserving and minimizing waste of resources.

We recognize that safe working practices and protection of the environment and those affected by our activities are fundamental to its long-term business success.

The company and its employees shall comply with all applicable health, safety and environmental laws and regulations, and apply responsible standards where laws or regulations do not exist.

This document is for guidance/advice only. Understanding and following this guideline will significantly reduce the risk of employees breaching environmental laws and regulations. The guideline should be followed, unless there is an alternative course of action that achieves the same or better environmental outcomes during land farming activities.

In summary, this industry environmental best practice guideline:-

- Gives practical guidance on how environmental best practices can be achieved in the land farming industry.
- Should be followed unless there is an alternative course of action that achieves the same or a better environmental outcome.

2. OBLIGATION OF EMPLOYEE(S)

MANAGER/SUPERVISOR RESPONSIBILITIES

Each manager/supervisor is responsible for safety and environmental activities within their area of supervision.

Responsibilities include:

- Setting good examples.
- Properly communicating policies.
- Enforcing policies.
- Promptly correcting substandard conditions.
- Reporting and investigating spills.

2.1 Obligation of the General Manager

The General Manager is responsible for site planning issues and for demonstrating that environmental best management practices have been incorporated into the development application. Any regulatory requirements placed on the site, such as consent conditions or clean-up, must be brought to the attention of the facility manager.

2.2 Obligations of the Facility and Field Supervisors (Operations Supervisor / Landfarm Operations Manager / Field Operations Manager/ Field Supervisor)

The facility and field supervisors have the overall responsibility for facility/site issues, occupational health and safety (OH&S) and environmental management of the facility/site. The facility and field supervisors also have the responsibility to ensure that all workers under their supervision are aware of and are undertaking their duties in compliance with relevant environmental legislation and industry standards.

2.3 Obligations of HSE Coordinator

IEI has responsibility to ensure appropriate training has been provided to the employees and must provide appropriate details and resources to enable them to complete their job duties without causing environmental pollution.

The HSE Coordinator is responsible for holding and documenting appropriate environmental awareness and ongoing training to all employees and subcontractors. Training should cover all aspects of environmental responsibility required of an employee, including spill response procedures, pollution controls, recycling procedures, dust/odor mitigation, and duty to notify.

EMPLOYEE RESPONSIBILITIES

Each employee shall demonstrate positive attitudes toward injury prevention and environmental stewardship.

Responsibilities include:

- Performing their job safely while protecting the environment.
- Understanding safety and environmental policies related to their job duties/tasks.
- Actively participating in safety and environmental training and meetings.
- Immediately reporting unsafe conditions and practices.
- Immediately reporting spills to their supervisor.

2.4 Obligations of the truck driver(s)

The truck driver has responsibility for performing work at the facility and on locations without causing environmental harm through spillage or leakage of oilfield waste.

The driver is responsible for safe and timely work without causing spillage on site or en route. The driver should be made aware of, and should then observe, all environment requirements that apply to a particular site, such as site access, work restrictions and handling requirements.

The driver should understand the importance of appropriate environmental controls and raise any concerns regarding such controls with the Field Operations Manager. In the event of a spill/leak, truck drivers will immediately notify the Emergency Response Coordinator(s) and the facility spill reporting/corrective actions and/or contingency plan will be implemented accordingly.

2.5 Obligations of General Personnel
(Equipment Operators, Field Technicians, Centrifuge Operators/Helpers, Laborers)

General personnel have a responsibility to ensure that they perform work in ways that do not cause environmental harm through spillages or leakage of oilfield waste.

It is the responsibility of all personnel to ensure that processing oilfield waste will occur in the "Processing Area" which is lined and bermed to prevent environmental harm. Servicing and clean-up of equipment will occur *off-site* at the contracted mechanics shop.

The company or business has a duty to provide appropriate on the job training that addresses industry competency standards in environmental awareness to all employees and subcontractors. Training should cover all aspects of environmental responsibility required of a landfarm employee, including spill response procedures, pollution controls, proper clean-up procedures, noise and dust mitigation and duty to notify relevant authorities.

3. BEST PRACTICES

3.1 Acceptance/Disposal of Oilfield Waste

Purpose

Proper management during the handling, acceptance, and disposal of oilfield waste can minimize the risk of detrimental impact on the environment.

Applications

- For facility personnel
- For facility managers overseeing landfarm activities

Best Management Practices

- The proper handling/acceptance/disposal of oilfield waste must be ensured to prevent spillage which could potentially contaminate the stormwater system.
- Appropriate spills controls will be in place before disposal begins.
- The facility managers will need to be satisfied that all appropriate pollution controls have been placed before disposal occurs.
- Spills and leaks occurring during the disposal process must be cleaned immediately.

Inspection and Maintenance

- Pollution controls should be in place before disposal of oilfield waste. If personnel have any concerns regarding pollution controls, they should be raised with the facility manager(s).
- The facility manager(s) must maintain vigilance or delegate authority to ensure that pollution control procedures are in place.

3.2 Equipment Maintenance

Purpose

Proper vehicle/equipment maintenance can minimize the risk of any detrimental impact on the environment.

Applications

- For all personnel
- For the company contracted mechanic
- For facility managers

Best Management Practices

- Equipment will be serviced off-site and washed down (if needed) at the contracted mechanic's shop.
- When selecting a contracted mechanic, the company will require them to be environmentally conscious.
- Vehicles/equipment and machinery must be regularly serviced and maintained to minimize noise and exhaust emissions and oil and fuel drips.
- A third party company is utilized to pick up and recycle "used motor oil".
- Where possible, equipment should be set up on site. This reduces the potential of leakages from hoses and fittings that could contaminate the stormwater system.

Inspection and Maintenance

- Inspect and maintain vehicles/equipment & machinery regularly to minimize leaks and drips.
- The Facility Manager will make arrangements with the contracted mechanic to transport equipment off-site to be services/cleaned.

4. FUGITIVE DUST & ODOR EMISSIONS

As a landfarm facility, we are responsible for controlling fugitive dust and odor emissions related to landfarm operations.

FUGITIVE DUST EMISSIONS - are a result of the lack of natural precipitation and moisture to unpaved roadways and biopiles on the facility.

ROAD AND YARD DUST

- Minimize fugitive dust emissions due to vehicle travel by:
  - site layout and design
  - Posting vehicle speed limits

  During the drier months, when natural precipitation is not being received regularly, unpaved roadways will be sprayed using fresh water.
- Natural vegetation will be allowed to grow to help provide barriers

DUST FROM BIOPILES

- Minimize fugitive dust emissions from biopiles by:
  - Trenching the biopiles, as needed, with fresh water.

ODOR EMISSIONS - are a natural result/occurrence associated with the bioremediation process.

ODOR CONTROL

- Minimize nuisance odors by:
  - When feasible, manure, used as part of the bioremediation process, will be stored on areas of the facility furthest from nearby residence(s);
  - Biopiles located nearest to residential areas will be "turned" early in the week between the hours of 8:00 am – 5:00 pm, when neighbors are most likely to be at work;
  - Reducing the holding time of waste disposed of at the tank battery.

5. RUN ON/OFF CONTROL

The purpose of the Run On/Off Control plan is to comply with provisions to control run-on water onto the site and run-off water from the site that complies with the requirements of 19.15.36.13.M NMAC. Run on/off control systems shall prevent flow onto the facility's *active* portions and prevent flow from leaving the facility during the peak discharge from a 25 year storm. Refer to the company's Run On/Off Control Plan.

Run-on control measures will be implemented to prevent uncontaminated surface flows from entering the facilities *active* portions by diverting run-on waters around the facility by use of v-ditches, earthen berms or soil swales.

Run-off control measures will be implemented to prevent discharging potentially contaminated pollutants from the facility's *active* portions to the waters of the state or United States that violates state water quality standards by:

- Installing v-ditches and earth berms prior to site disturbance and construction activities;
- Installing silt fences, vegetated buffers, hay or straw bales, slash buffers, mulching, check dams, or compost filter socks for erosion and sediment controls;
- Installing surface water control features including diversion berms;
- Installing earthen berms around each of the active "treatment" landfarm cells;
- Installing retention pond/dikes within each of the bermed active "treatment" cells to contain run-off from the individual "treatment" cells;
- Installing retention ponds/dikes in specific areas of the facility designed to contain run-off from a 25 year storm event;
- Install a liquids collection system (liner and earth berm) in the "Processing Area" areas to capture stormwater and process wastewater;
- Storing the manure (used in the bioremediation process) pile(s) in a bermed area (secondary containment) within a bermed cell to prevent run-off;
- Storing chemicals in covered and/or lined areas;
- Containing the diesel fuel tank within a metal stock tank in an earthen bermed (secondary containment) vehicle fueling area;
- Captured stormwater will be transported off-site for disposal to an appropriate facility with the proper manifest forms.

6. HANDLING AND DISPOSAL OF RCRA EXEMPT, NON-HAZARDOUS WASTES

Proper handling and disposal of oilfield waste is critical in assuring the health and safety of the public and protection of the environment. Some important things to remember are:

- Only RCRA exempt (predominately hydrocarbon impacted soils/gravels/drill cuttings and tank bottoms), NON-HAZARDOUS waste is accepted for disposal.
- Waste must conform with the chloride content standards prior to being placed into a biopile within an active "treatment" cell.
- Waste must pass the paint filter test prior to being placed into a biopile within an active "treatment" cell.

7.1 CONTAINERS

- Maintain containers in good conditions. Prevent leaks, ruptures and the accumulation of rainwater on the top of drums.
- If a container leaks, the material shall be transferred to a new container.
- Keep lids on, and containers closed, when not in use.
- Use funnels when pouring liquids.
- Use containers that are compatible with the waste being stored.
- Do not mix different or incompatible wastes in the same container.

7.2 CONTAINER LABELING

Proper labeling can reduce accidents and ensure proper disposal. Containers shall be labeled as follows:

ORIGINAL CONTAINERS

- Labels must include the chemical or product name and the proper hazard warning to enable the user to immediately understand the material's primary health and/or physical hazard(s).
- A recommended practice is to also include the common name of the material such as paint thinner, window cleaner, etc.
- Employers or employees shall not remove or deface labels on containers of hazardous chemicals.
- Labels will be legible and in English, however, for non-English speaking employees, the information will be relayed to them in their own language.

SECONDARY CONTAINERS

- Labels must include the chemical name and hazard warning.
- A recommended practice is to also include the common name of the material such as paint thinner, window cleaner, etc.

LABELING REQUIREMENTS

- When two or more labels are required, they will be displayed next to each other;
- Labels will be on a background of contrasting color;
- Labels may not be obscured by markings or attachments;
- Labels must be durable, weather resistant, and able to withstand exposure for 30 days without deterioration or discoloration;
- Labels may be printed on or affixed to a tag when package surfaces are such that labels cannot be affixed.

8. CONTAINER STORAGE

- Containers will be stored in the Processing Area building which the interior walls and floors will be sealed with a coating designed to resist oxidizing agents; (Sheet C104-Proposed Site Plan-Elevation View);
- When possible, storage containers will be stored in a single area; however incompatible materials shall not be stored beside each other;
- The hydrofluoric acid totes will be housed in a separate room connected to the outside of the Processing Area building (Refer to Sheet C104-Proposed Site Plan-Hydrofluoric Acid Totes Containment);
- The H2S treating agent is housed in the Processing Area building (Refer to Sheet C104-Proposed Site Plan-Schematic of Chemical Feed Injection Pump with H2S Breaker Solution Tote & Sheet C107-Foundation Plan-Cross Section 4-Secondary Containment Detail);
- Sufficient aisle space between containers shall be allowed to ensure proper inspection for leaks or damage.

9. OPPORTUNITIES

The company and personnel will continually look for additional opportunities to reduce wastes, protect fresh water, public health, safety and the environment.

10. EMPLOYEE EDUCATION

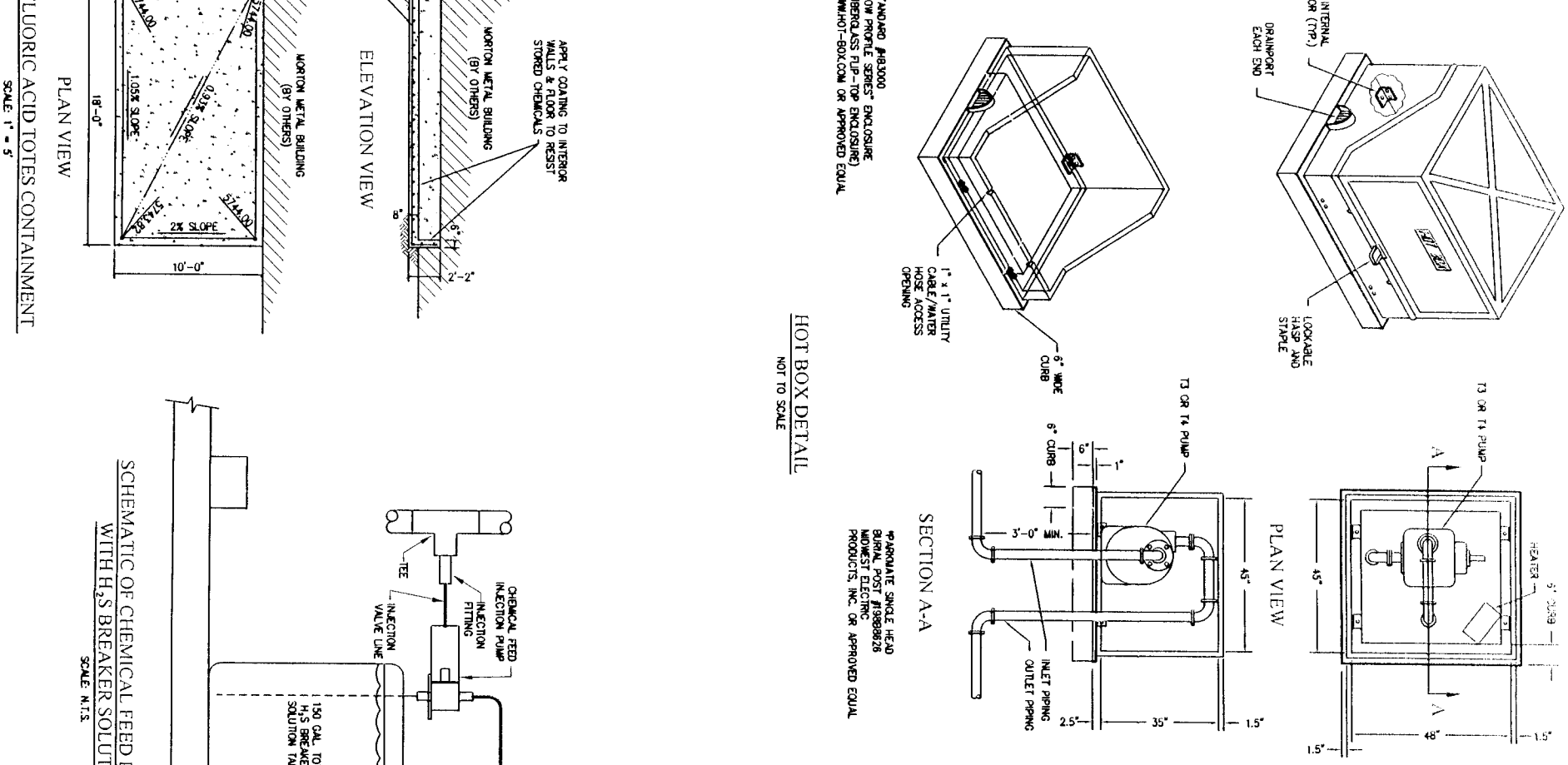
Pollution prevention efforts can only be successful if all employees are committed to protecting the environment and minimizing operational wastes. Regular employee training and meetings will be held to discuss changes and on-going practices and procedures related to the company environmental best practices guidelines.

Employees will be trained to:

a) recognize and minimize environmental hazard's;
b) handle / dispose of waste in a manner to protect the environment;
c) clean and service vehicles/equipment in a manner to protect the environment;
d) prevent pollution and minimize waste;
e) deter fugitive dust and odor emissions;
f) Implement and practice proper container storage/labeling/disposal techniques; and
g) Implement and practice proper or new pollution prevention techniques.

11. GENERAL FACILITY OPERATIONS/MAINTENANCE

- Maintain all equipment according to manufacturer's recommendations to prevent leaks.
- Implement procedures to minimize fugitive dust and odor emissions.
- Keep a routine maintenance log on-site of vehicles/equipment.
- Provide integrated quality, safety and environmental management systems for the facility, operations of the facility and waste handling/disposal process.



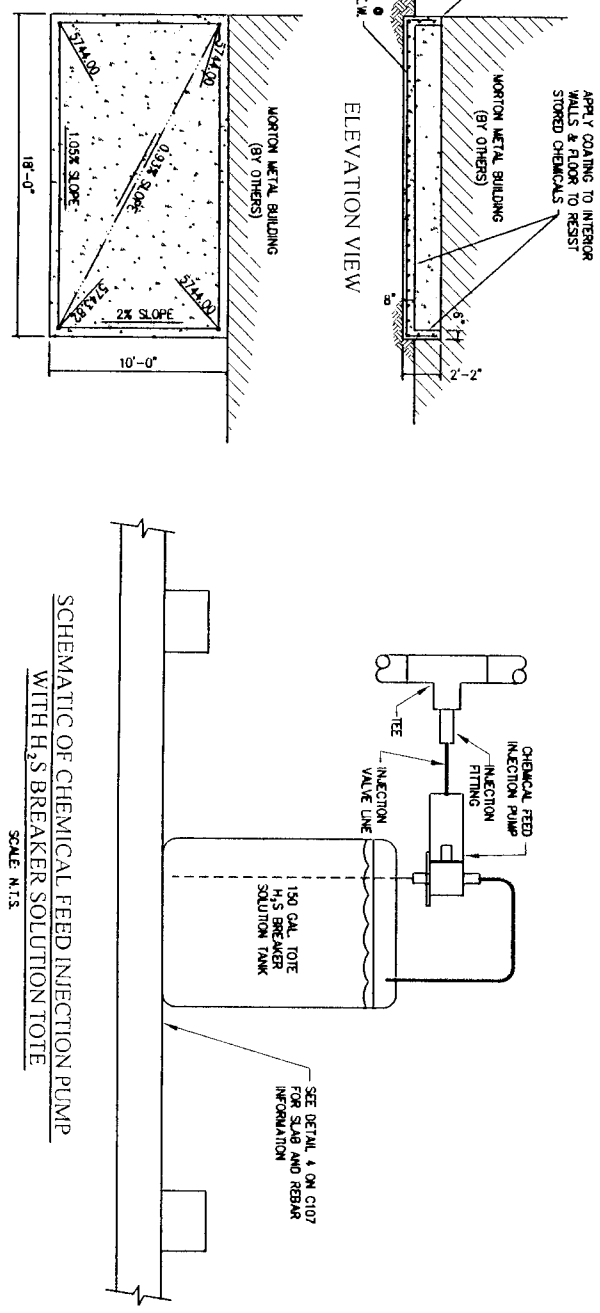
HOT BOX DETAIL

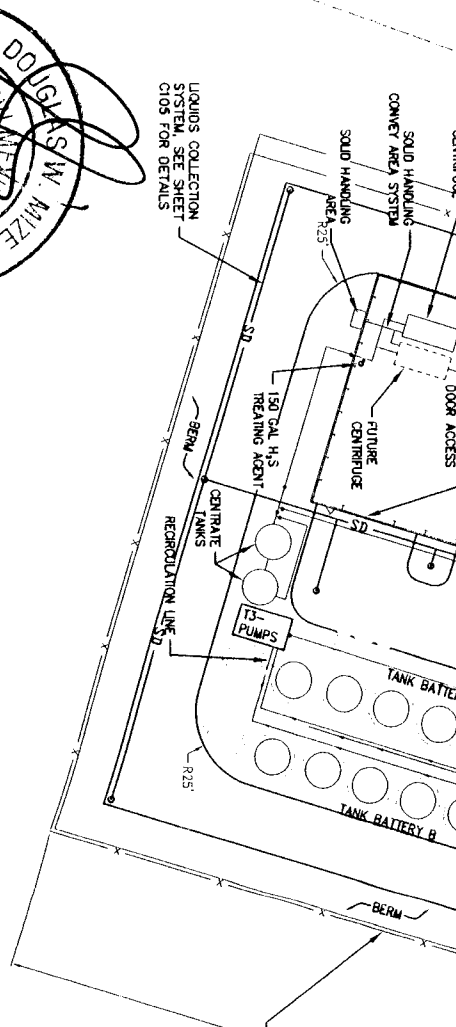
NOT TO SCALE

STANDARD #HB3000 "LOW PROFILE SERIES" ENCLOSURE (FIBERGLASS FLIP-TOP ENCLOSURE) WWW.HOT-BOX.COM OR APPROVED EQUAL

*FARMINATE SINGLE HEAD BURIAL POST #19888626 MIDWEST ELECTRIC PRODUCTS, INC. OR APPROVED EQUAL

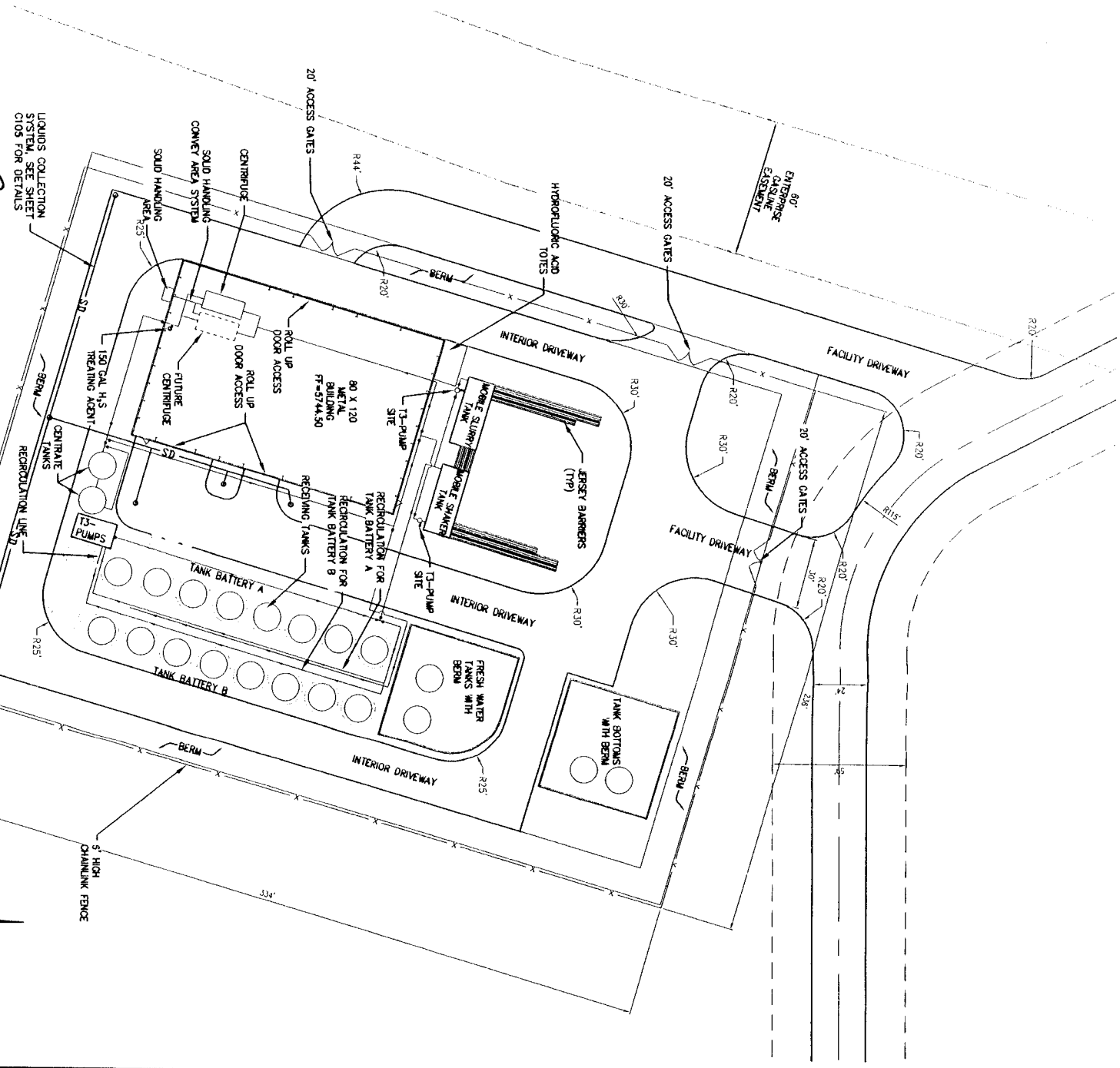
SECTION A-A





SCHEMATIC OF CHEMICAL FEED INJECTION PUMP WITH H_2S BREAKER SOLUTION TOTE

SCALE: N.T.S.



PROPOSED SITE PLAN

SCALE: 1" = 30'

PROFESSIONAL ENGINEER
DOUGLAS W. MAIZE
NEW MEXICO
13673
11-7-2012

Designed DWM	Drawn DJB	Checked DWM	

SMA Engineering Environmental Surveying

SOUDER, MILLER & ASSOCIATES
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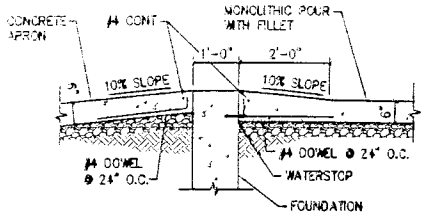
INDUSTRIAL ECOSYSTEMS INC. SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
PROPOSED SITE PLAN

Revision	Date	Description	By	Check'd
1	4/2012	OCD REVIEW COMMENTS	DWM	
2	2/2013	REMOVE SEPTIC TANK & REVISED BLDG SIZE	DWM	

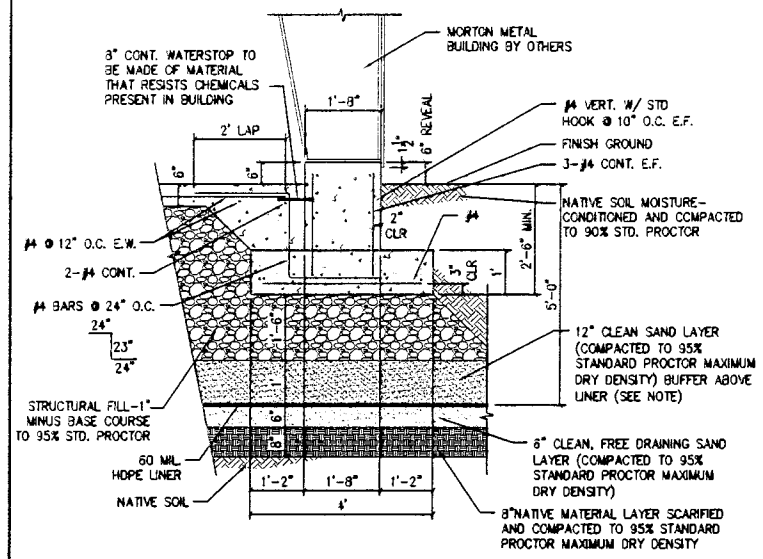
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT'S STAMPED, SIGNED AND DATED

Date: AUGUST, 2011
Scale: Horz 1" = 30' Vert N/A
Project No: 5119829
Sheet: C104



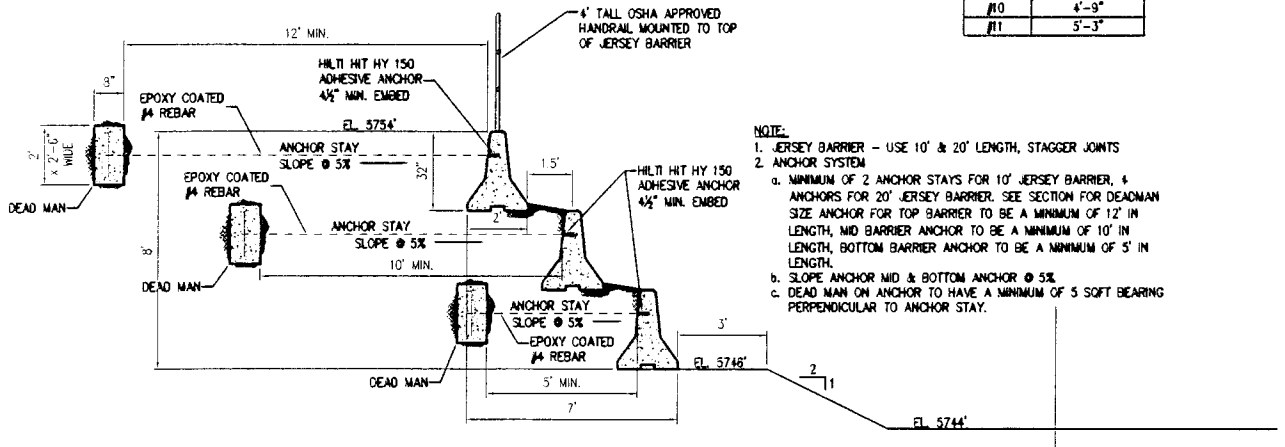
1 / C107 RAMP DETAIL

SCALE: 1/2"=1'-0"



2 / C107 PERIMETER FOOTING DETAIL

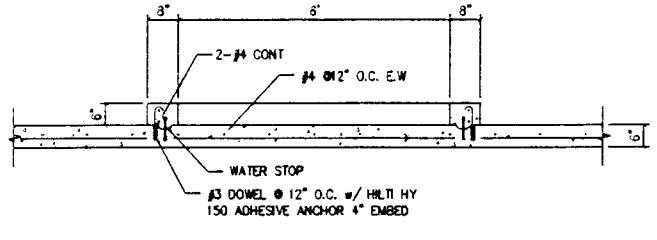
SCALE: 1/2"=1'-0"



NOTE:
1. JERSEY BARRIER – USE 10' & 20' LENGTH, STAGGER JOINTS
2. ANCHOR SYSTEM
   a. MINIMUM OF 2 ANCHOR STAYS FOR 10' JERSEY BARRIER, 4 ANCHORS FOR 20' JERSEY BARRIER. SEE SECTION FOR DEADMAN SIZE ANCHOR FOR TOP BARRIER TO BE A MINIMUM OF 12' IN LENGTH, MID BARRIER ANCHOR TO BE A MINIMUM OF 10' IN LENGTH, BOTTOM BARRIER ANCHOR TO BE A MINIMUM OF 5' IN LENGTH.
   b. SLOPE ANCHOR MID & BOTTOM ANCHOR @ 5%
   c. DEAD MAN ON ANCHOR TO HAVE A MINIMUM OF 5 SQFT BEARING PERPENDICULAR TO ANCHOR STAY.

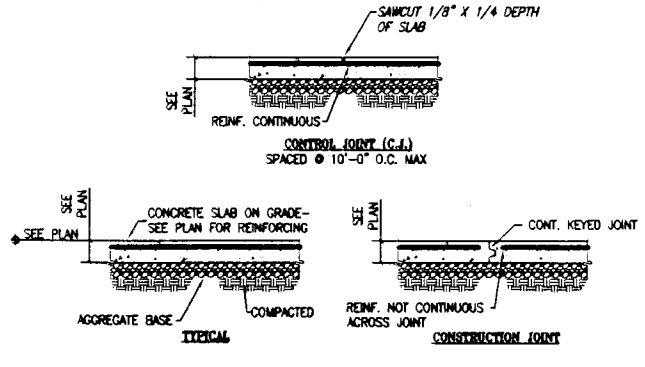
3 / C107 JERSEY BARRIER DETAIL

NOT TO SCALE



4 / C107 SECONDARY CONTAINMENT DETAIL

SCALE: 1/2"=1'-0"



5 / C107 SLAB JOINTS

NOT TO SCALE

GENERAL STRUCTURAL NOTES

1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2009 EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318

2. DESIGN CRITERIA:
   A. VERTICAL:
      ROOF SNOW 25 PSF
   B. HORIZONTAL:
      (1) WIND*
         BASIC WIND SPEED = 90 MPH (3 SEC. WIND GUST)
         EXPOSURE "C"
      (2) SEISMIC*
         SITE CLASS "D"

3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   C. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   D. REMOVAL OF FORMS AND SHORING SHALL BE IN ACCORDANCE WITH ACI 347.
   E. NOTE: ALL LOADING CRITERIA PERTAINING TO THE BUILDING SUPERSTRUCTURE SHALL BE CERTIFIED BY THE SUPPLIER OF THE PRE-ENGINEERED METAL BUILDING SYSTEM AND SHALL BE SO NOTED ON HIS SHOP DRAWING SUBMITTALS. THE METAL BUILDING SUPPLIER SHALL PROVIDE ALL PERTINENT DATA REGARDING MEMBER SIZES, ANCHORAGE DETAILS, BAY SPACINGS, LATERAL STABILITY AT COLUMN BASES, DIMENSIONS, AND DETAILING TO ENABLE THE CONTRACTOR TO PROPERLY COORDINATE CONSTRUCTION ACTIVITIES. SUBMIT BUILDING REACTIONS TO VERIFY FOUNDATION SIZE. FOUNDATIONS WILL BE ADJUSTED ACCORDINGLY IF REQUIRED.

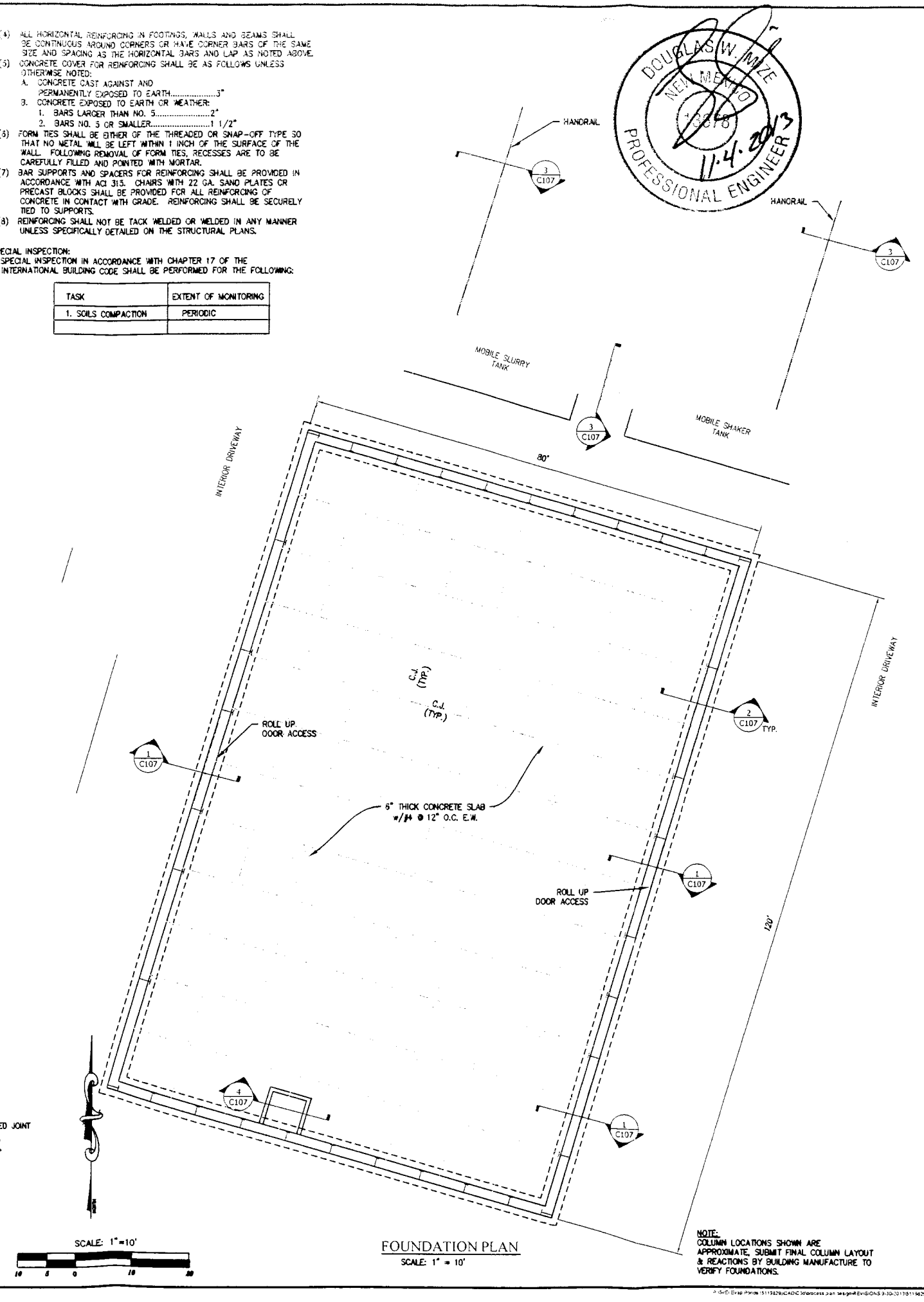
4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ASTM TYPE II PORTLAND CEMENT. FOUNDATION CONCRETE SHALL BE DESIGNED WITH PROVISIONS OF ACI DESIGN MANUAL SECTION 3.8 CHAPTER 4.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMALWEIGHT CONCRETE:
         A. F'C = 3000 PSI @ 28 DAYS
      (4) TO REDUCE SHRINKAGE CRACKS, LIMIT SLAB ON GRADE POURS TO 1800 SQ. FEET.
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60; EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

LAP SPLICE SCHEDULE	
BAR SIZE	SPLICE LENGTH
#3	1'-6"
#4	2'-0"
#5	2'-6"
#6	2'-10"
#7	3'-4"
#8	3'-10"
#9	4'-4"
#10	4'-9"
#11	5'-3"

      (4) ALL HORIZONTAL REINFORCING IN FOOTINGS, WALLS AND BEAMS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP AS NOTED ABOVE.
      (5) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
         A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
         B. CONCRETE EXPOSED TO EARTH OR WEATHER:
            1. BARS LARGER THAN NO. 5.....2"
            2. BARS NO. 5 OR SMALLER.....1 1/2"
      (6) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL. FOLLOWING REMOVAL OF FORM TIES, RECESSES ARE TO BE CAREFULLY FILLED AND POINTED WITH MORTAR.
      (7) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (8) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS.

5. SPECIAL INSPECTION:
   A. SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE SHALL BE PERFORMED FOR THE FOLLOWING:

TASK	EXTENT OF MONITORING
1. SOILS COMPACTION	PERIODIC



SCALE: 1"=10'

FOUNDATION PLAN

SCALE: 1" = 10'

NOTE:
COLUMN LOCATIONS SHOWN ARE APPROXIMATE, SUBMIT FINAL COLUMN LAYOUT & REACTIONS BY BUILDING MANUFACTURE TO VERIFY FOUNDATIONS.

DOUGLAS W. MAZE NEW MEXICO 23078 11.4.2013 PROFESSIONAL ENGINEER

Revision	Date	Description	By	Chkd

SAN JUAN COUNTY, NM

CROWE BLANCO PROPERTIES, LLC. OPERATED BY:
INDUSTRIAL ECOSYSTEMS INC.
BLANCO FACILITY PROCESS ENGINEERING DESIGN
FOUNDATION PLAN

INDUSTRIAL ECOSYSTEMS INC.

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SMA Engineering Environmental Surveying

Designed	Drawn	Checked
GYQ	DJB	DWM

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Date AUGUST, 2011

Scale Horiz AS NOTED
Vert N/A

Project No 5119829

Sheet C107

GEOMAT INC.
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

June 18, 2013

Richard P. Cheney, P.E.
Cheney-Walters-Echols, Inc.
909 West Apache Street
Farmington, New Mexico 87401

RE: Summary Report
Monitor Well Installation and Potentiometric Surface Mapping
Crowe Blanco Properties, LLC – Operated by Industrial Ecosystems Inc.
Blanco, New Mexico
GEOMAT Project No. 102-1162

GEOMAT Inc. (GEOMAT) has completed the subsurface exploration and installation of ten groundwater monitor wells at the proposed Crowe Blanco Properties, LLC Landfarm, operated by Industrial Ecosystems, Inc. (IEI) located near Blanco, New Mexico. Our services were performed in general accordance with our Work Plans (GEOMAT Proposal No. 102-06-17 Rev. 1, dated October 27, 2010, with additional services as described in revised proposals Rev. 5, dated January 27, 2011; Rev. 6, dated April 20, 2011; and Rev. 7, dated June 17, 2011). The Work Plans were reviewed and approved by New Mexico Oil Conservation Division (NMOCD) prior to commencement of the work.

The objective of our services was to obtain water level data from selected points across the site and use this data to develop a map indicating the elevation and direction of groundwater flow at the site.

This report summarizes our subsurface exploration and the installation of monitor wells conducted between November 29, 2010 and July 27, 2011. It also presents the data obtained from the wells and an interpretation of the data. Our preliminary report and Addendum No.1 to our preliminary report have been combined into this Summary Report.

Summary of Services

A total of ten exploratory boreholes were drilled and permanent groundwater monitor wells installed at the locations shown on the attached **Site Plan**. The borings/wells, designated MW-1 through MW-10, were installed as follows:

- MW-1, MW-2, and MW-3 were installed between November 29 and December 8, 2010;
- MW-4 and MW-5 between February 7 and 11, 2011;
- MW-6 and MW-7 between May 2 and 5, 2011; and
- MW-8, MW-9, and MW-10 between July 18 and 27, 2011.

The borings were drilled using continuous-flight 8-inch O.D. hollow-stem auger. Continuous core samples of the subsurface materials were obtained from each boring during drilling. Where auger refusal was encountered on bedrock, the borings were advanced using HQ wireline rock-coring equipment. Compressed air was used as a drilling fluid during rock coring, with foam injection used on a limited basis as needed to remove cuttings and stabilize the borehole.

A permanent 2-inch diameter monitor well was installed in each boring in accordance with the approved Work Plan submitted by our drilling contractor, Enviro-Drill Inc. (EDI). Following completion, each well was developed by bailing. **As-Completed Cross-Sections** of each monitor well are attached to this report.

A geologist and/or engineer from our office monitored the drilling operations and prepared a continuous log of each boring. The **Boring Logs**, a **Lithologic Fence Diagram**, and **Generalized Geologic Cross-Sections** (based on the borings) are attached.

As described in our Work Plan, disturbance of the natural ground surface elevation at each well location was documented, based on the topography and natural vegetation surrounding each well location. With the exception of MW-5, it did not appear that any alteration of the natural ground surface elevation had taken place. At the location of MW-5, the well monument and concrete slab were constructed on a surficial layer of excess drill cuttings, and appeared to be elevated approximately one foot above the surrounding natural terrain.

After completion and development, the water level in each of the ten wells was measured using an electronic water-level indicator. Water levels were measured relative to the top of the well casing (TOC). Depth of groundwater below natural ground surface at each well location was calculated by subtracting the difference between TOC and natural ground surface (the casing "stick-up" height) from the measured water level (relative to TOC). The water-level data was used to develop a subsurface profile showing the relationship between the soil/rock materials and water levels in each boring. The unconfined water levels are presented in the attached **Water Level Measurements** table.

As shown in the table, in wells MW-2, MW-4, MW-5, and MW-10, the water level measured in the well after completion (the static water level) was significantly higher than the level at which water was initially encountered during drilling (the confined water level). In wells MW-1, MW-3, MW-6, MW-7, MW-8, and MW-9, the static water levels generally correspond to the unconfined levels observed during drilling.

Based on the differences between the unconfined and confined water levels, and the subsurface profiles illustrated on the boring logs, it appears likely that groundwater

beneath the site is confined by a relatively impermeable shale strata across the north and east portion of the site. The shale strata appears to dip slightly toward the southwest, and likely terminates ("pinches out") along a roughly northwest-southeast trending line traversing the center of the site.

The water-bearing formation is mapped as the Nacimiento Formation (Geologic Map of the Aztec 1° x 2° Quadrangle, Northwestern New Mexico and Southern Colorado, Manley et. al., 1987). The groundwater occurs in either sandstone or siltstone. In the borings where the sandstone/siltstone is overlain by shale, the water occurs immediately below the interface between the water-bearing sandstone/siltstone and the relatively impermeable shale.

The water level data obtained from the wells were used to determine the approximate direction and gradient of groundwater flow beneath the site using the strike and dip three point method described in the Hydrogeology Field Manual (Hudak, Paul F., University of North Texas, 1996). Worksheets showing the three point analyses are available upon request.

Analysis of Data and Interpretation of Site Hydrogeology

The water level data, results of our subsurface exploration, and a review of aerial photography of the site indicate that there is a single water-bearing zone beneath the proposed facility.

Continuous samples of the soil and rock materials were obtained during drilling of the boreholes. The drilling operations were continuously monitored by an experienced geologist and/or engineer from our office. Moist zones were evaluated per the approved Work Plans. It is not likely that any moisture-bearing zones were undetected during drilling. Monitor wells were installed in the first-encountered moisture-bearing zone at each boring location.

The water levels in four of the wells (MW-2, MW-4, MW-5, and MW-10) stabilized at elevations on the order of 22 to 28 feet higher than the levels first encountered during drilling. The rise in water levels suggests a confined condition. As shown on the boring logs for these borings, it appears that groundwater occurs in a sandstone and/or siltstone stratum. The groundwater is confined by an overlying shale and/or siltstone stratum. Due to the interbedded nature of the sedimentary strata, the particle sizes, and thus the permeability, within the shale/siltstone, are variable. Thus, the shale/siltstone stratum is likely not a "perfect" confining layer, but rather allows variable degrees of hydraulic transfer within the layer.

The stabilized water levels in the other six wells (MW-1, MW-3, MW-6, MW-7, MW-8, and MW-9) were not significantly different from those encountered during drilling, suggesting an unconfined condition. As shown on the boring logs for these borings, groundwater generally occurs in a sandstone and/or siltstone stratum; the shale confining layer was not encountered in these borings.

Because both confined and unconfined conditions were encountered, both conditions were analyzed separately and compared to evaluate whether multiple aquifers exist beneath the site. Each condition was analyzed by graphically plotting water levels versus elevation, and by determining direction and gradient of groundwater flow. Data from MW-2, MW-4, MW-5, and MW-10 were used for analysis of the confined condition. Data from MW-1, MW-3, MW-6, MW-7, MW-8, and MW-9 were used for analysis of the unconfined condition.

The elevations where water was encountered during drilling of each boring were plotted, along with the static water level measured in each well after completion. The results are presented in the **Water Elevation During Drilling vs. Static Water Elevation** graph. The graph indicates that for both the confined and unconfined condition, water elevations generally decrease across the site from northeast to southwest, which is consistent with the strike and dip of the strata. There are no significant "groupings" of water elevations that would suggest multiple aquifers.

Direction and gradient of groundwater flow were analyzed separately for both the confined and unconfined conditions using the Strike and Dip Geologist's Three Point Method. Each condition was analyzed separately, using data from MW-2, MW-4, MW-5, and MW-10 for the confined condition, and data from MW-1, MW-3, MW-6, MW-7, MW-8, and MW-9 for the unconfined condition. The results of the three-point analyses are presented in the **Results of Three Point Analyses Tables** and on the **Groundwater Elevations and Direction of Flow Maps**. Comparison of the tables and maps for each condition indicates that flow directions are generally consistent between the confined and unconfined conditions. Gradients were slightly steeper for the confined condition. Slight variations in gradient could be explained by irregularities in the shape and/or orientation of the bottom of the confining layer, or by variations in permeability within the layer.

A review of aerial photographs (obtained from Google Earth) indicates that the site is situated on the west flank of Manzanares Mesa, with strata dipping generally to the west. As shown on the attached aerial photograph entitled **General Location of Confining Layer**, a blue-gray layer of shale is exposed on the west side of the mesa. The trace of the bed follows a roughly northwest-southeast trending line along the base of the mesa. Based on its position, orientation, color, and rock type, this shale strata is interpreted to be the upgradient exposure of the confining layer. The confining layer appears to be covered by surficial soil deposits across the project site.

Examination of the aerial photograph reveals a lineament traversing the project site from northwest to southeast, roughly parallel to the trace of the upgradient exposure of the blue-gray shale strata. The lineament is manifested as an intermittent shallow depression in the surficial topography. The lineament appears to roughly coincide with a line dividing the confined wells to the northeast from the unconfined wells to the southwest. The lineament is interpreted to be a surficial expression of the "toe" or "pinch out" of the underlying shale confining layer, and is labeled as the "Inferred Toe of Confining Layer" on the attached aerial photograph.

Comparison of the **Boring Logs, Lithologic Fence Diagram, and General Location of Confining Layer** photograph indicates that the inferred location of the toe of the confining layer is generally consistent with the subsurface conditions encountered in our borings. The confining layer appears to occur as a lens which tapers toward the southwest. The composition of the lens is variable, grading between shale and siltstone. A simplified profile view illustrating the confining layer is shown in Section A – A' on the **Generalized Subsurface Profile**.

The following points summarize our interpretation of the hydrogeologic conditions beneath the proposed facility:

- Water levels from the confined and unconfined wells were analyzed separately, and the results compared with each other. In both cases, water elevations decreased from northeast to southwest, over the same general range of elevations, with no apparent "groupings" of water elevations. This would suggest that a single aquifer exists beneath the site.

- Flow directions using data from the confined and unconfined wells were analyzed separately, and the results compared with each other. Flow directions were consistent between the two cases, and appeared consistent with the strike and dip of the strata. In conjunction with the distribution of water levels noted above, the consistency between confined and unconfined flow directions suggests that a single aquifer exists beneath the site.

- Comparison of the boring logs, aerial photographs, and the distribution of confined and unconfined wells across the site suggests that MW-2, MW-4, MW-5, and MW-10 are confined by a southwest-dipping lens of shale which terminates ("pinches out") in a roughly northwest-southeast trending line across the site. Wells located down-gradient of the toe of the shale lens are unconfined.

These observations indicate that the first-encountered (i.e. shallowest) groundwater beneath the site occurs as a single, hydraulically connected water-bearing zone. Groundwater flow beneath the site appears to be primarily controlled by stratigraphic dip, with the general direction of groundwater flow toward the southwest.

Our analysis indicates that the aquifer transitions from a confined condition beneath the northeastern portion of the site to an unconfined condition beneath the southwestern portion. Our generalized interpretation of the groundwater flow is shown on the attached **Interpretation of Flow Map**.

Thank you for the opportunity to work with you on this project. If you have any questions regarding this addendum, please let us know.

Sincerely yours,
GEOMAT Inc.

Donald R. Baldwin

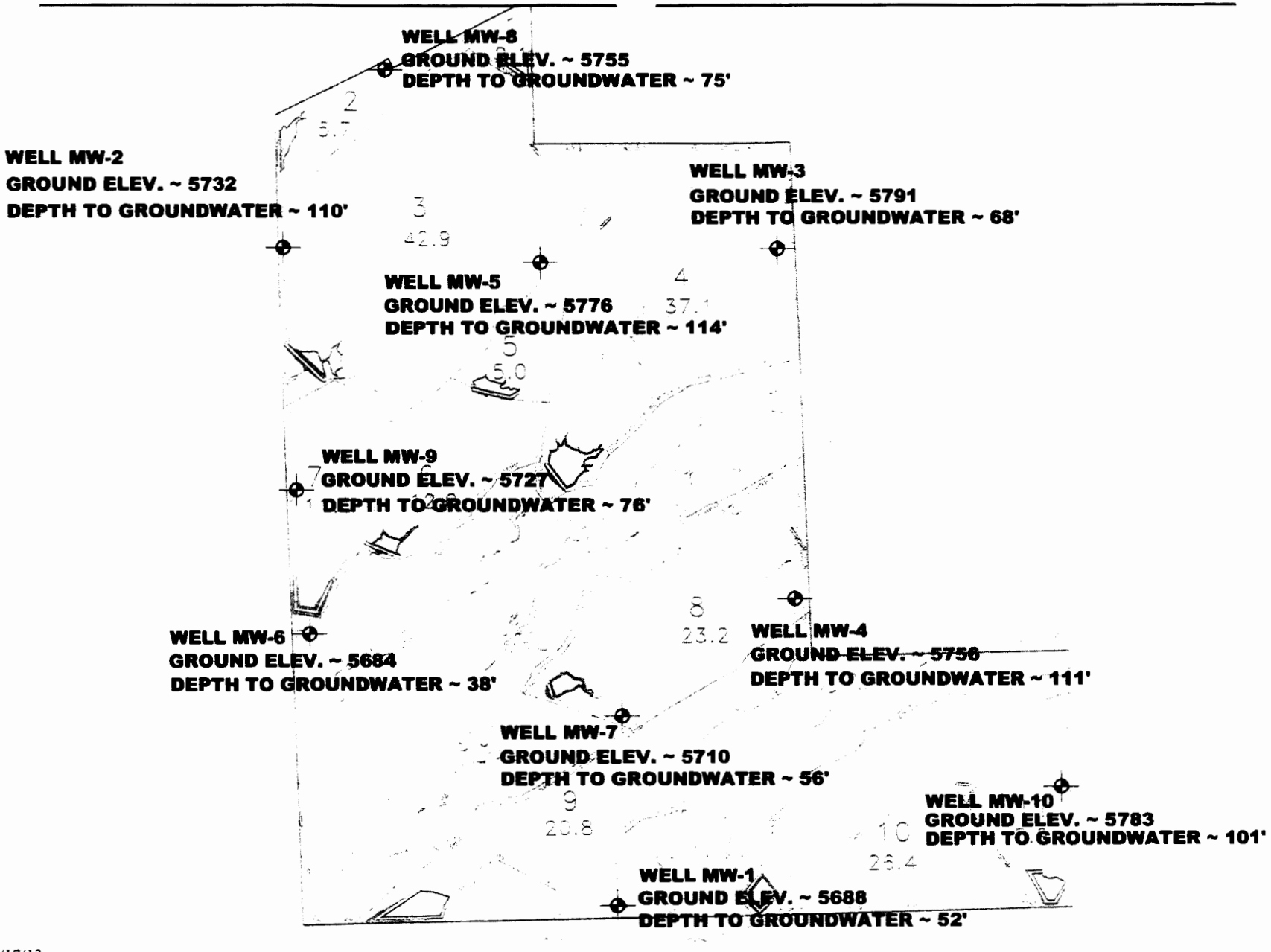
Donald R. Baldwin
Geologist

Reviewed by: George A. Madrid, P.E.
President, Principal Engineer

GEORGE A. MADRID NEW MEXICO 9110 REGISTERED PROFESSIONAL ENGINEER 6/18/13

Attachments: Site Plan
Boring Logs
Monitor Well As-Completed Cross Sections
Generalized Geologic Cross Sections
Water Level Measurements
Lithologic Fence Diagrams
Water Elevation During Drilling vs. Static Water Elevation Graph
Results of Three Point Analyses Tables
Groundwater Elevations and Direction of Flow Map – Confined
Groundwater Elevations and Direction of Flow Map – Unconfined
General Location of Confining Layer (Aerial Photograph)
Generalized Subsurface Profile
Interpretation of Flow Map – Confined
Interpretation of Flow Map – Unconfined

Distribution: Addressee (1)
Marcella Marquez, Industrial Ecosystems, Inc. (1)



15.7

REVISED: 6/17/13

Approximate Not to Scale	SITE PLAN Monitor Well Locations (approximate) GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico

GEOMAT INC

GEOMAT INC
915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Borehole MW-1

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 2" split spoon/HQ core
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 12/8/2010
Latitude: 36.71803°
Longitude: -107.78701°
Elevation: 5688
Boring Location: See Site Plan
Groundwater Depth: Approx. 51.7 ft during drilling
Logged By: LC
Remarks: None

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
									1	SILTY SAND, tan to brown, loose to medium dense, slightly damp to damp
							SM		2	
									3	
									4	
									5	
					SS 24				6	
					SS 24				7	
									8	SANDY LEAN CLAY, tan, medium stiff to stiff, damp
					SS 24				9	
									10	
					SS 24				11	contains variable amounts of fine sand
									12	
					SS 24				13	
									14	
					SS 24				15	
									16	
					SS 24				17	
							CL		18	
					SS 24				19	
									20	
					HQ 24				21	
									22	switched from auger to HQ coring equipment at approximately 21 feet
					HQ 84				23	
									24	
									25	
									26	recovered sandy lean clay in core barrel
									27	
									28	SAND, tan, fine- to coarse-grained, medium dense, slightly damp
									29	
									30	
					HQ 120				31	
									32	
									33	
							SP		34	
									35	
									36	
									37	
									38	
									39	
									40	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Fax (505) 326-5721

Borehole MW-1

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	12/8/2010
Project Number:	102-1162	Latitude:	36.71803°
Client:	Cheney-Walters-Echols	Longitude:	-107.78701°
Site Location:	Blanco, New Mexico	Elevation:	5688
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8" O.D. HSA/HQ Core	Groundwater Depth:	Approx. 51.7 ft during drilling
Sampling Method:	2" split spoon/HQ core	Logged By:	LC
Hammer Weight:	140 lbs	Remarks:	None
Hammer Fall:	30 inches		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 24		SP		41	SAND, tan, fine- to coarse-grained, medium dense, slightly damp
					SS 24				42	
									43	switched from HQ coring equipment to auger at approximately 40 feet
					SS 24				44	
									45	trace gravel
					SS 23				46	
					SS 5				47	
							GP		48	GRAVEL with sand, dense, damp to moist (no sample)
					SS 24				49	SAND, tan, fine- to coarse-grained, medium dense, slightly damp
									50	
					SS 24				51	hard drililng - no sample
									52	▽ Groundwater at approximately 51.7 feet during drilling
									53	drilling stopped at 52 feet on 11/29/2010
							SP		54	water level 51.7 feet on 11/30/2010
									55	resumed on 12/8/2010
									56	
									57	
									58	
									59	
									60	SANDSTONE, gray, fine-grained, highly weathered, soft, weakly cemented
									61	
									62	
							RK		63	moderately weathered, moderately hard, moderately cemented
									64	
					SS 5				65	
									66	Total Depth 65.4 feet
									67	
									68	
									69	
									70	
									71	
									72	
									73	
									74	
									75	
									76	
									77	
									78	
									79	
									80	

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Borehole MW-2

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 2" split spoon/HQ core
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 12/3/2010
Latitude: 36.72739°
Longitude: -107.79256°
Elevation: 5732
Boring Location: See Site Plan
Groundwater Depth: Approx. 110 ft during drilling
Logged By: LC
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
									1	SILTY SAND, tan, fine- to coarse-grained, loose to medium dense, damp
									2	
									3	
									4	
									5	
					SS 24				6	slightly damp
									7	
					SS 24				8	layers/lenses of clayey sand 3" to 4" thick
									9	tan, slightly damp
					SS 24				10	
									11	
					SS 24				12	
									13	
					SS 24				14	
									15	
					SS 24				16	
									17	
					SS 24				18	
									19	
					SS 24		SM		20	
									21	
					SS 24				22	
									23	
					SS 24				24	
									25	
					SS 24				26	
									27	
					SS 24				28	
									29	
					SS 24				30	
									31	
					SS 24				32	
									33	
					SS 24				34	
									35	
					SS 24				36	
									37	
					SS 24				38	
									39	
					SS 24				40	

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Borehole MW-2

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	12/3/2010
Project Number:	102-1162	Latitude:	36.72739°
Client:	Cheney-Walters-Echols	Longitude:	-107.79256°
Site Location:	Blanco, New Mexico	Elevation:	5732
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8" O.D. HSA/HQ Core	Groundwater Depth:	Approx. 110 ft during drilling
Sampling Method:	2" split spoon/HQ core	Logged By:	LC
Hammer Weight:	140 lbs	Remarks:	None
Hammer Fall:	30 inches		

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					SS 24				41	SILTY SAND, tan, fine- to coarse-grained, loose to medium dense, damp
					SS 24				42	
					SS 24				43	coarse-grained, slightly damp
					SS 24				44	
					SS 24				45	
					SS 24				46	
					SS 24		SM		47	
					SS 24				48	tan to white, fine- to coarse-grained, medium dense, damp
					SS 24				49	
					SS 24				50	
					SS 20				51	layers/lenses of clayey sand 3" to 6" thick
									52	damp to moist
									53	
							GP		54	GRAVEL with cobbles
									55	hard drilling - no sample
					SS 22		CL		56	SANDY LEAN CLAY, gray, soft, moist
									57	SHALE to SILTSTONE, gray, highly weathered, slightly damp
					SS 10				58	
									59	
					HQ 120				60	contains variable amounts of silt- and/or fine sand-size particles
									61	
									62	grades between shale and siltstone
									63	blue-gray, slightly damp
									64	switched from auger to HQ coring equipment at approximately 59 feet
									65	
									66	gray
									67	no core recovery 60' to 70' due to cored cobble stuck in bit
							RK		68	
									69	
									70	
					HQ 120				71	
									72	
									73	
									74	
									75	no core recovery 70' to 80'
									76	
									77	
									78	lost circulation 77' to 80'
									79	
									80	

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Borehole MW-2

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	12/3/2010
Project Number:	102-1162	Latitude:	36.72739°
Client:	Cheney-Walters-Echols	Longitude:	-107.79256°
Site Location:	Blanco, New Mexico	Elevation:	5732
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8" O.D. HSA/HQ Core	Groundwater Depth:	Approx. 110 ft during drilling
Sampling Method:	2" split spoon/HQ core	Logged By:	LC
Hammer Weight:	140 lbs	Remarks:	None
Hammer Fall:	30 inches		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					HQ 120				81	SHALE to SILTSTONE, gray, highly weathered, slightly damp
									82	
									83	contains variable amounts of silt- and/or fine sand-size particles
									84	
									85	grades between shale and siltstone
									86	regained circulation
									87	no core recovery 80' to 90'
									88	
									89	
							RK		90	
					HQ 120				91	
									92	
									93	
									94	
									95	
									96	90' to 100' --> HQ core recovery = 15%, RQD = 6%
									97	
									98	
									99	SANDSTONE, light gray, fine-grained, slightly weathered, moderately hard, moderately cemented, slightly damp
									100	
					HQ 120				101	
									102	
									103	
									104	
									105	
									106	100' to 110' --> HQ core recovery = 98%, RQD = 70%
									107	
									108	slightly damp
									109	
							RK		110	▽
					HQ 120				111	wet
									112	groundwater at approximately 110 feet during drilling
									113	
									114	
									115	
									116	110' to 120' --> HQ core recovery = 75%, RQD = 41%
									117	
									118	
									119	
									120	

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Borehole MW-2

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 2" split spoon/HQ core
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 12/3/2010
Latitude: 36.72739°
Longitude: -107.79256°
Elevation: 5732
Boring Location: See Site Plan
Groundwater Depth: Approx. 110 ft during drilling
Logged By: LC
Remarks: None

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					HQ 120		RK		121 122 123 124 125 126 127 128 129 130	SANDSTONE, light gray, fine-grained, slightly weathered, moderately hard, moderately cemented, slightly damp 120' to 130' --> HQ core recovery = 68%, RQD = 52% lost circulation
									131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160	Total Depth 130 feet

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Borehole MW-3

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	12/7/2010
Project Number:	102-1162	Latitude:	36.72721°
Client:	Cheney-Walters-Echols	Longitude:	-107.78402°
Site Location:	Blanco, New Mexico	Elevation:	5791
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8" O.D. HSA/HQ Core	Groundwater Depth:	Approx. 68 ft during drilling
Sampling Method:	4" continuous barrel/HQ core	Logged By:	LC
Hammer Weight:	N/A	Remarks:	0' - 30' sampled with 5' continuous sampler
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SM		1	SILTY SAND, tan, fine-grained, loose, damp
									2	
									3	
									4	
									5	
					SS 60		ML		6	SILT, light gray, soft to medium stiff, slightly damp contains trace of water-soluble salts
									7	
									8	
									9	CLAYEY SAND, gray to tan, fine-grained, medium dense, damp
					SS 60		SC		10	
									11	
									12	SILTSTONE, gray to green-gray, highly weathered, soft, damp
									13	
									14	
					SS 60		RK		15	
									16	
									17	slightly damp to damp
									18	
									19	
					SS 60				20	
									21	green-gray, slightly damp
									22	
									23	
									24	
					SS 60		RK		25	SANDSTONE, tan, fine- to coarse-grained, highly weathered, moderately soft, weakly to moderately cemented, slightly damp
									26	
									27	
									28	contains layers/lenses of shale/siltstone 2" to 4" thick slightly damp
									29	
									30	

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Borehole MW-3

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 12/7/2010
Latitude: 36.72721°
Longitude: -107.78402°
Elevation: 5791
Boring Location: See Site Plan
Groundwater Depth: Approx. 68 ft during drilling
Logged By: LC
Remarks: 0' - 30' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					HQ 60				31	SANDSTONE, tan, fine- to coarse-grained, highly weathered, moderately soft, weakly to moderately cemented, slightly damp
									32	
									33	switched from auger to HQ coring equipment at 30 feet
									34	
									35	
									36	30' to 40' --> HQ core recovery = 52%, RQD = 22%
									37	
									38	
									39	
									40	
					HQ 120				41	moderately weathered, moderately hard
									42	
									43	color change to white
									44	
							RK		45	
									46	40' to 50' --> HQ core recovery = 83%, RQD = 41%
									47	Layer/lens of gray shale 2" to 3" thick
									48	
									49	
									50	
					HQ 120				51	gray, soft to moderately hard, damp
									52	
									53	
									54	
									55	
									56	50' to 60' --> HQ core recovery = 73%, RQD = 27%
									57	
									58	Layer/lens of carbonaceous shale 2" to 3" thick
									59	
									60	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-3

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 12/7/2010
Latitude: 36.72721°
Longitude: -107.78402°
Elevation: 5791
Boring Location: See Site Plan
Groundwater Depth: Approx. 68 ft during drilling
Logged By: LC
Remarks: 0' - 30' sampled with 5' continuous sampler

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					HQ 120				61	SANDSTONE, tan, fine- to coarse-grained, highly weathered, moderately soft, weakly to moderately cemented, slightly damp
									62	
									63	
									64	
									65	
									66	60' to 70' --> HQ core recovery = 84%, RQD = 23%
									67	Layers/lenses of gray shale
									68	▽ Groundwater at approximately 68 feet during drilling
									69	
					HQ 120		RK		70	
									71	
									72	
									73	
									74	
									75	
									76	70' to 80' --> HQ core recovery = 48%, RQD = 25%
									77	
									78	
									79	
									80	
									81	Total Depth 80 feet
									82	
									83	
									84	
									85	
									86	
									87	
									88	
									89	
									90	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-4

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/11/2011
Latitude: 36.72227°
Longitude: -107.78391°
Elevation: 5756
Boring Location: See Site Plan
Groundwater Depth: Approx. 111 ft during drilling
Logged By: DB
Remarks: 0' - 70' sampled with 5' continuous sampler

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					SS 60		SC		1 2 3	CLAYEY SAND, brown, fine-grained, moist
					SS 60		SM		4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	SILTY SAND, tan, fine-grained, slightly damp moderate carbonate cementation white marbling (poorly developed caliche)

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-4

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/11/2011
Latitude: 36.72227°
Longitude: -107.78391°
Elevation: 5756
Boring Location: See Site Plan
Groundwater Depth: Approx. 111 ft during drilling
Logged By: DB
Remarks: 0' - 70' sampled with 5' continuous sampler

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					SS 60				41	SILTY SAND, tan, fine-grained, slightly damp
									42	
									43	
									44	
									45	
					SS 60				46	gray to brown
									47	damp
									48	
									49	
							SM		50	
					SS 60				51	
									52	
									53	
									54	
									55	
					SS 60				56	
									57	
									58	
									59	SHALE, gray to brown, highly weathered, soft, friable, damp
									60	
									61	
					SS 60				62	
									63	moderately weathered
									64	
									65	slightly weathered, moderately hard, blocky
					SS 60				66	purple-gray
									67	
									68	
									69	
							RK		70	
					HQ 36				71	auger refusal at 70 feet
									72	begin HQ rock coring
									73	70' to 73' --> HQ core recovery = 28%, RQD = 0%
					HQ 120				74	moderately weathered zone 73 to 80 feet
									75	soft, friable
									76	
									77	
									78	
									79	73' to 83' --> HQ core recovery = 40%, RQD = 18%
									80	

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Borehole MW-4

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/11/2011
Latitude: 36.72227°
Longitude: -107.78391°
Elevation: 5756
Boring Location: See Site Plan
Groundwater Depth: Approx. 111 ft during drilling
Logged By: DB
Remarks: 0' - 70' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					HQ 120		RK		81–85	SHALE, gray to brown, highly weathered, soft, friable, damp slightly weathered, moderately hard, massive
					HQ 120		RK		86–105	SILTSTONE, dark gray, fresh, hard, massive 83' to 93' --> HQ core recovery = 73%, RQD = 27% 93' to 103' --> HQ core recovery = 45%, RQD = 7%
					HQ 120		RK		106–111	SHALE, dark gray, fresh, hard, massive 103' to 113' --> HQ core recovery = 88%, RQD = 23%
					HQ 120		RK		112–120	SANDSTONE, green-gray, fine- to medium-grained, fresh, hard, strongly cemented groundwater encountered at 111 feet during drilling fine-grained medium-grained 113' to 123' --> HQ core recovery = 95%, RQD = 42%

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Borehole MW-4

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/11/2011
Latitude: 36.72227°
Longitude: -107.78391°
Elevation: 5756
Boring Location: See Site Plan
Groundwater Depth: Approx. 111 ft during drilling
Logged By: DB
Remarks: 0' - 70' sampled with 5' continuous sampler

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					HQ 120		RK		121 122 123 124 125 126 127 128 129 130 131 132 133	SANDSTONE, green-gray, fine- to medium-grained, fresh, hard, strongly cemented 123' to 133' --> HQ core recovery = 46%, RQD = 27%
									134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160	Total Depth 133 feet

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-5

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/9/2011
Latitude: 36.72709°
Longitude: -107.78810°
Elevation: 5776
Boring Location: See Site Plan
Groundwater Depth: Approx. 115 ft during drilling
Logged By: DB
Remarks: 0' - 57' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SC		1 2 3	CLAYEY SAND, brown, fine-grained, moist
					SS 60		SM		4 5 6 7 8 9 10 11	SILTY SAND, tan, fine-grained, slightly damp moderate carbonate cementation white marbling (poorly developed caliche)
					SS 60		SC		12 13 14	CLAYEY SAND with gravel, fine-grained, damp
					SS 60		RK		15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	SANDSTONE, gray, medium- to coarse-grained, slightly weathered, moderately hard, moderately cemented minor iron-staining 16' - 18' tan minor iron-staining 22' - 23' light gray, fresh fine-grained contains thin lenses of damp gray shale medium-grained, damp hard drilling highly weathered zone 35' - 36' fresh, medium-grained, strongly cemented

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-5

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/9/2011
Latitude: 36.72709°
Longitude: -107.78810°
Elevation: 5776
Boring Location: See Site Plan
Groundwater Depth: Approx. 115 ft during drilling
Logged By: DB
Remarks: 0' - 57' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		RK		41	SANDSTONE, gray, medium- to coarse-grained, slightly weathered, moderately hard, moderately cemented
									42	
									43	contains occasional lenses of damp shale
									44	
									45	
					SS 60				46	
									47	
									48	SHALE, gray, highly weathered, friable, damp to moist
							RK		49	stopped drilling to check for moisture infiltration
									50	no free water in hole after sitting overnight
					SS 60				51	
									52	
									53	SILTSTONE, green-gray, fresh, hard, massive
									54	
									55	
					SS 24				56	
									57	
					HQ 84				58	auger refusal at 57 feet
									59	begin HQ rock coring
									60	
									61	
									62	57' to 64' --> HQ core recovery = 83%, RQD = 8%
									63	
									64	
					HQ 120		RK		65	
									66	
									67	
									68	
									69	
									70	64' to 74' --> HQ core recovery = 60%, RQD = 28%
									71	
									72	
									73	
									74	
					HQ 120				75	
									76	
									77	
									78	SHALE, green-gray, fresh, hard, massive
							RK		79	
									80	74' to 84' --> HQ core recovery = 60%, RQD = 18%

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Borehole MW-5

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	2/9/2011
Project Number:	102-1162	Latitude:	36.72709°
Client:	Cheney-Walters-Echols	Longitude:	-107.78810°
Site Location:	Blanco, New Mexico	Elevation:	5776
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8" O.D. HSA/HQ Core	Groundwater Depth:	Approx. 115 ft during drilling
Sampling Method:	4" continuous barrel/HQ core	Logged By:	DB
Hammer Weight:	N/A	Remarks:	0' - 57' sampled with 5' continuous sampler
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
									81	SHALE, green-gray, fresh, hard, massive
									82	
									83	
									84	
					HQ 120				85	
									86	blue-gray
									87	
							RK		88	
									89	
									90	84' to 94' --> HQ core recovery = 40%, RQD = 23%
									91	
									92	contains lenses of siltstone
									93	
									94	
					HQ 120				95	
									96	SILTSTONE, green-gray to blue-gray, fresh, hard, massive
									97	
									98	
									99	
									100	94' to 104' --> HQ core recovery = 63%, RQD = 34%
									101	
									102	
							RK		103	
									104	
					HQ 120				105	
									106	
									107	
									108	highly weathered zone 108' - 110'
									109	104' to 114' --> HQ core recovery = 88%, RQD = 58%
									110	
									111	SANDSTONE, green-gray to blue-gray, fine-grained, fresh, hard, strongly cemented
									112	
									113	
									114	medium-grained
									115	▽
									116	groundwater encountered at 115 feet during drilling
									117	
									118	
									119	
					HQ 120		RK		120	114' to 124' --> HQ core recovery = 85%, RQD = 55%

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Borehole MW-5

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 2/9/2011
Latitude: 36.72709°
Longitude: -107.78810°
Elevation: 5776
Boring Location: See Site Plan
Groundwater Depth: Approx. 115 ft during drilling
Logged By: DB
Remarks: 0' - 57' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					HQ 120		RK		121–125	SANDSTONE, green-gray to blue-gray, fine-grained, fresh, hard, strongly cemented
							RK		126–135	SILTSTONE, dark gray, fresh, hard, massive 124' to 134' --> HQ core recovery = 83%, RQD = 50%
					HQ 24				136	134' to 136' --> HQ core recovery = 100%, RQD = 83%
									137–160	Total Depth 136 feet

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-6

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	5/2/2011
Project Number:	102-1162	Latitude:	36.72192°
Client:	Cheney-Walters-Echols	Longitude:	-107.79240°
Site Location:	Blanco, New Mexico	Elevation:	5684
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 38 ft during driling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60				1	SILTY SAND, brown, fine-grained, damp
									2	
									3	
									4	
					SS 60				5	
									6	
									7	
									8	
									9	
					SS 60		SM		10	color change to tan
									11	
									12	
									13	
									14	
					SS 60				15	calcareous stringers and nodules
									16	
									17	
									18	
									19	
					SS 60				20	
									21	SAND with trace gravel, tan, poorly graded, fine- to medium-grained, damp
									22	
									23	
									24	
					SS 60		SP		25	
									26	
									27	
									28	fine- to coarse-grained damp
									29	
									30	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-6

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	5/2/2011
Project Number:	102-1162	Latitude:	36.72192°
Client:	Cheney-Walters-Echols	Longitude:	-107.79240°
Site Location:	Blanco, New Mexico	Elevation:	5684
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 38 ft during driling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SP		31	SAND with trace gravel, tan, poorly graded, fine- to medium-grained, damp
									32	
									33	
									34	contains occasional clay nodules
					SS 60				35	
									36	
									37	SANDSTONE, tan, highly weathered, fine- to coarse-grained, soft to moderately soft, wet
									38	▽
									39	green to gray, slightly weathered, hard
									40	
									41	Drilling halted at 40 foot depth to evaluate moist zone
									42	Let boring sit overnight to check for water infiltration
									43	Measured water level following morning @ 38.6 ft below ground surface
							RK		44	Advanced boring to 51 feet and installed monitor well
					A				45	
									46	
									47	
									48	
									49	
					A				50	
									51	
									52	Total Depth 51 feet
									53	
									54	
									55	
									56	
									57	
									58	
									59	
									60	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-7

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	5/4/2011
Project Number:	102-1162	Latitude:	36.72071°
Client:	Cheney-Walters-Echols	Longitude:	-107.78700°
Site Location:	Blanco, New Mexico	Elevation:	5710
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 56 ft during drilling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SM		1–19	SILTY SAND, brown, fine-grained, moist tan, damp, moderate cementation calcareous stringers/nodules
					SS 60		CL		20–31	LEAN CLAY, tan, damp contains small roots hard drilling easier drilling
					SS 60		SM		32–37	SILTY SAND, tan, fine-grained, damp
					SS 60		SP		38–40	SAND with trace gravel, tan, poorly graded, fine- to medium-grained, damp

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-7

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	5/4/2011
Project Number:	102-1162	Latitude:	36.72071°
Client:	Cheney-Walters-Echols	Longitude:	-107.78700°
Site Location:	Blanco, New Mexico	Elevation:	5710
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 56 ft during drilling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SP		41	SAND with trace gravel, tan, poorly graded, fine- to medium-grained, damp
					SS 60				45	
					SS 60				50	
									53	
							CL		54	LEAN CLAY, gray, moist
					SS 60				55	SILTSTONE, tan, highly weathered, soft, wet
							RK		59	color change to blue-gray
									60	slightly weathered, hard
									61	Halted drilling at 60 feet to evaluate wet zone
									62	Let boring sit overnight to allow infiltration of water
									63	Measured water level next morning @ 55.0 feet below ground surface
									65	Advanced boring to 70 feet and installed monitor well
							RK		66	SANDSTONE, green-gray, fine- to medium-grained, fresh, hard, wet
					A				70	
									71	Total Depth 70 feet

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

GEOMAT 102-1162.GPJ GEOMAT.GDT 08/25/11

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Tel (505) 327-7928
Fax (505) 326-5721

Borehole MW-8

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/19/2011
Latitude: 36.729750°
Longitude: -107.790940°
Elevation: 5727
Boring Location: See Site Plan
Groundwater Depth: Approx. 75 ft during drilling
Logged By: DB
Remarks: 0' - 75' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		CL		1–8	SANDY LEAN CLAY, brown, dry to damp
					SS 60		SM		9–12	SILTY SAND, brown, fine-grained, damp contains white calcareous stringers
					SS 60		SP		13–16	SAND, tan, poorly graded, fine- to medium-grained, damp
					SS 60		SM		17–22	SILTY SAND, tan, fine- to medium-grained, damp moderate calcareous cementation
					SS 60		SW		23–27	SAND, tan, well graded, fine- to coarse-grained, damp
					SS 60		SM		28–33	SILTY SAND, tan, fine-grained, damp moderate calcareous cementation weak cementation
					SS 60		SW		34–40	SAND, tan, well graded, fine- to coarse-grained, damp no cementation

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-8

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/19/2011
Latitude: 36.729750°
Longitude: -107.790940°
Elevation: 5727
Boring Location: See Site Plan
Groundwater Depth: Approx. 75 ft during drilling
Logged By: DB
Remarks: 0' - 75' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SW		41 42 43 44 45 46 47	SAND, tan, well graded, fine- to coarse-grained, damp no cementation
					SS 60		SP		48 49 50	SAND, tan, poorly graded, fine- to medium-grained, damp
					SS 60		SW		51 52 53 54 55 56 57 58 59 60 61 62 63	SAND with gravel, tan, well graded, fine- to coarse-grained, damp
					SS 60		GP		64 65 66 67 68 69 70 71 72	GRAVEL with sand and cobbles, tan to gray, fine- to coarse-grained, damp rough drilling (jumping, grinding) no sample
					HQ 84		RK		73 74 75 76 77 78 79 80	SANDSTONE, moderately to highly weathered, moderately hard, damp auger refusal on cobbles at 75 ft begin HQ rock coring SHALE, blue-green, highly to moderately weathered, moderately soft to moderately hard, moist to wet below 75 ft

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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Borehole MW-8

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8" O.D. HSA/HQ Core
Sampling Method: 4" continuous barrel/HQ core
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/19/2011
Latitude: 36.729750°
Longitude: -107.790940°
Elevation: 5727
Boring Location: See Site Plan
Groundwater Depth: Approx. 75 ft during drilling
Logged By: DB
Remarks: 0' - 75' sampled with 5' continuous sampler

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
							RK		81	
					HQ 36		RK		82	
									83	SANDSTONE, blue-green, medium-grained, slightly weathered, hard, wet 82' to 85' --> rec=50%, RQD=0
					HQ 84				84	
									85	SILTSTONE, blue-green, moderately weathered, soft to moderately soft, fissile, friable
									86	
									87	lost circulation at 85 - soft rock plugging core barrel
							RK		88	
									89	85' to 92'--> HQ core recovery=33%, RQD=0
									90	
									91	lost circulation at 90 ft
									92	
									93	Total Depth 92 feet
									94	
									95	
									96	
									97	
									98	
									99	
									100	
									101	
									102	
									103	
									104	
									105	
									106	
									107	
									108	
									109	
									110	
									111	
									112	
									113	
									114	
									115	
									116	
									117	
									118	
									119	
									120	

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Borehole MW-9

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8.25" O.D. Hollow Stem Auger
Sampling Method: 4" continuous barrel
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/20/2011
Latitude: 36.724520°
Longitude: -107.792420°
Elevation: 5755
Boring Location: See Site Plan
Groundwater Depth: Approx. 76 ft during drilling
Logged By: DB
Remarks: None

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SM		1	SILTY SAND, brown, fine- to medium-grained, dry
									2	
									3	
									4	
					SS 60				5	
									6	
									7	moderate calcareous cementation
									8	
									9	
					SS 60				10	
									11	
									12	strong cementation
									13	
									14	
					SS 60				15	
									16	
									17	
							CL		18	SANDY LEAN CLAY, brown, damp
									19	
									20	contains white calcareous stringers
					SS 60				21	
									22	
							SP		23	SAND, tan, poorly graded, fine-grained, damp, no cementation
									24	
									25	
					SS 60				26	
									27	
							SM		28	SILTY SAND, tan, fine-grained, damp
									29	
									30	

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Borehole MW-9

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8.25" O.D. Hollow Stem Auger
Sampling Method: 4" continuous barrel
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/20/2011
Latitude: 36.724520°
Longitude: -107.792420°
Elevation: 5755
Boring Location: See Site Plan
Groundwater Depth: Approx. 76 ft during drilling
Logged By: DB
Remarks: None

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SM		31	SILTY SAND, tan, fine-grained, damp
									32	
									33	
							SW		34	SAND, tan, well-graded, fine- to coarse-graded, damp
					SS 60				35	
									36	
									37	
							SP		38	SAND, tan, poorly graded, fine- to medium-grained, damp
									39	
					SS 60				40	
									41	
									42	
									43	
									44	
					SS 60				45	
							SM		46	SILTY SAND, brown, fine-grained, damp
									47	
									48	
									49	
					SS 60				50	
									51	
							GP		52	GRAVEL with sand and cobbles
									53	SILTSTONE, green-gray, highly weathered, soft, damp
									54	
									55	
					SS 60		RK		56	
									57	
									58	
									59	moderately weathered, moderately soft, damp
									60	

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Borehole MW-9

Project Name: Crowe Blanco Properties, LLC
Project Number: 102-1162
Client: Cheney-Walters-Echols
Site Location: Blanco, New Mexico
Rig Type: CME - 75
Drilling Method: 8.25" O.D. Hollow Stem Auger
Sampling Method: 4" continuous barrel
Hammer Weight: N/A
Hammer Fall: N/A

Date Drilled: 7/20/2011
Latitude: 36.724520°
Longitude: -107.792420°
Elevation: 5755
Boring Location: See Site Plan
Groundwater Depth: Approx. 76 ft during drilling
Logged By: DB
Remarks: None

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		RK		61	SILTSTONE, green-gray, highly weathered, soft, damp
									62	
									63	
							RK		64	SHALE, green-gray, slightly weathered, moderately hard, damp, fissile, friable
					SS 60				65	
									66	
							RK		67	SILTSTONE, green-gray, fresh, moderately hard, damp
									68	
									69	
					SS 60				70	
									71	
									72	weakly fissile
									73	
							RK		74	SHALE, dark gray, fresh, moderately hard, damp, blocky to weakly fissile
									75	
									76	▽
							RK		77	SILTSTONE, green-gray
									78	highly weathered, soft, wet between 76 and 78 ft
									79	
									80	fresh, hard, damp to moist below 78 ft
									81	
									82	
									83	
									84	
									85	
									86	
									87	
									88	Total Depth 87 feet
									89	
									90	

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Borehole MW-10

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	7/26/2011
Project Number:	102-1162	Latitude:	36.720440°
Client:	Cheney-Walters-Echols	Longitude:	-107.780040°
Site Location:	Blanco, New Mexico	Elevation:	5783
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 101 ft during drilling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		SM		1–7	SILTY SAND, brown, fine-grained, dry to damp
					SS 60		SW		8–15	SAND, brown, well-graded, fine- to coarse-grained, damp
					SS 60		SM		16–21	SILTY SAND, brown, fine-grained, damp, weak to moderate calcareous cementation
					SS 60		SW		22–23	SAND, brown, well-graded, fine- to coarse-grained, damp
							SC		24–25	CLAYEY SAND, red-brown, fine-grained, damp
					SS 60		SM		26–40	SILTY SAND, tan, fine-grained, damp

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Borehole MW-10

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	7/26/2011
Project Number:	102-1162	Latitude:	36.720440°
Client:	Cheney-Walters-Echols	Longitude:	-107.780040°
Site Location:	Blanco, New Mexico	Elevation:	5783
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 101 ft during drilling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
					SS 60				41	SILTY SAND, tan, fine-grained, damp
									42	
									43	
									44	
					SS 60				45	
									46	
									47	
									48	contains layers/lenses of well graded sand
									49	
					SS 60				50	
									51	
									52	
									53	
							SM		54	
					SS 60				55	
									56	
									57	
									58	
									59	
					SS 60				60	
									61	
									62	
									63	
									64	
					SS 60				65	
									66	
									67	
									68	
							RK		69	SILTSTONE, green-gray, moderately weathered, moderately hard
									70	
					SS 60				71	SHALE, green-gray, moderately weathered, blocky
									72	
							RK		73	
									74	
									75	weakly fissile
					SS 60				76	
									77	SILTSTONE, green-gray, slightly weathered, moderately hard
									78	
							RK		79	
									80	

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Borehole MW-10

Project Name:	Crowe Blanco Properties, LLC	Date Drilled:	7/26/2011
Project Number:	102-1162	Latitude:	36.720440°
Client:	Cheney-Walters-Echols	Longitude:	-107.780040°
Site Location:	Blanco, New Mexico	Elevation:	5783
Rig Type:	CME - 75	Boring Location:	See Site Plan
Drilling Method:	8.25" O.D. Hollow Stem Auger	Groundwater Depth:	Approx. 101 ft during drilling
Sampling Method:	4" continuous barrel	Logged By:	DB
Hammer Weight:	N/A	Remarks:	None
Hammer Fall:	N/A		

Laboratory Results: Dry Density (pcf)	Laboratory Results: % Passing #200 Sieve	Laboratory Results: Plasticity Index	Laboratory Results: Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
					SS 60		RK		81	SILTSTONE, green-gray, slightly weathered, moderately hard
									82	
							RK		83	
									84	SHALE, green-gray
							RK		85	SANDSTONE, light gray, clayey, fine-grained, moderately to highly weathered, weakly cemented
					SS 60				86	
									87	SILTSTONE, green-gray, fresh, moderately hard to hard
									88	
									89	
									90	
					SS 60				91	hard drilling
									92	
									93	
									94	
									95	
					SS 60				96	
									97	
							RK		98	
									99	purple-gray, fresh, hard, fissile
									100	
					SS 60				101	▽green-gray
									102	
									103	between 101 and 103 ft - highly weathered, soft, wet
									104	
									105	purple-gray, fresh, hard, damp, fissile
					SS 60				106	
									107	
									108	gray, damp
									109	
									110	
									111	
									112	Total Depth 111 feet
									113	
									114	
									115	
									116	
									117	
									118	
									119	
									120	

A = Auger Cuttings GRAB = Hand Sample MC = Modified California (Ring Sample) SS = Split Spoon HQ = 2.5" Rock Core

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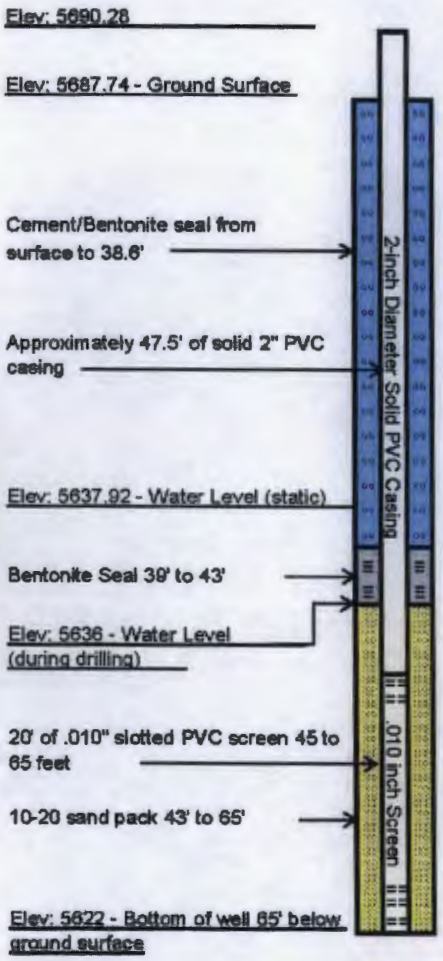
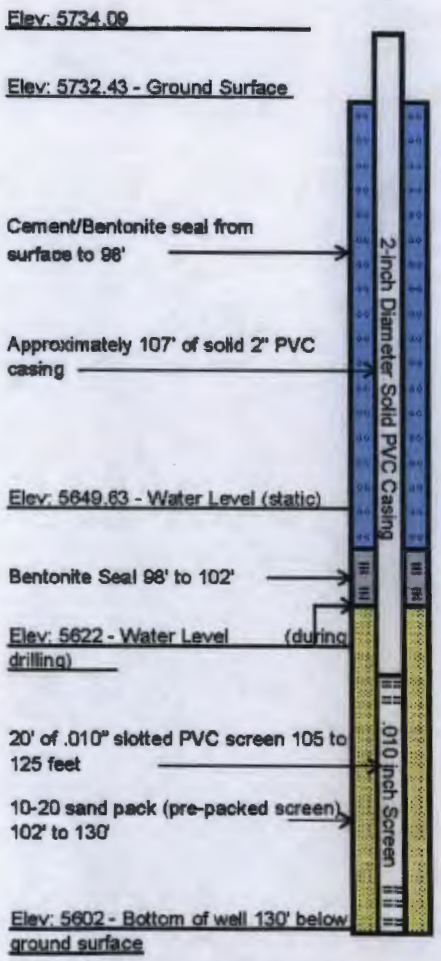
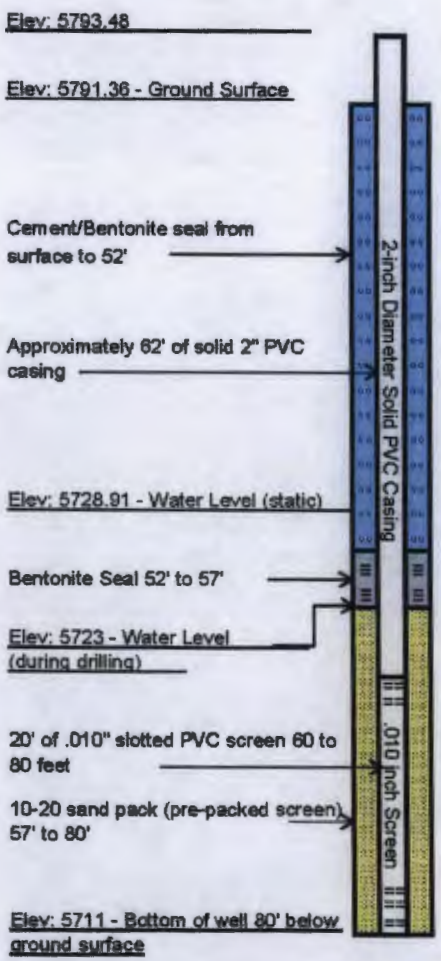
MONITOR WELL MW-1



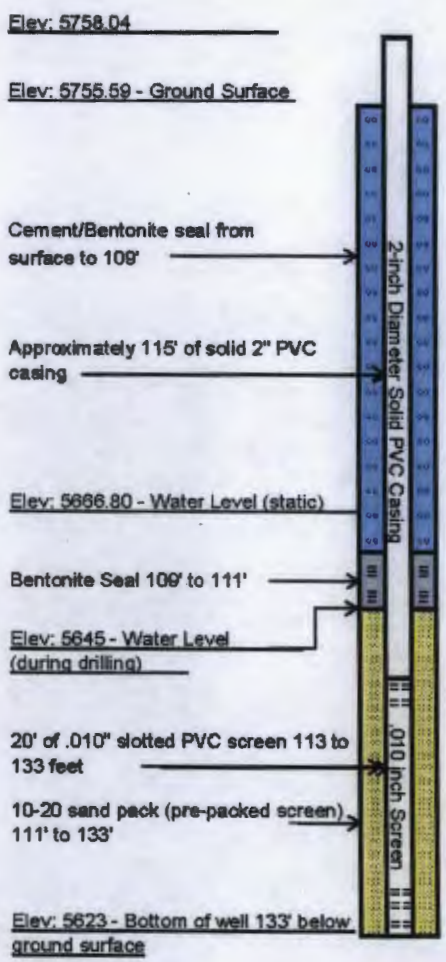
MONITOR WELL MW-2



MONITOR WELL MW-3



MONITOR WELL MW-4



15.38

REVISED: 2/27/13

	Monitor Well As-Completed Cross-Sections	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico
Not to Scale	GEOMAT Project No. 102-1162	GEOMAT INC

MONITOR WELL MW-5

Elev: 5779.22

Elev: 5776.08 - Ground Surface

Cement/Bentonite seal from surface to 111.5'

Approximately 118' of solid 2" PVC casing

Elev: 5683.92 - Water Level (static)

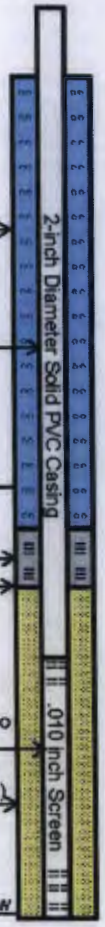
Bentonite Seal 111.5' to 114'

Elev: 5662 - Water Level (during drilling)

20' of .010" slotted PVC screen 116 to 136 feet

10-20 sand pack (pre-packed screen) 114' to 136'

Elev: 5640 - Bottom of well 136' below ground surface



MONITOR WELL MW-6

Elev: 5685.76

Elev: 5683.59 - Ground Surface

Cement/Bentonite seal from surface to 27'

Approximately 33' of solid 2" PVC casing

Bentonite Seal 27' to 29'

Elev: 5646 - Water Level (during drilling)

20' of .010" slotted PVC screen 31 to 51 feet

10-20 sand pack (pre-packed screen) 29' to 51'

Elev: 5633 - Bottom of well 51' below ground surface

MONITOR WELL MW-7

Elev: 5712.52

Elev: 5710.13 - Ground Surface

Cement/Bentonite seal from surface to 46'

Approximately 52' of solid 2" PVC casing

Bentonite Seal 46' to 48'

Elev: 5654 - Water Level (during drilling)

20' of .010" slotted PVC screen 50 to 70 feet

10-20 sand pack (pre-packed screen) 48' to 70'

Elev: 5640 - Bottom of well 70' below ground surface

MONITOR WELL MW-8

Elev: 5757.36

Elev: 5755.01 - Ground Surface

Cement/Bentonite seal from surface to 71'

Approximately 77' of solid 2" PVC casing

Bentonite Seal 71' to 75'

Elev: 5680 - Water Level (during drilling)

20' of .010" slotted PVC screen 75 to 92 feet

10-20 sand pack (pre-packed screen) 75' to 92'

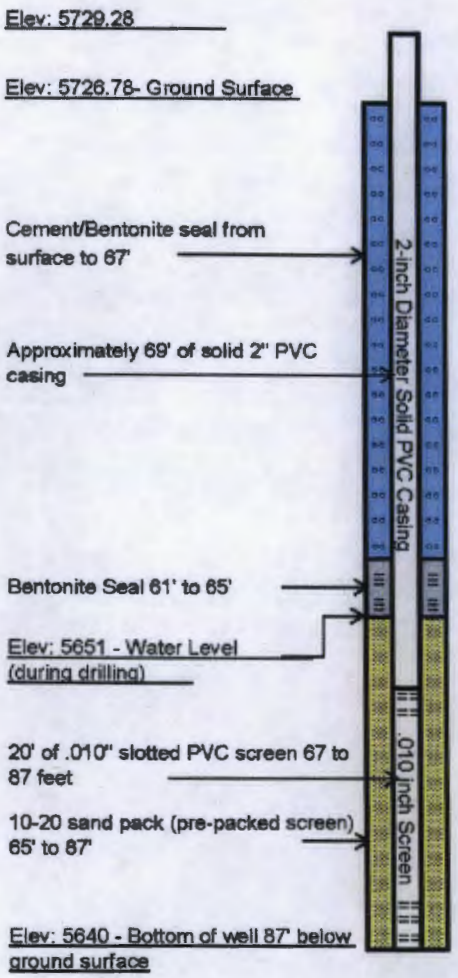
Elev: 5663- Bottom of well 92' below ground surface

15.39

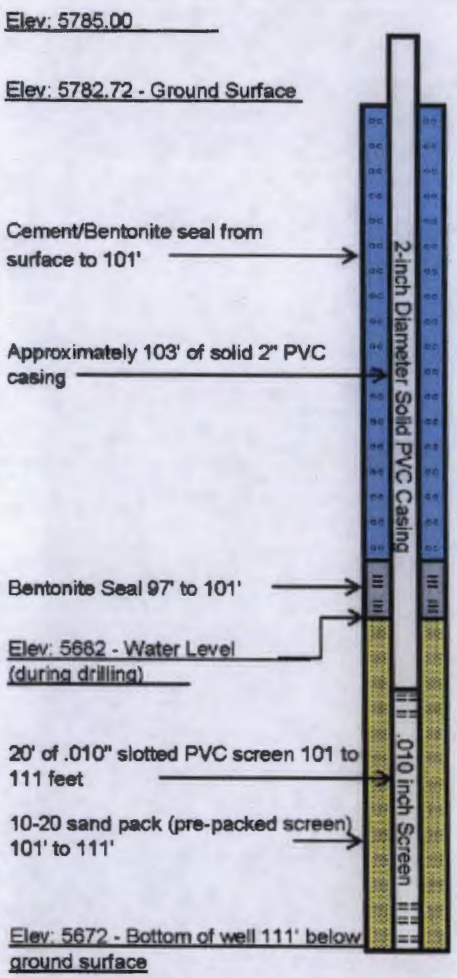
REVISED: 2/27/13

	PROJECT	
Monitor Well As-Completed Cross-Sections	Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico	GEOMAT INC
GEOMAT Project No. 102-1162		
Not to Scale		

MONITOR WELL MW-9



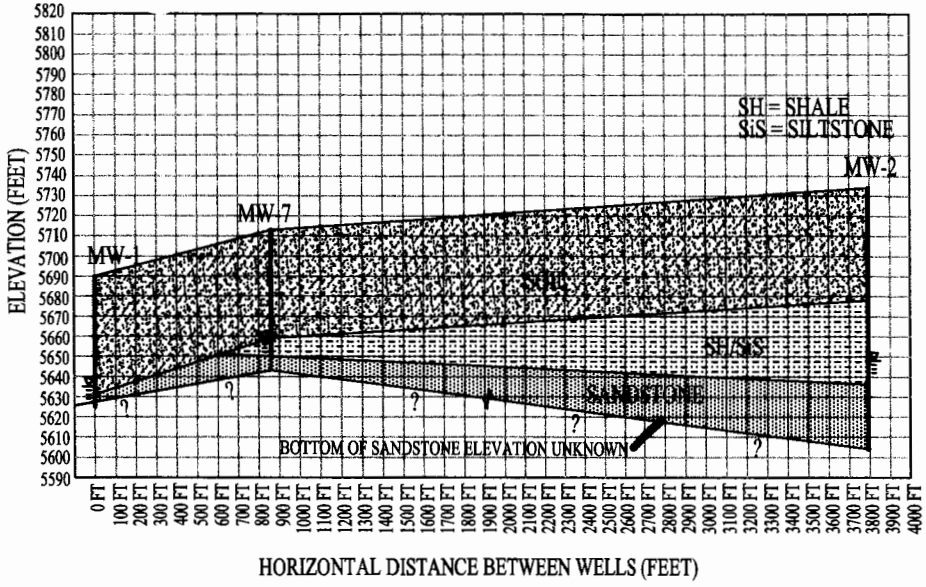
MONITOR WELL MW-10

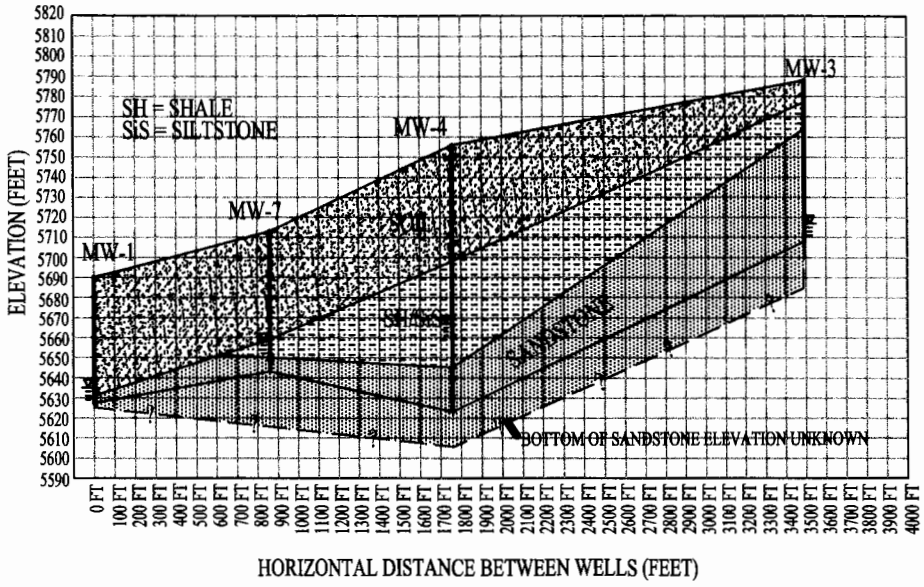


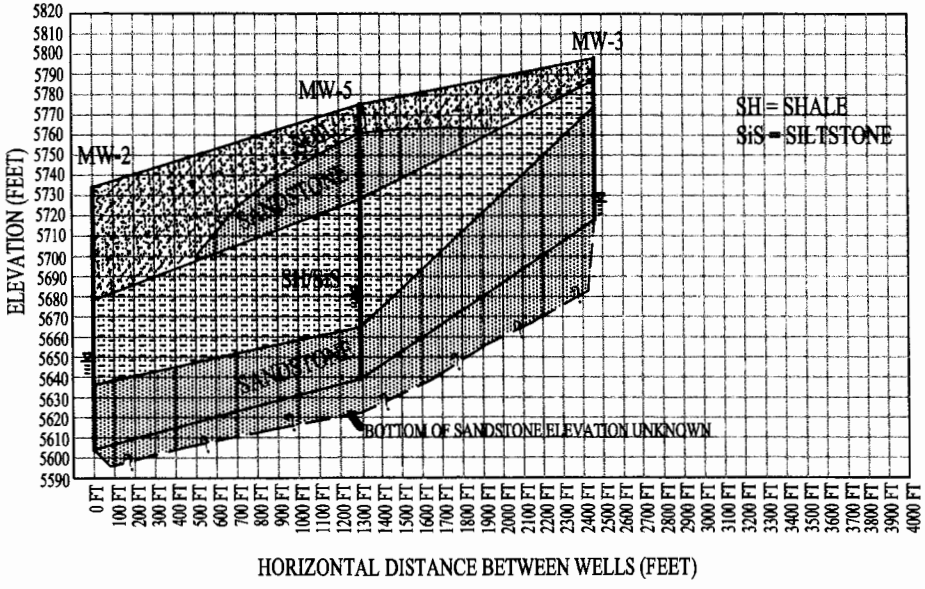
15.40

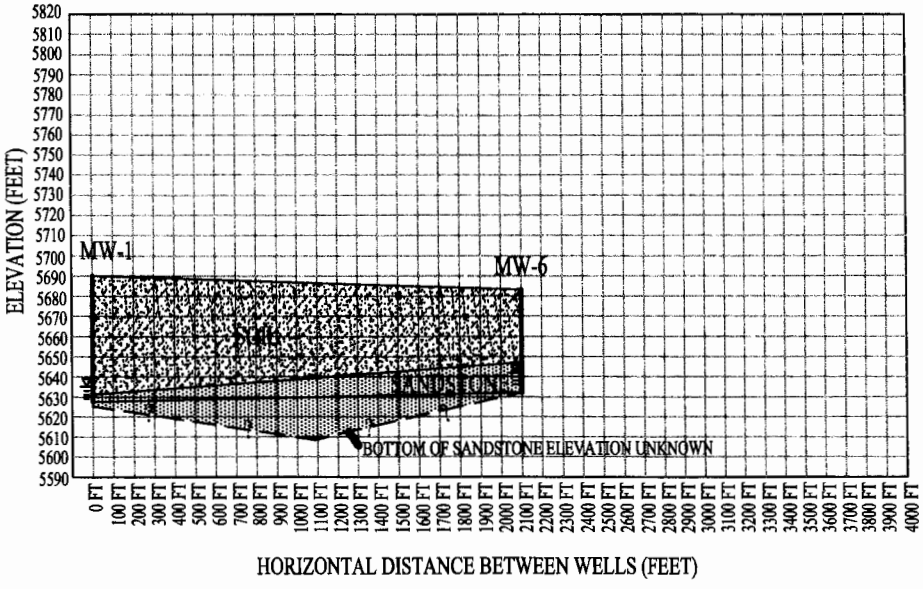
REVISED: 2/27/13

	PROJECT	
Monitor Well As-Completed Cross-Sections	Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico	GEOMAT INC
GEOMAT Project No. 102-1162		
Not to Scale		





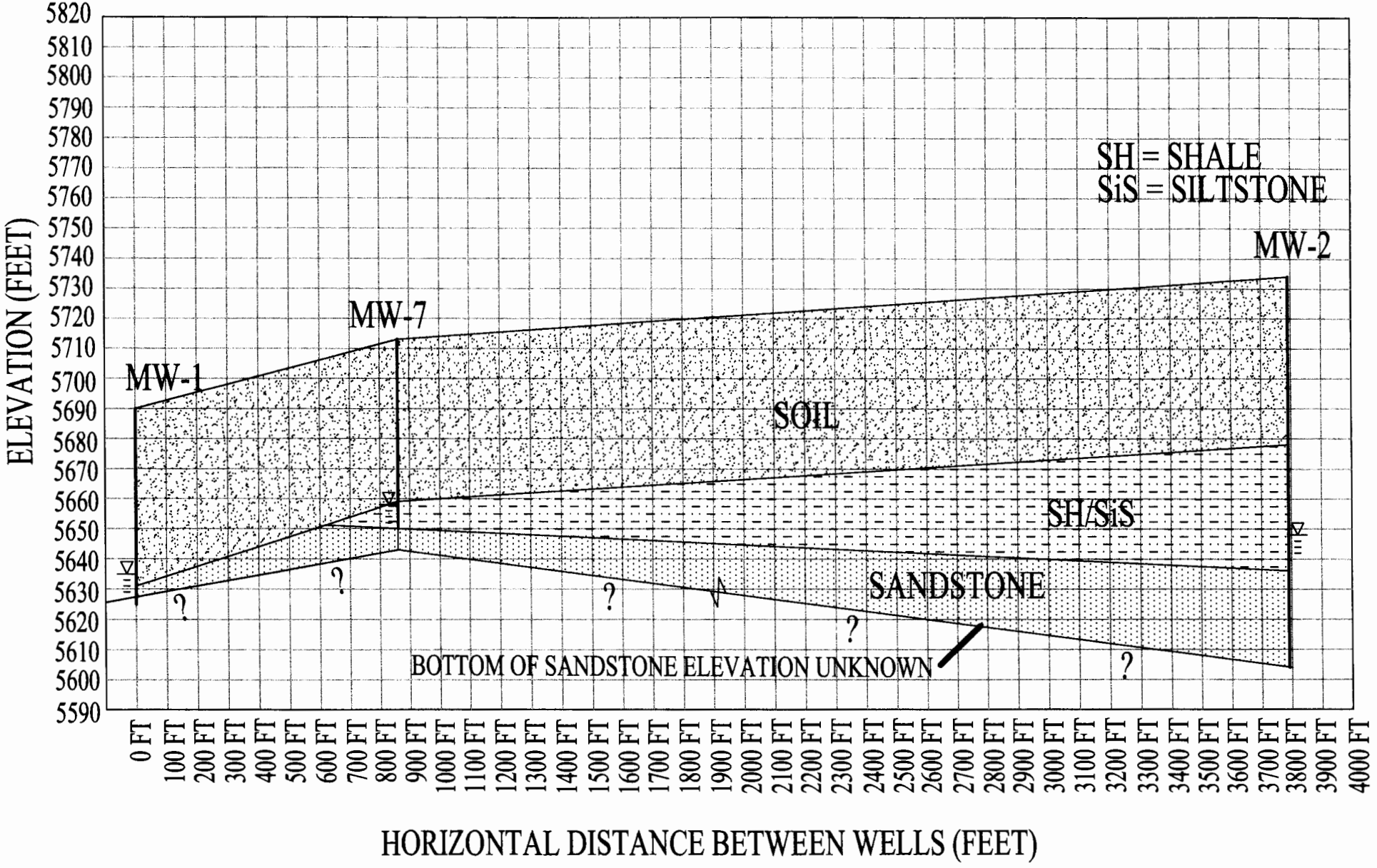




15.41

REVISED: 5/10/11

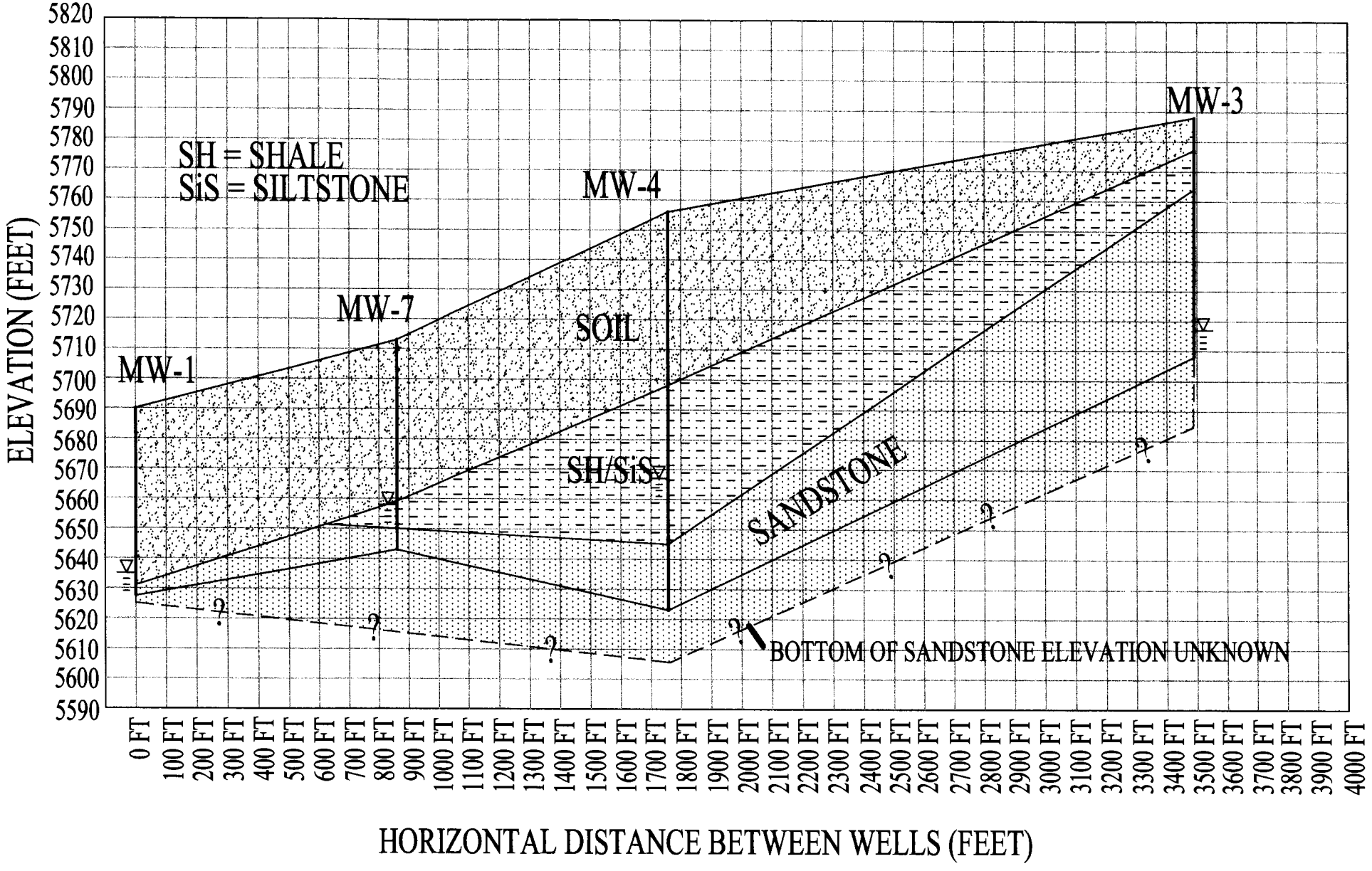
	INFORMATION	PROJECT	
	Monitor Well Cross Sections	Crowe Blanco Properties, LLC-Operated by IEI Generalized Geologic Cross Sections Blanco, New Mexico	GEOMAT INC
Not to Scale	GEOMAT Project No. 102-1162		



15.42

REVISED: 5/10/11

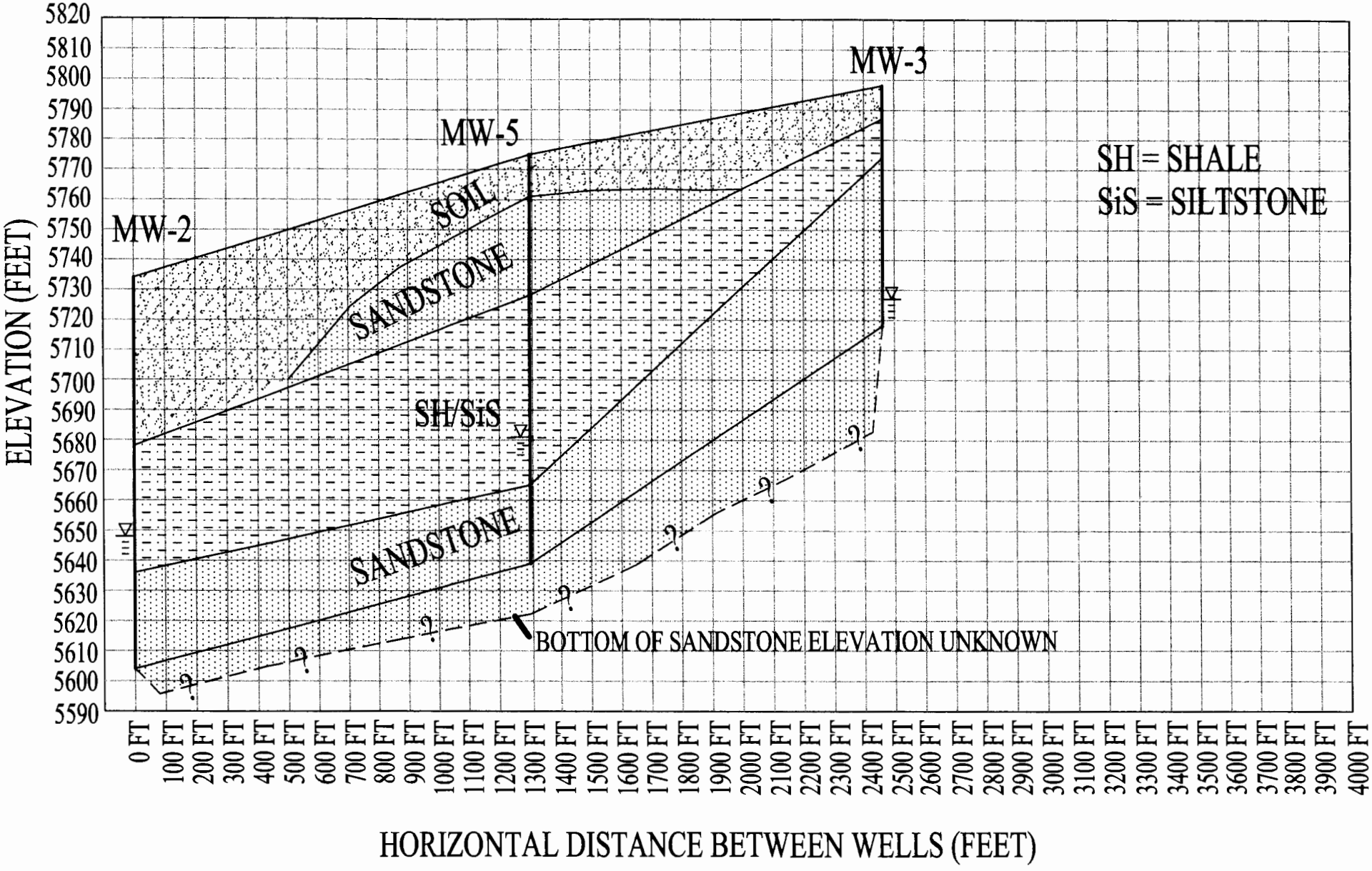
	INFORMATION	PROJECT	
	MW-1 to MW-7 to MW-2	Crowe Blanco Properties, LLC-Operated by IEI Generalized Geologic Cross Sections Blanco, New Mexico	GEOMAT INC
Not to Scale	GEOMAT Project No. 102-1162		



15.43

REVISED: 5/10/11

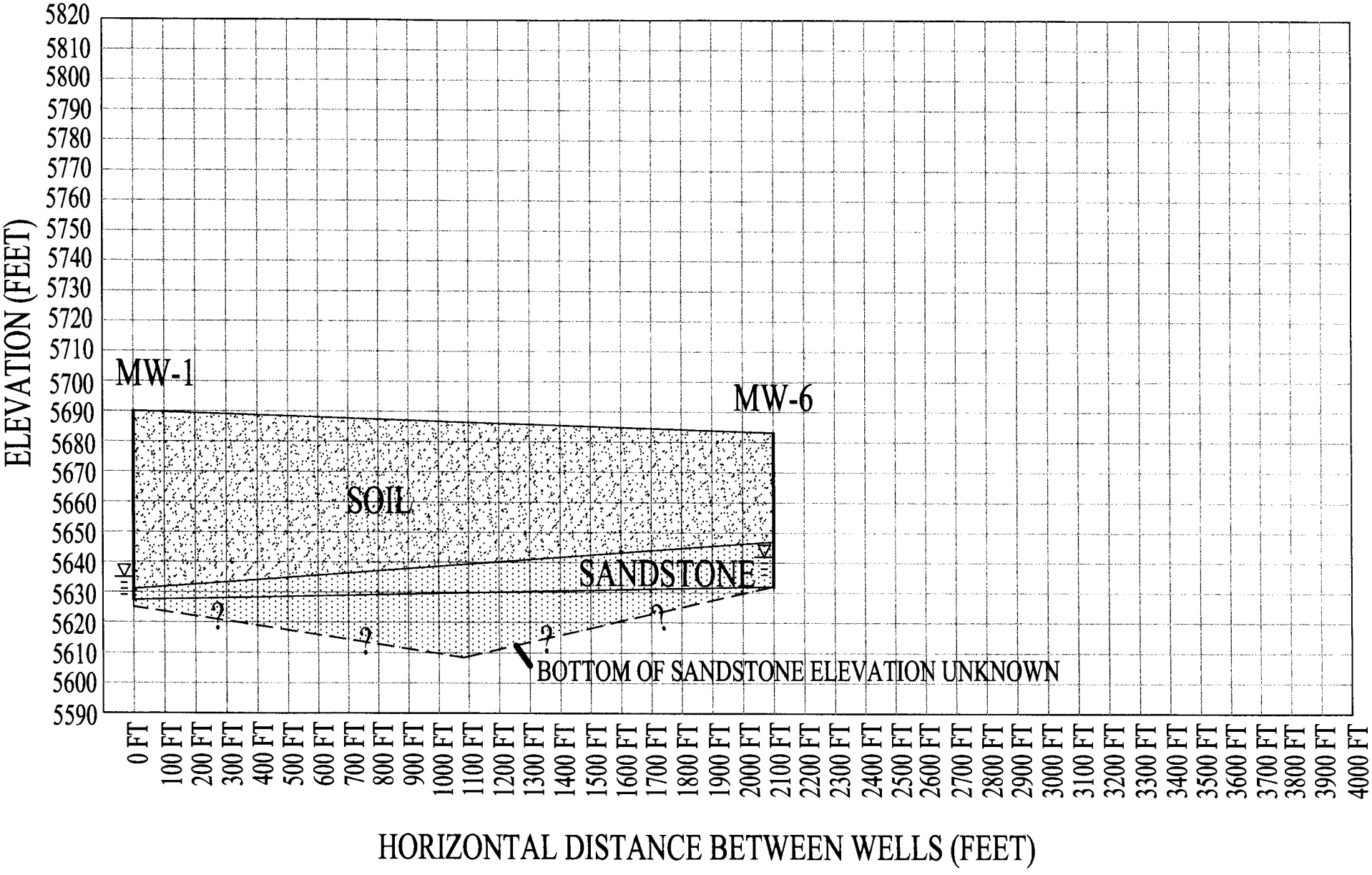
	INFORMATION	PROJECT	
	MW-1 to to MW-7 to MW-4 to MW-3	Crowe Blanco Properties, LLC-Operated by IEI Generalized Geologic Cross Sections Blanco, New Mexico	GEOMAT INC
Not to Scale	GEOMAT Project No. 102-1162		



15.44

REVISED: 5/10/11

	INFORMATION	PROJECT	
	MW-2 to MW-5 to MW-3	Crowe Blanco Properties, LLC-Operated by IEI Generalized Geologic Cross Sections Blanco, New Mexico	GEOMAT INC
Not to Scale	GEOMAT Project No. 102-1162		



EVISED: 5/10/11

	INFORMATION	PROJECT	
Not to Scale	MW-1 to MW-6 GEOMAT Project No. 102-1162	Crowe Blanco Properties, LLC-Operated by IEI Generalized Geologic Cross Sections Blanco, New Mexico	GEOMAT INC

WATER LEVEL MEASUREMENTS

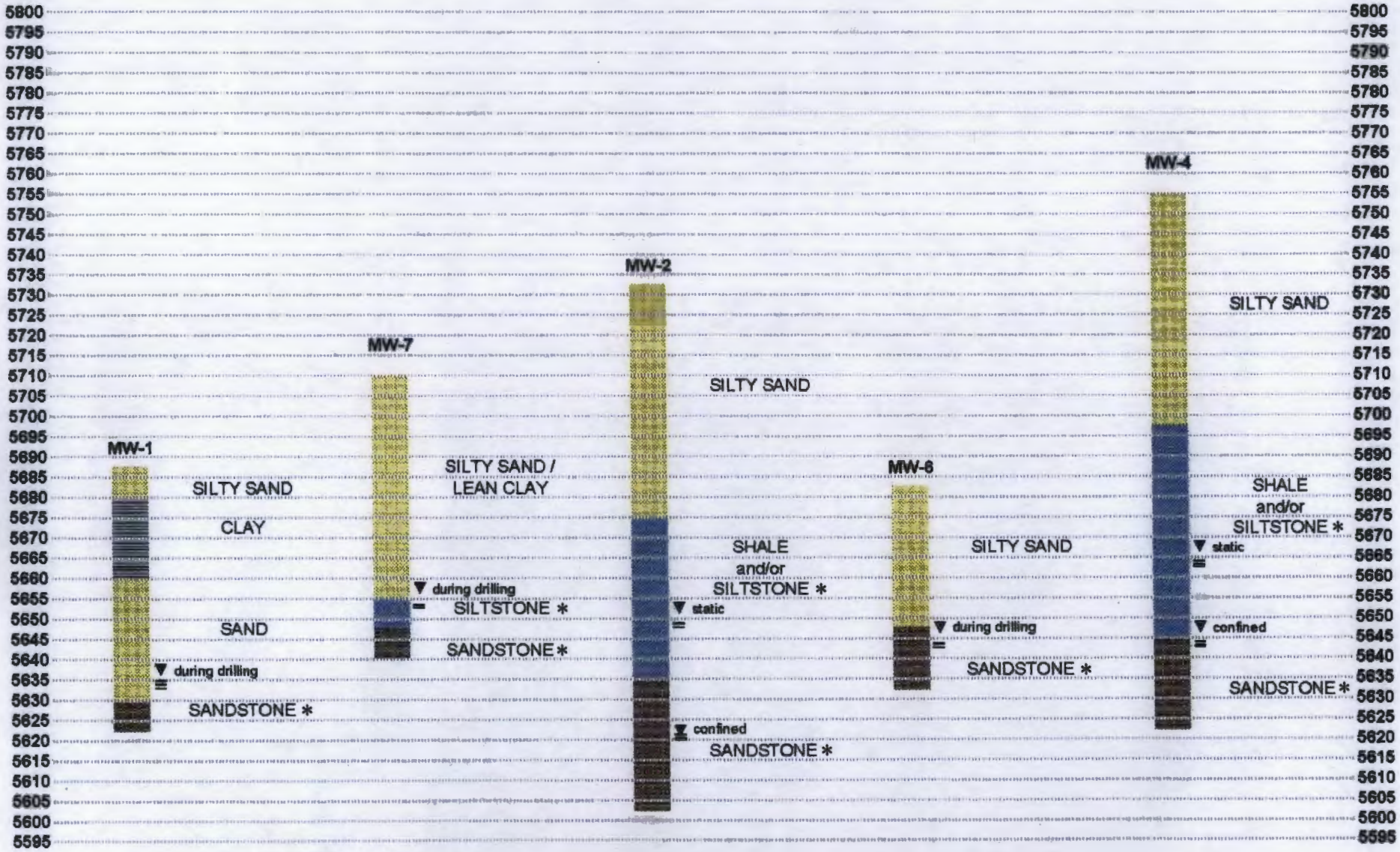
STATIC WATER LEVELS

WELL No.	TOC (ASL)[1]	TOP OF PAD (ASL)[1]	NATURAL GROUND SURFACE[2]	CASING STICKUP (feet)	DISTURBANCE of NATURAL GROUND ELEV	WL below TOC (measured)	WL below Pad (feet)[3]	WL Below Natural GS (feet)[4]	Static Water Elevation (ASL)[5]
MW-1	5690.28	5687.74	5687.74	2.54	None	52.32	49.78	49.87	5637.96
MW-2	5734.09	5732.43	5732.43	1.66	None	84.37	82.71	82.71	5649.72
MW-3	5793.48	5791.36	5791.36	2.12	None	64.76	62.64	62.64	5728.72
MW-4	5758.04	5755.59	5755.59	2.45	None	91.10	88.65	88.65	5666.94
MW-5	5779.22	5777.08	5776.08	2.14	+1 ft of fill	95.40	93.26	92.26	5683.82
MW-6	5685.76	5683.59	5683.59	2.17	None	40.10	37.93	37.93	5645.66
MW-7	5712.52	5710.13	5710.13	2.39	None	58.39	56.00	56.00	5654.13
MW-8	5757.38	5755.01	5755.01	2.37	None	76.48	74.11	74.11	5680.90
MW-9	5729.28	5726.78	5726.78	2.50	None	81.00	78.50	78.50	5648.28
MW-10	5785.00	5782.72	5782.72	2.28	None	81.27	78.99	78.99	5703.73

COMPARISON OF WATER LEVEL DURING DRILLING VS. STATIC WATER LEVEL

WELL No. No.	TOC (ASL)[1]	TOP OF PAD (ASL)[1]	NATURAL GROUND SURFACE[2]	CASING STICKUP (feet)	DISTURBANCE of NATURAL GROUND ELEV	Approx. WL Observed during Drilling[6]	Water ELEV DURING DRILLING[7] (ASL)	DIFFERENCE BETWEEN WL DURING DRILLING AND STATIC WL (feet)
MW-1	5690.28	5687.74	5687.74	2.54	None	52	5636	<2
MW-2	5734.09	5732.43	5732.43	1.66	None	110	5622	27.7
MW-3	5793.48	5791.36	5791.36	2.12	None	68	5723	5.7
MW-4	5758.04	5755.59	5755.59	2.45	None	111	5645	21.9
MW-5	5779.22	5777.08	5776.08	2.14	+1 ft of fill	115	5662	21.8
MW-6	5685.76	5683.59	5683.59	2.17	None	38	5646	<1
MW-7	5712.52	5710.13	5710.13	2.39	None	56	5654	<1
MW-8	5757.38	5755.01	5755.01	2.37	None	75	5680	<1
MW-9	5729.28	5726.78	5726.78	2.50	None	76	5651	2.7
MW-10	5785.00	5782.72	5782.72	2.28	None	101	5682	21.7

[1]Elevations (in feet above sea level) surveyed by Cheney-Walters-Echols, Inc.
[2]Top of concrete pad minus ground disturbance
[3]Measured water level (referenced to TOC) minus stickup
[4]Water level (below concrete pad) minus ground disturbance
[5]Surveyed top of pad elevation minus water level below pad
[6]Approximate depth at which groundwater was first encountered at time of drilling
[7]Surveyed top of pad elevation minus water level observed during drilling

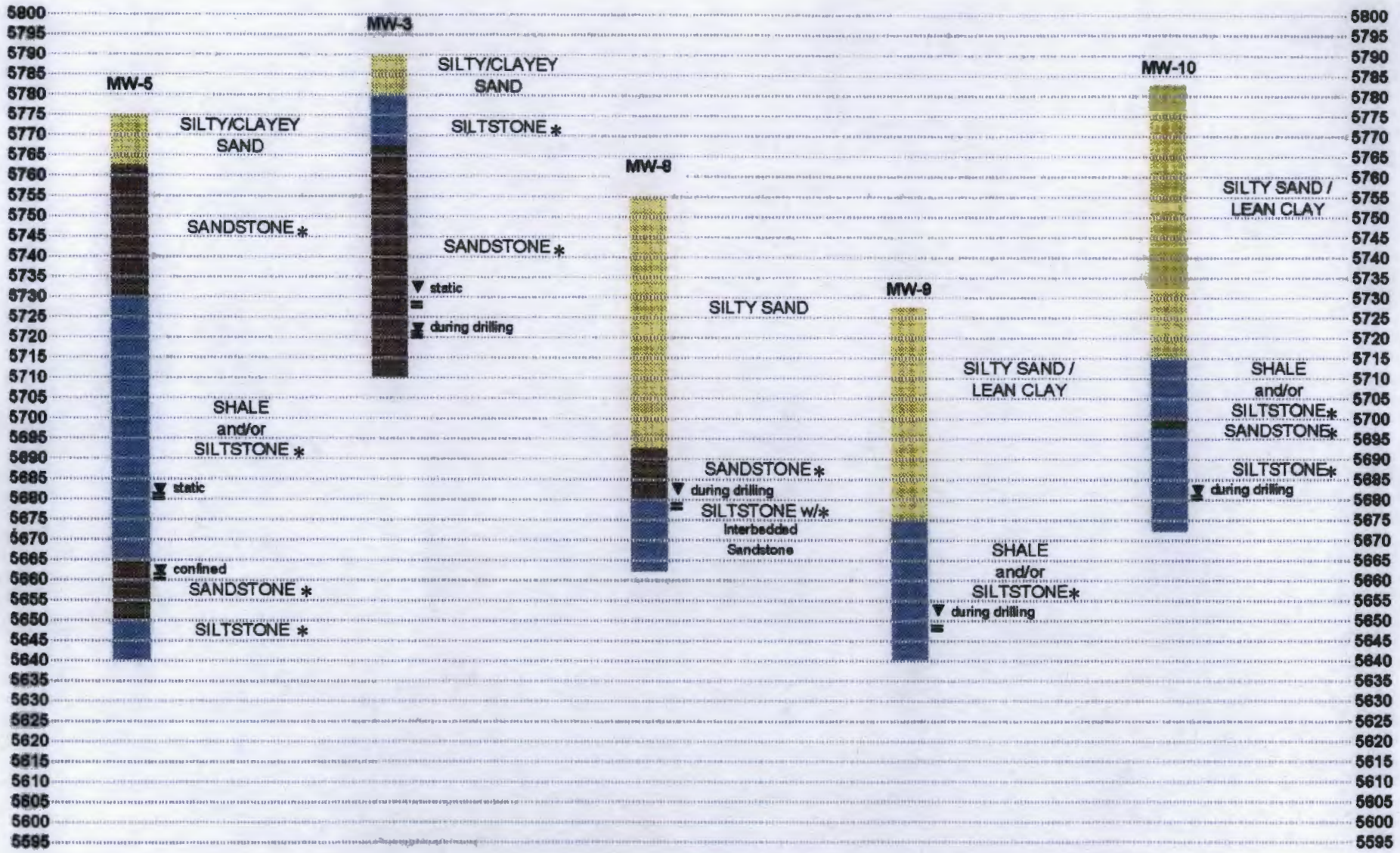


15.47

* Nacimiento Formation

REVISED: 2/27/13

	Lithologic Fence Diagram	PROJECT
	GEOMAT Project No. 102-1162	Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico
Not to Scale		GEOMAT INC



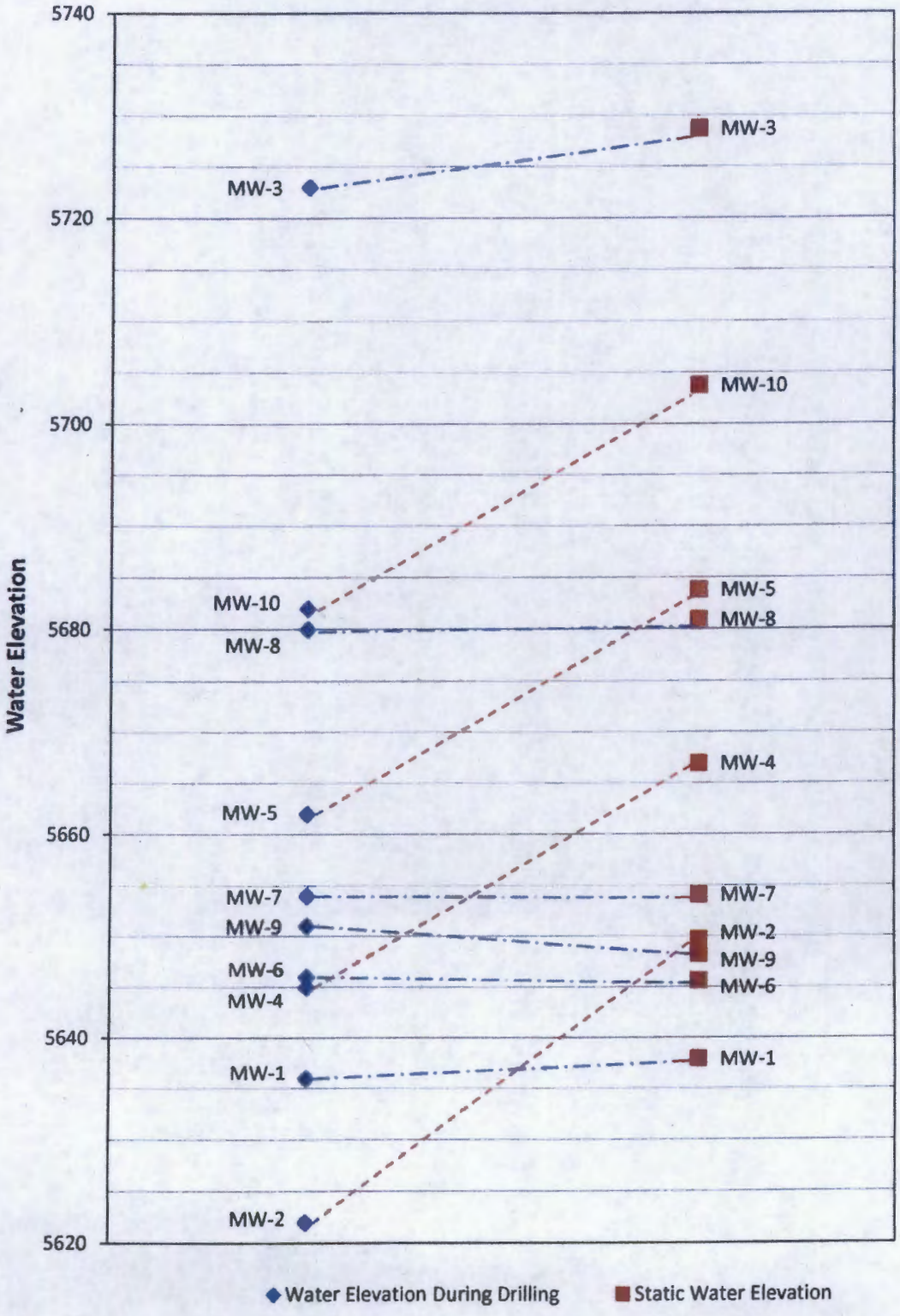
15.48

* Nacimiento Formation

REVISED: 2/27/13

		PROJECT
	Lithologic Fence Diagram	Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico
Not to Scale	GEOMAT Project No. 102-1162	GEOMAT INC

Water Elevation During Drilling vs. Static Water Elevation

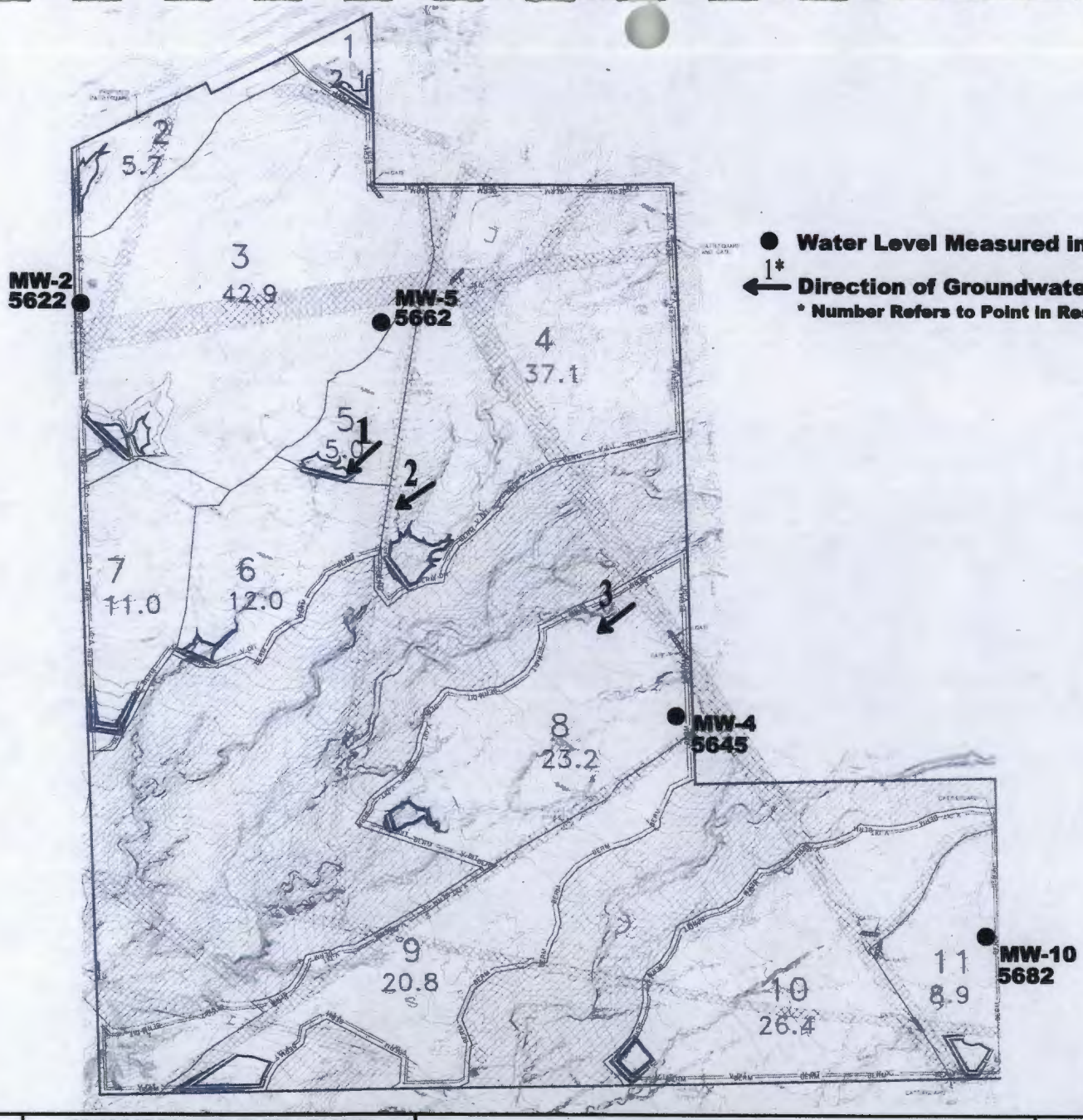


Results of Three Point Analyses			
Using Confined Water Level Data[1]			
Map Point[2]	Wells Analyzed MW- #	Flow Direction (confined)	Gradient (confined)
1	2,4,5	S 47 W	2.7°
2	2,5,10	S 56 W	2.3°
3	4,5,10	S 51 W	4.9°
Average		S 51 W	3.3°

[1]Wells used for analysis were MW-2, MW-4, MW-5, and MW-10
[2]Corresponding point on **Groundwater Elevations and Direction of Flow Map - Confined Condition**

Results of Three Point Analyses			
Using Static Water Level Data[3]			
Map Point[4]	Wells Analyzed MW- #	Flow Direction (unconfined)	Gradient (unconfined)
4	1,6,7	S 33 W	1.1°
5	1,7,9	S 49 W	1.4°
6	3,6,8	S 75 W	1.6°
7	3,8,9	S 71 W	1.7°
8	6,7,9	S 67 W	0.4°
Average		S 59 W	1.2°

[3]Wells used for analysis were MW-1, MW-3, MW-6, MW-7, MW-8, and MW-9
[4]Corresponding point on **Groundwater Elevations and Direction of Flow Map - Unconfined Condition**

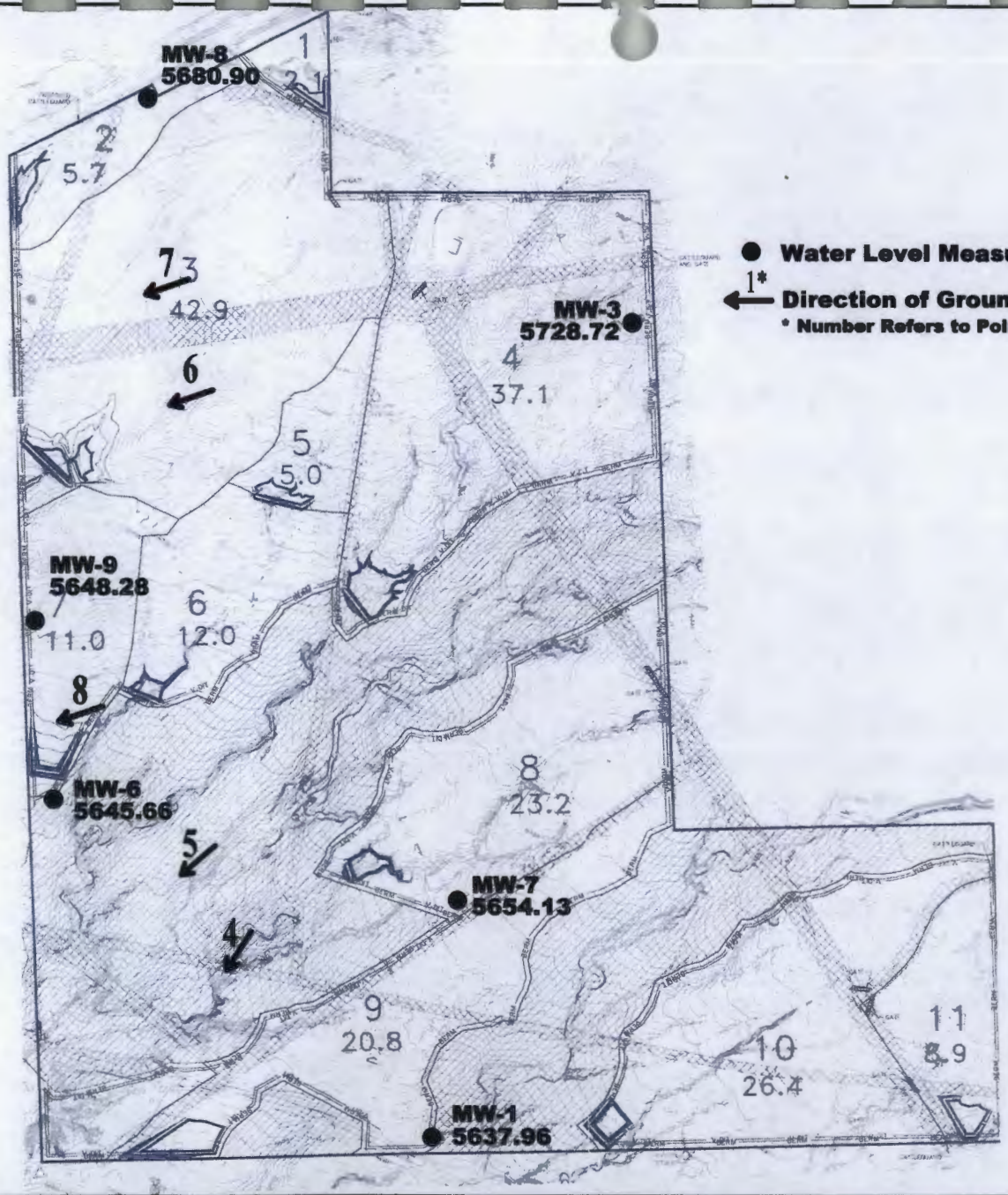


15.51

REVISED: 3/7/13

Approximate Not to Scale	GROUNDWATER ELEVATIONS AND DIRECTION OF FLOW MAP Confined Conditions GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico

GEOMAT INC



15.52

REVISED: 3/7/13

Approximate Not to Scale	GROUNDWATER ELEVATIONS AND DIRECTION OF FLOW MAP Unconfined Conditions GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico

GEOMAT INC

Approximate

Not to Scale

GENERAL LOCATION OF CONFINING LAYER

GEOMAT Project No. 102-1162

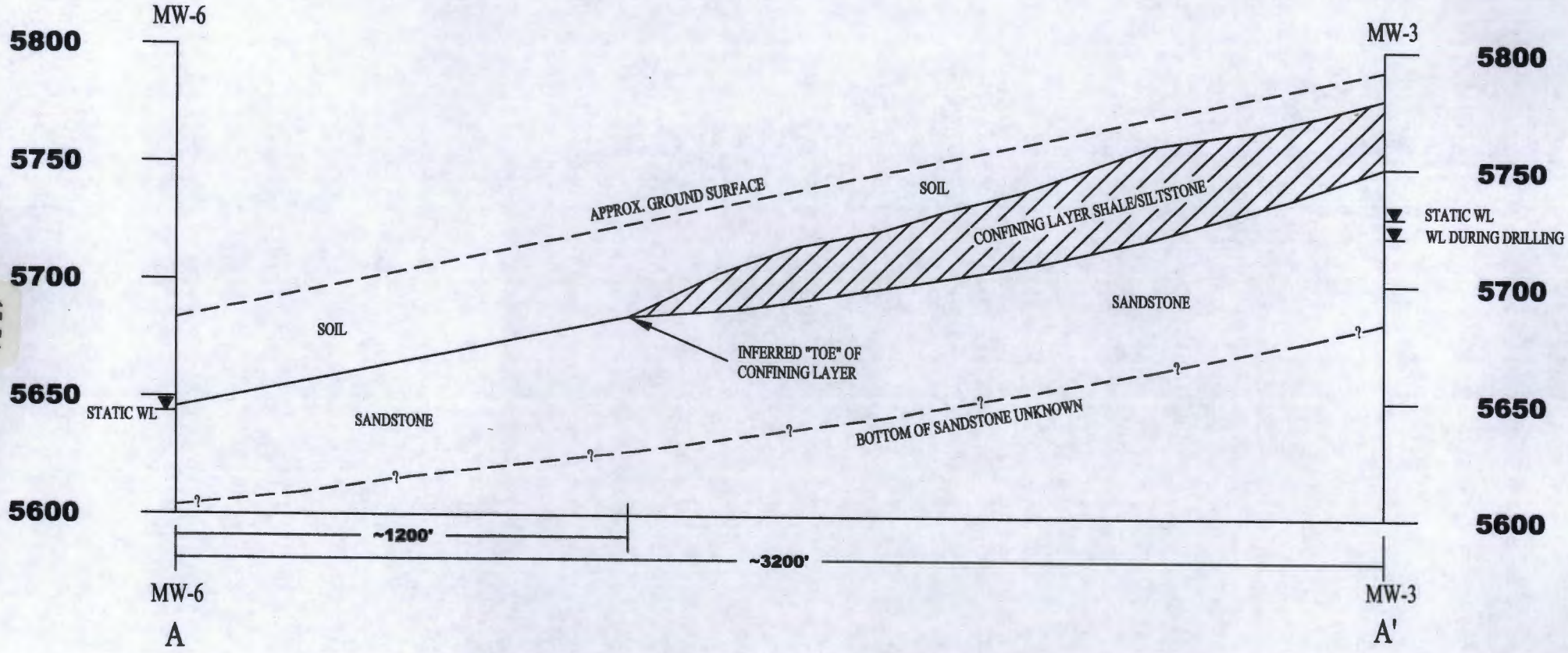
PROJECT

Crowe Blanco Properties, LLC

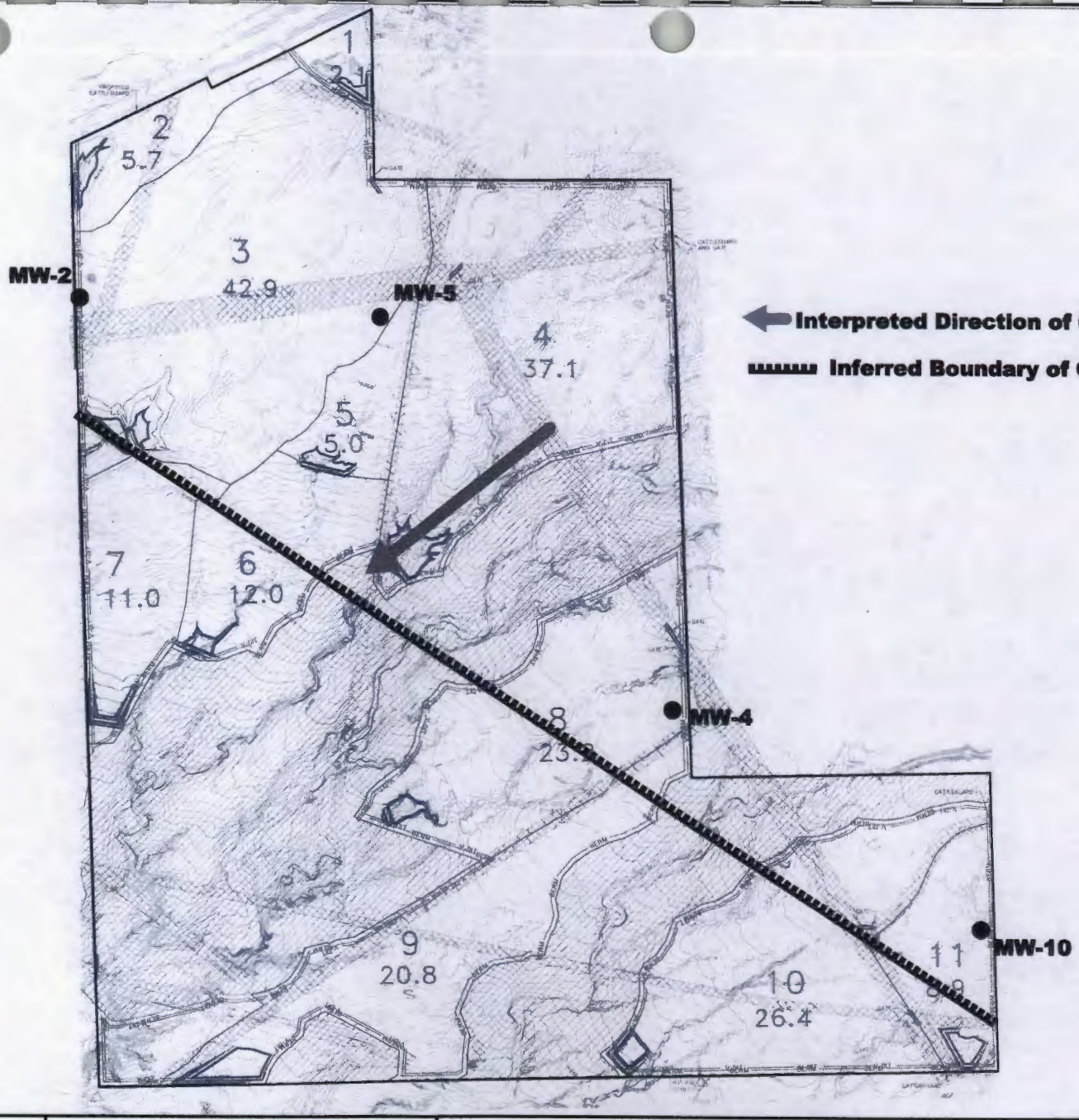
Operated by IEI

Blanco, New Mexico

GEOMAT INC



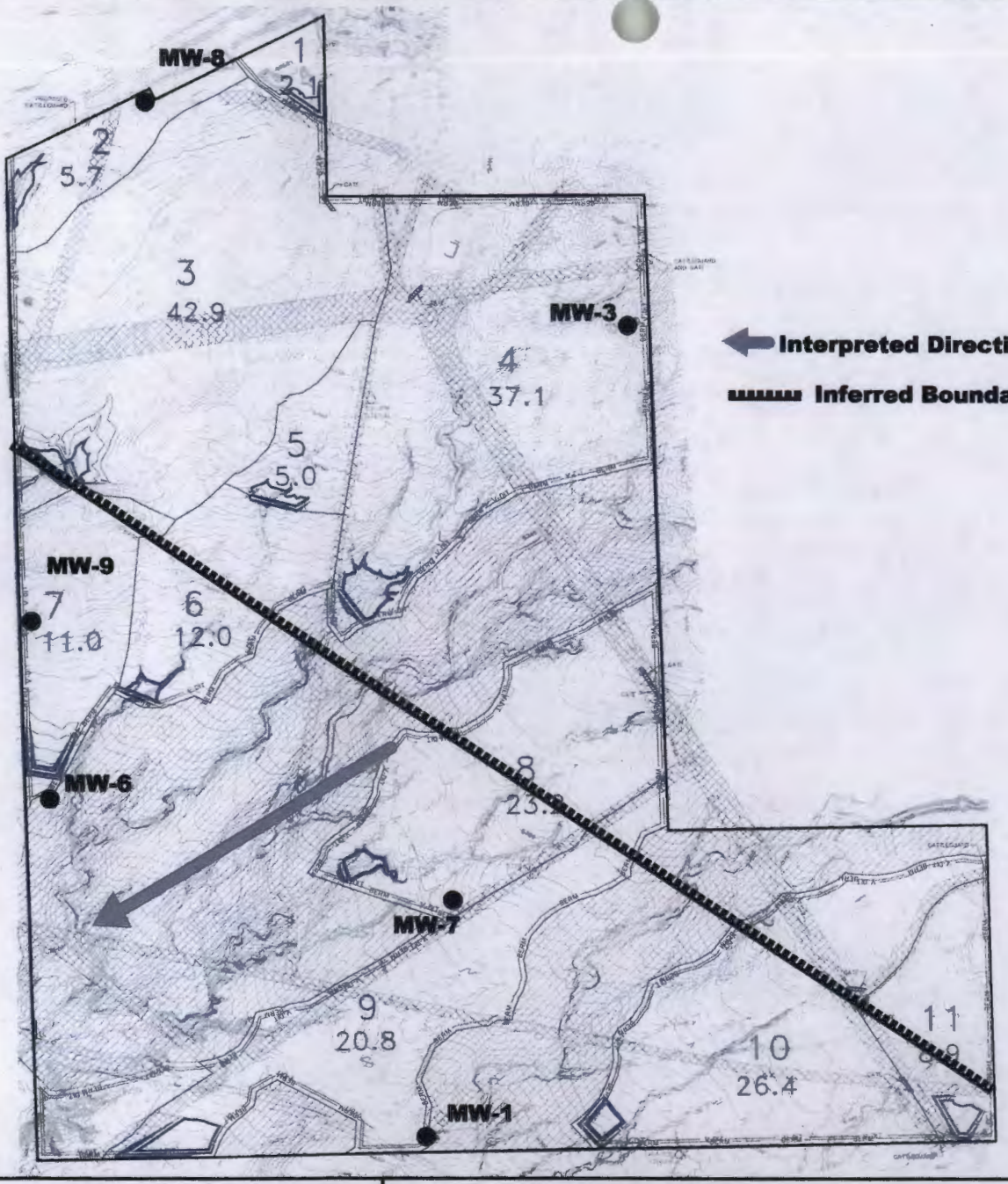
Approximate Not to Scale	CROSS SECTION A-A' Generalized Subsurface Profile GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico	GEOMAT INC



15.55

REVISED: 4/9/13

Approximate Not to Scale	INTERPRETATION OF FLOW MAP Based On Data From Confined Wells GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico	GEOMAT INC



15.56

REVISED: 4/9/13

Approximate Not to Scale	INTERPRETATION OF FLOW MAP Based On Data From Unconfined Wells GEOMAT Project No. 102-1162	PROJECT Crowe Blanco Properties, LLC Operated by IEI Blanco, New Mexico

GEOMAT INC

Green Analytical Laboratories

75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

13 September 2011

Marcella Marquez
Industrial Ecosystems Inc.
49 CR 3150
Aztec, NM 87410
RE: MW6

Enclosed are the results of analyses for samples received by the laboratory on 08/31/11 14:55. The data to follow was performed, in whole or in part, by a subcontract laboratory with an additional report attached.

If you any any further assistance, please feel free to contact me.

Sincerely,

Debbie Zufelt

Debbie Zufelt
Reports Manager

Green Analytical Laboratories
dzufelt@greenanalytical.com p: 970.247.4220 f: 970 247 4227 75 Suttle Street Durango, CO 81303
www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW6	1109002-01	Water	08/31/11 09:30	08/31/11 14:55

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

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www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

MW6

1109002-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry								
Alkalinity, Bicarbonate	**138**	10.0	mg/L	1	09/01/11	2320 B		ABP
Alkalinity, Carbonate	ND	10.0	mg/L	1	09/01/11	2320 B		ABP
Alkalinity, Hydroxide	ND	10.0	mg/L	1	09/01/11	2320 B		ABP
Alkalinity, Total	**138**	10.0	mg/L	1	09/01/11	2320 B		ABP
Chloride	**26.0**	10.0	mg/L	1	09/01/11	4500Cl B		ABP
TDS	**5120**	10.0	mg/L	1	09/01/11	160.1/2540C		ABP
Sulfate	**3700**	1000	mg/L	1	09/02/11	4500SO4		ABP
Dissolved Metals by ICP								
Arsenic	ND	0.100	mg/L	1	09/07/11	200.7		JGS
Barium	ND	0.010	mg/L	1	09/07/11	200.7		JGS
Cadmium	ND	0.050	mg/L	1	09/07/11	200.7		JGS
Calcium	**67.3**	1.00	mg/L	1	09/07/11	200.7		JGS
Chromium	ND	0.050	mg/L	1	09/07/11	200.7		JGS
Iron	**1.17**	0.050	mg/L	1	09/07/11	200.7		JGS
Lead	ND	0.100	mg/L	1	09/07/11	200.7		JGS
Magnesium	**7.69**	1.00	mg/L	1	09/07/11	200.7		JGS
Potassium	**3.81**	1.00	mg/L	1	09/07/11	200.7		JGS
Selenium	ND	0.200	mg/L	1	09/07/11	200.7		JGS
Silver	ND	0.050	mg/L	1	09/07/11	200.7		JGS
Sodium	**1580**	1.00	mg/L	1	09/07/11	200.7		JGS
Dissolved Mercury								
Mercury	ND	0.0002	mg/L	1	09/12/11	245.1		JGS

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Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B109007 - General Prep - Wet Chem										
Blank (B109007-BLK1)				Prepared & Analyzed: 09/01/11						
Chloride	ND	10.0	mg/L							
LCS (B109007-BS1)				Prepared & Analyzed: 09/01/11						
Chloride	98.0	10.0	mg/L	100		98.0	85-115			
LCS Dup (B109007-BSD1)				Prepared & Analyzed: 09/01/11						
Chloride	98.0	10.0	mg/L	100		98.0	85-115	0.00	20	
Batch B109008 - General Prep - Wet Chem										
Blank (B109008-BLK1)				Prepared & Analyzed: 09/02/11						
Sulfate	ND	10.0	mg/L							
LCS (B109008-BS1)				Prepared & Analyzed: 09/02/11						
Sulfate	55.0	10.0	mg/L	50.0		110	80-120			
LCS Dup (B109008-BSD1)				Prepared & Analyzed: 09/02/11						
Sulfate	55.0	10.0	mg/L	50.0		110	80-120	0.00	20	
Batch B109011 - General Prep - Wet Chem										
Blank (B109011-BLK1)				Prepared & Analyzed: 09/01/11						
Alkalinity, Total	ND	10.0	mg/L							
LCS (B109011-BS1)				Prepared & Analyzed: 09/01/11						
Alkalinity, Total	102	10.0	mg/L	100		102	85-115			

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

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www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B109011 - General Prep - Wet Chem										
LCS Dup (B109011-BSD1)				Prepared & Analyzed: 09/01/11						
Alkalinity, Total	103	10.0	mg/L	100		103	85-115	0.976	20	
Batch B109018 - General Prep - Wet Chem										
Blank (B109018-BLK1)				Prepared & Analyzed: 09/01/11						
TDS	ND	10.0	mg/L							
Duplicate (B109018-DUP1)	**Source: 1108159-01**			Prepared & Analyzed: 09/01/11						
TDS	1010	10.0	mg/L		1010			0.00	20	
Reference (B109018-SRM1)				Prepared & Analyzed: 09/01/11						
TDS	3500	10.0	mg/L	3510		99.6	85-115			

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Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B109032 - Dissolved Metals										
Blank (B109032-BLK1)				Prepared & Analyzed: 09/07/11						
Arsenic	ND	0.100	mg/L							
Barium	ND	0.010	mg/L							
Cadmium	ND	0.050	mg/L							
Calcium	ND	1.00	mg/L							
Chromium	ND	0.050	mg/L							
Iron	ND	0.050	mg/L							
Lead	ND	0.100	mg/L							
Magnesium	ND	1.00	mg/L							
Potassium	ND	1.00	mg/L							
Selenium	ND	0.200	mg/L							
Silver	ND	0.050	mg/L							
Sodium	ND	1.00	mg/L							
LCS (B109032-BS1)				Prepared & Analyzed: 09/07/11						
Arsenic	5.32	0.100	mg/L	5.00		106	85-115			
Barium	2.62	0.010	mg/L	2.50		105	85-115			
Cadmium	2.73	0.050	mg/L	2.50		109	85-115			
Calcium	5.15	1.00	mg/L	5.00		103	85-115			
Chromium	2.70	0.050	mg/L	2.50		108	85-115			
Iron	5.38	0.050	mg/L	5.00		108	85-115			
Lead	2.74	0.100	mg/L	2.50		110	85-115			
Magnesium	27.6	1.00	mg/L	25.0		110	85-115			
Potassium	10.8	1.00	mg/L	10.0		108	85-115			
Selenium	10.7	0.200	mg/L	10.0		107	85-115			
Silver	0.128	0.050	mg/L	0.125		102	85-115			
Sodium	8.63	1.00	mg/L	8.10		106	85-115			
LCS Dup (B109032-BSD1)				Prepared & Analyzed: 09/07/11						
Arsenic	5.32	0.100	mg/L	5.00		106	85-115	0.0250	20	
Barium	2.63	0.010	mg/L	2.50		105	85-115	0.359	20	
Cadmium	2.76	0.050	mg/L	2.50		110	85-115	0.925	20	
Calcium	5.20	1.00	mg/L	5.00		104	85-115	0.974	20	
Chromium	2.72	0.050	mg/L	2.50		109	85-115	0.488	20	
Iron	5.44	0.050	mg/L	5.00		109	85-115	1.23	20	
Lead	2.78	0.100	mg/L	2.50		111	85-115	1.22	20	
Magnesium	27.8	1.00	mg/L	25.0		111	85-115	0.988	20	
Potassium	11.1	1.00	mg/L	10.0		111	85-115	2.89	20	
Selenium	10.7	0.200	mg/L	10.0		107	85-115	0.143	20	
Silver	0.129	0.050	mg/L	0.125		103	85-115	0.439	20	

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

Green Analytical Laboratories
dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303
www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B109032 - Dissolved Metals										
LCS Dup (B109032-BSD1)				Prepared & Analyzed: 09/07/11						
Sodium	8.70	1.00	mg/L	8.10		107	85-115	0.860	20	

Green Analytical Laboratories

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www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

Dissolved Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B109067 - EPA 245.1/7470										
Blank (B109067-BLK1)				Prepared & Analyzed: 09/12/11						
Mercury	ND	0.0002	mg/L							
LCS (B109067-BS1)				Prepared & Analyzed: 09/12/11						
Mercury	0.0021	0.0002	mg/L	0.00200		107	85-115			
LCS Dup (B109067-BSD1)				Prepared & Analyzed: 09/12/11						
Mercury	0.0022	0.0002	mg/L	0.00200		110	85-115	2.49	20	

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

Green Analytical Laboratories

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www.GreenAnalytical.com

Industrial Ecosystems Inc.	Project: MW6	
49 CR 3150	Project Name / Number: 9932	**Reported:**
Aztec NM, 87410	Project Manager: Marcella Marquez	09/13/11 10:35

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
	*Results reported on as received basis unless designated as dry.
RPD	Relative Percent Difference
LCS	Laboratory Control Sample (Blank Spike)

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

GREEN Analytical Laboratories

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: IEI
Contact: Marcella
Address: 49 CR 3150
Aztec, NM 87410
Phone Number: 505-632-1782
FAX Number: 505-632-1876

NOTES:
1) Ensure proper container packaging.
2) Ship samples promptly following collection.
3) Designate Sample Reject Disposition.
PO# 9932
Project Name: MW 6

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other (Specify) _____

FOR GAL USE ONLY
GAL JOB # 1109-002

Samplers Signature: M. Morgan

Lab Name: Green Analytical Laboratories (970) 247-4220 FAX (970) 247-4227
Address: 75 Suttle Street, Durango, CO 81303

Sample ID	Collection: Date	Collection: Time	Misc: Collected by: (Init.)	Misc: Matrix Type From Table 1	Misc: No. of Containers	Misc: Sample Filtered ? Y/N	Preservative(s): Unpreserved (Ice Only)	Preservative(s): HNO3	Preservative(s): HCL	Preservative(s): H2SO4	Preservative(s): NAOH	Preservative(s): Other (Specify)	Analyses Required: ✓Cations + Anions	Analyses Required: RCRA metals	Analyses Required: BTEX + TDS	Comments
1 MW 6	8/31/11	9:30	MM	2	1	N							✓			Temp 20.6 cc
2 MW 6	↓	9:30		2	1	N								✓		3.0 cc Dup on ice
3 MW 6	↓	9:30		2	2	N									✓	
4.																
5.																
6.																
7.																
8.																
9.																
10.																

01

Relinquished by: M. Morgan	Date: 8/31/11	Time: 2:20	Received by:	Date: 8-31-11	Time: 5:20
Relinquished by:	Date: 8/31/11	Time: 2:55	Received by: Kristen Clark	Date: 8/31/11	Time: 1955

* Sample Reject: [ ] Return [ ] Dispose [ ] Store (30 Days)

15.66

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

September 07, 2011

Debbie Zufelt

Green Analytical Laboratories

75 Suttle Street

Durango, CO 81303

RE: I E I

Enclosed are the results of analyses for samples received by the laboratory on 09/02/11 9:40.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Green Analytical Laboratories
Debbie Zufelt
75 Suttle Street
Durango CO, 81303
Fax To: (970) 247-4227

Received:	09/02/2011	Sampling Date:	08/31/2011
Reported:	09/07/2011	Sampling Type:	Water
Project Name:	I E I	Sampling Condition:	Cool & Intact
Project Number:	1109-002-01	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: M W 6 (H101874-01)

BTEX 8021B mg/L **Analyzed By: CMS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/06/2011	ND	0.053	106	0.0500	2.52	
Toluene*	<0.001	0.001	09/06/2011	ND	0.052	104	0.0500	3.08	
Ethylbenzene*	<0.001	0.001	09/06/2011	ND	0.053	105	0.0500	2.88	
Total Xylenes*	<0.003	0.003	09/06/2011	ND	0.157	105	0.150	2.73	

Surrogate: 4-Bromofluorobenzene (PIL *109 %* *70.7-118*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Cardinal

CHAIN OF CUSTODY RECORD

Client: GREEN ANALYTICAL
Contact: DEBBIE ZUFELT
Address: 75 SUTTLE ST
DURANGO, CO 81303
Phone Number: 970-247-4220
FAX Number: 970-247-4227

NOTES:
1) Ensure proper container packaging.
2) Ship samples promptly following collection.
3) Designate Sample Reject Disposition.

PO# GA 11-201
Project Name: IEI

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other (Specify) _____

FOR GAL USE ONLY
GAL JOB #
_____

Samplers Signature:

PLEASE CALL WITH ANY QUESTIONS

Lab Name: Green Analytical Laboratories (970) 247-4220 FAX (970) 247-4227
Address: 75 Suttle Street, Durango, CO 81303

Sample ID	Collection: Date	Collection: Time	Misc: Collected by: (Init.)	Misc: Matrix Type From Table 1	Misc: No. of Containers	Misc: Sample Filtered ? Y/N	Preservative(s): Unpreserved (Ice Only)	Preservative(s): HNO3	Preservative(s): HCL ?	Preservative(s): H2SO4	Preservative(s): NAOH	Preservative(s): Other (Specify)	Analyses Required: BTEX 8021	Comments
H101874														
1A,B MW6	8-31-11	09:30	MM	2	2	N			X				X	1109-002-01
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Michael Valentine	9-1-11	16:00	[illegible] Hudson	9/2/11	9:40
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: [ ] Return [ ] Dispose [ ] Store (30 Days)

4°C #26

1570

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

April 11, 2011

MARCELLA MARQUEZ

INDUSTRIAL ECOSYSTEMS

49 CR 3150

AZTEC, NM 87410

RE: BLANCO GROUNDWATER

Enclosed are the results of analyses for samples received by the laboratory on 03/30/11 8:00.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #1 (H100628-01)

Arsenic, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Arsenic	<0.100	0.100	04/05/2011	ND	4.03	101	4.00	2.77	GAL

Barium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Barium	**0.140**	0.010	04/05/2011	ND	1.94	97.0	2.00	2.61	GAL

Bicarbonate 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Bicarbonate	**149**	10.0	04/01/2011	ND				0.673	GAL

BTEX 8260B mg/L **Analyzed By: CMS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.001**	0.001	03/30/2011	ND	0.020	101	0.0200	10.4	
Toluene*	<0.001	0.001	03/30/2011	ND	0.020	98.8	0.0200	9.43	
Ethylbenzene*	<0.001	0.001	03/30/2011	ND	0.021	106	0.0200	9.50	
Total Xylenes*	<0.003	0.003	03/30/2011	ND	0.058	96.9	0.0600	9.44	

Surrogate: Dibromofluoromethane	*107 %*	*80-120*
Surrogate: Toluene-d8	*94.6 %*	*80-120*
Surrogate: 4-Bromofluorobenzene	*76.3 %*	*80-120*

Cadmium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Cadmium	<0.010	0.010	04/05/2011	ND	1.91	95.5	2.00	2.12	GAL

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #1 (H100628-01)

Calcium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Calcium	**222**	0.500	04/05/2011	ND	4.20	84.0	5.00	2.90	GAL

Carbonate 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Carbonate	<10.0	10.0	04/01/2011	ND					GAL

Chromium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chromium	<0.010	0.010	04/05/2011	ND	2.01	100	2.00	2.52	GAL

Hydroxide 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Hydroxide	<10.0	10.0	04/01/2011	ND					GAL

Lead, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Lead	<0.050	0.050	04/05/2011	ND	2.07	104	2.00	1.95	GAL

Magnesium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Magnesium	**26.4**	0.500	04/05/2011	ND	20.4	81.8	25.0	3.23	GAL

Mercury, 245.1 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Mercury	<0.0002	0.0002	04/06/2011	ND	0.0022	110	0.00200	4.44	GAL

Potassium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #1 (H100628-01)

Potassium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Potassium	**6.40**	0.500	04/05/2011	ND	8.34	83.4	10.0	0.964	GAL

Selenium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Selenium	<0.200	0.200	04/05/2011	ND	7.88	98.5	8.00	2.31	GAL

Silver, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Silver	<0.010	0.010	04/05/2011	ND	0.390	97.5	0.400	2.60	GAL

Sodium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sodium	**748**	0.500	04/05/2011	ND	6.61	110	6.00	3.86	GAL

Sulfate 4500SO4 mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**2300**	10.0	03/30/2011	ND	58.0	107	54.0	0.00	GAL

TDS 2540C mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**4000**	10.0	03/29/2011	ND	3540	101	3510	2.53	GAL

Total Alkalinity 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Total	**149**	10.0	04/01/2011	ND	340	96.6	352	0.673	GAL

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #2 (H100628-02)

Arsenic, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Arsenic	<0.100	0.100	04/05/2011	ND	4.03	101	4.00	2.77	GAL

Barium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Barium	**0.190**	0.010	04/05/2011	ND	1.94	97.0	2.00	2.61	GAL

Bicarbonate 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Bicarbonate	**139**	10.0	04/01/2011	ND				0.673	GAL

BTEX 8260B mg/L **Analyzed By: CMS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/30/2011	ND	0.020	101	0.0200	10.4	
Toluene*	<0.001	0.001	03/30/2011	ND	0.020	98.8	0.0200	9.43	
Ethylbenzene*	<0.001	0.001	03/30/2011	ND	0.021	106	0.0200	9.50	
Total Xylenes*	<0.003	0.003	03/30/2011	ND	0.058	96.9	0.0600	9.44	
Surrogate: Dibromofluoromethane	*108 %*	*80-120*							
Surrogate: Toluene-d8	*93.1 %*	*80-120*							
Surrogate: 4-Bromofluorobenzene	*76.9 %*	*80-120*							

Cadmium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Cadmium	<0.010	0.010	04/05/2011	ND	1.91	95.5	2.00	2.12	GAL

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #2 (H100628-02)

Calcium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Calcium	**217**	0.500	04/05/2011	ND	4.20	84.0	5.00	2.90	GAL

Carbonate 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Carbonate	<10.0	10.0	04/01/2011	ND					GAL

Chromium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chromium	<0.010	0.010	04/05/2011	ND	2.01	100	2.00	2.52	GAL

Hydroxide 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Hydroxide	<10.0	10.0	04/01/2011	ND					GAL

Lead, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Lead	<0.050	0.050	04/05/2011	ND	2.07	104	2.00	1.95	GAL

Magnesium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Magnesium	**27.2**	0.500	04/05/2011	ND	20.4	81.8	25.0	3.23	GAL

Mercury, 245.1 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Mercury	<0.0002	0.0002	04/06/2011	ND	0.0022	110	0.00200	4.44	GAL

Potassium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
MARCELLA MARQUEZ
49 CR 3150
AZTEC NM, 87410
Fax To: (505) 632-1876

Received:	03/30/2011	Sampling Date:	03/28/2011
Reported:	04/11/2011	Sampling Type:	Water
Project Name:	BLANCO GROUNDWATER	Sampling Condition:	Cool & Intact
Project Number:	9590	Sample Received By:	Jodi Henson
Project Location:	BLANCO GROUONDWATER		

Sample ID: MW 1 - #2 (H100628-02)

Potassium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Potassium	**6.90**	0.500	04/05/2011	ND	8.34	83.4	10.0	0.964	GAL

Selenium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Selenium	<0.200	0.200	04/05/2011	ND	7.88	98.5	8.00	2.31	GAL

Silver, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Silver	<0.010	0.010	04/05/2011	ND	0.390	97.5	0.400	2.60	GAL

Sodium, 200.7 mg/L **Analyzed By: JM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sodium	**772**	0.500	04/05/2011	ND	6.61	110	6.00	3.86	GAL

Sulfate 4500SO4 mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**2100**	10.0	03/30/2011	ND	58.0	107	54.0	0.00	GAL

TDS 2540C * mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**4000**	10.0	03/29/2011	ND	3540	101	3510	2.53	GAL

Total Alkalinity 2320B mg/L **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Alkalinity, Total	**139**	10.0	04/01/2011	ND	340	96.6	352	0.673	GAL

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Notes and Definitions

GAL	Analysis subcontracted to Green Analytical Laboratories, a subsidiary of Cardinal Laboratories.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: I.E.I

Contact: Marcella

Address: 99 CR 3150
Aztec NM

Phone Number: 505.632.1782

FAX Number: 505.632.1876

NOTES:

1) Ensure proper container packaging.

2) Ship samples promptly following collection.

3) Designate Sample Reject Disposition.

PO# 9590

Project Name: Blanco-groundwater

Samplers Signature: Steve Hayden

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other (Specify)

FOR GAL USE ONLY
GAL JOB #

Lab Name: Green Analytical Laboratories (970) 247-4220 FAX (970) 247-4227

Address: 75 Suttle Street, Durango, CO 81303

Sample ID	Collection: Date	Collection: Time	Misc: Collected by: (Init.)	Misc: Matrix Type From Table 1	Misc: No. of Containers	Misc: Sample Filtered? Y/N	Preservative(s): Unpreserved (Ice Only)	Preservative(s): HNO3	Preservative(s): HCL	Preservative(s): H2SO4	Preservative(s): NAOH	Preservative(s): Other (Specify)	Analyses Required: Cations	Anions	TDS	BTEX	RCRA metals	*Chloride	Comments
H100628-																			
1. MW1 - #1	3/28/11	12:30	SA	2	6	N													Please list Chloride results on seperate page.
2. MW4 - #2	3/28/11	12:30	SA	2	6	N													
3.																			
4.																			
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

Relinquished by: Steve Hayden	Date: 3/28/11	Time: 7:00 pm	Received by: M. Marquez	Date: 3/28/11	Time: 7:00 pm
Relinquished by: M. Marquez	Date: 3/28/11	Time: 2:05 pm	Received by: Kristin Gade	Date: 3/28/11	Time: 1905

* Sample Reject: [ ] Return [ ] Dispose [ ] Store (30 Days)

-10c #26 Jodi Henson 3/29/11 8:00

WATER WELL LOCATIONS
WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC
OPERATED BY INDUSTRIAL ECOSYSTEMS
LYING IN SECTION 16,
T29N R09W, N.M.P.M.,
SAN JUAN COUNTY,
NEW MEXICO

UTILIZING AVAILABLE AERIAL PHOTOGRAPHY, INDUSTRIAL ECOSYSTEMS PERSONNEL PERFORMED A PHYSICAL INSPECTION OF AREAS OF UNUSUAL PLANT GROWTH THAT MIGHT HAVE INDICATED FREE FLOWING SPRINGS. NO FREE FLOWING SPRINGS WERE ENCOUNTERED. A SEARCH OF AVAILABLE RESOURCES DID NOT INDICATE ANY RECORD OF FREE FLOWING SPRINGS.

1000 500 0 1000
SCALE: 1"=1000'

SPRINGS AND WATER WELLS WITHIN 1 MILE OF
CROWE BLANCO PROPERTIES, LLC

OPERATED BY INDUSTRIAL ECOSYSTEMS
BLANCO, NEW MEXICO

CHENEY·WALTERS·ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467SETDDN.dwg

DATE: 10/25/2013
DRAWN BY: LH
PROJ. 09467
SCALE: 1" = 1000'
FILE: 09467SETDDN
SHEET
10
OF
15

DATE: 10/25/2013 DRAWN BY: LH PROJ. 09467 SCALE: N.T.S. FILE: 09467SET SHEET 14 OF 15	TEST PITS AND MONITOR WELLS LOCATIONS CROWE BLANCO PROPERTIES, LLC OPERATED BY INDUSTRIAL ECOSYSTEMS BLANCO, NEW MEXICO

CHENEY · WALTERS · ECHOLS INC.
ENGINEERS · SURVEYORS
909 W. APACHE · FARMINGTON, NEW MEXICO 87401 · (505)327-3303

DATE	REVISION	BY

PRINTED: October 28, 2013
FILE: D:\DRAWINGS-LEH\2009\09467\9467sel.dwg

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For State Use Only:

Form C-137
Revised August 1, 2011

Submit 1 Copy to Santa Fe Office

APPLICATION FOR SURFACE WASTE MANAGEMENT FACILITY

A meeting should be scheduled with the Division's Santa Fe office Environmental Bureau prior to pursuing an application for a surface waste management facility in order to determine if the proposed location is capable of satisfying the siting requirements of Subsections A and B of 19.15.36.13 NMAC for consideration of an application submittal.

1 Application: ☒ New ☐ Modification ☐ Renewal

2. Type: ☐ Evaporation ☐ Injection ☐ Treating Plant ☐ Landfill ☒ Landfarm ☐ Other

3. Facility Status: ☒ Commercial ☐ Centralized

4. Operator: Crowe Blanco Properties, LLC Operated by: Industrial Ecosystems, Inc.

Address: 49 CR 3150 * Aztec, NM 87410

Contact Person: Terry Lattin, President/GM Phone: (505) 860-2885 or (505) 632-1782

5. Location: NW 1 /4 [redacted] /4 Section 16 Township T29N Range 9W

6. Is this an existing facility? ☐ Yes ☒ No If yes, provide permit number _____

7. Attach the names and addresses of the applicant and principal officers and owners of 25 percent or more of the applicant. Specify the office held by each officer and identify the individual(s) primary responsible for overseeing management of the facility.

8. Attach a plat and topographic map showing the surface waste management facility's location in relation to governmental surveys (quarter-quarter section, township and range); highways or roads giving access to the surface waste management facility site; watercourses; fresh water sources, including wells and springs; and inhabited buildings within one mile of the site's perimeter.

9. Attach the names and addresses of the surface owners of the real property on which the surface waste management facility is sited and surface owners of the real property within one mile of the site's perimeter.

10. Attach a description of the surface waste management facility with a diagram indicating the location of fences and cattle guards, and detailed construction/installation diagrams of pits, liners, dikes, piping, sprayers, tanks, roads, fences, gates, berms, pipelines crossing the surface waste management facility, buildings and chemical storage areas.

11. Attach engineering designs, certified by a registered professional engineer, including technical data on the design elements of each applicable treatment, remediation and disposal method and detailed designs of surface impoundments.

12. Attach a plan for management of approved oil field wastes that complies with the applicable requirements contained in 19.15.36.13, 19.15.36.14, 19.15.36.15 and 19.15.36.17 NMAC.

13. Attach an inspection and maintenance plan that complies with the requirements contained in Subsection L of 19.15.36.13 NMAC.

14. Attach a hydrogen sulfide prevention and contingency plan that complies with those provisions of 19.15.3.118 NMAC that apply to surface waste management facilities.

15. Attach a closure and post closure plan, including a responsible third party contractor's cost estimate, sufficient to close the surface waste management facility in a manner that will protect fresh water, public health, safety and the environment (the closure and post closure plan shall comply with the requirements contained in Subsection D of 19.15.36.18 NMAC).

16 Attach a contingency plan that complies with the requirements of Subsection N of 19.15.36.13 NMAC and with NMSA 1978, Sections 12-12-1 through 12-12-30, as amended (the Emergency Management Act).

17. Attach a plan to control run-on water onto the site and run-off water from the site that complies with the requirements of Subsection M of 19.15.36.13 NMAC.

18. In the case of an application to permit a new or expanded landfill, attach a leachate management plan that describes the anticipated amount of leachate that will be generated and the leachate's handling, storage, treatment and disposal, including final post closure options.

19. In the case of an application to permit a new or expanded landfill, attach a gas safety management plan that complies with the requirements of Subsection O of 19.15.36.13 NMAC

20. Attach a best management practice plan to ensure protection of fresh water, public health, safety and the environment.

21. Attach a demonstration of compliance with the siting requirements of Subsections A and B of 19.15.36.13 NMAC.

22. Attach geological/hydrological data including:

(a) a map showing names and location of streams, springs or other watercourses, and water wells within one mile of the site;

(b) laboratory analyses, performed by an independent commercial laboratory, for major cations and anions; benzene, toluene, ethyl benzene and xylenes (BTEX); RCRA metals; and total dissolved solids (TDS) of ground water samples of the shallowest fresh water aquifer beneath the proposed site;

(c) depth to, formation name, type and thickness of the shallowest fresh water aquifer;

(d) soil types beneath the proposed surface waste management facility, including a lithologic description of soil and rock members from ground surface down to the top of the shallowest fresh water aquifer;

(e) geologic cross-sections;

(f) potentiometric maps for the shallowest fresh water aquifer; and

(g) porosity, permeability, conductivity, compaction ratios and swelling characteristics for the sediments on which the contaminated soils will be placed.

23. In the case of an existing surface waste management facility applying for a minor modification, describe the proposed change and identify information that has changed from the last C-137 filing.

24. The division may require additional information to demonstrate that the surface waste management facility's operation will not adversely impact fresh water, public health, safety or the environment and that the surface waste management facility will comply with division rules and orders

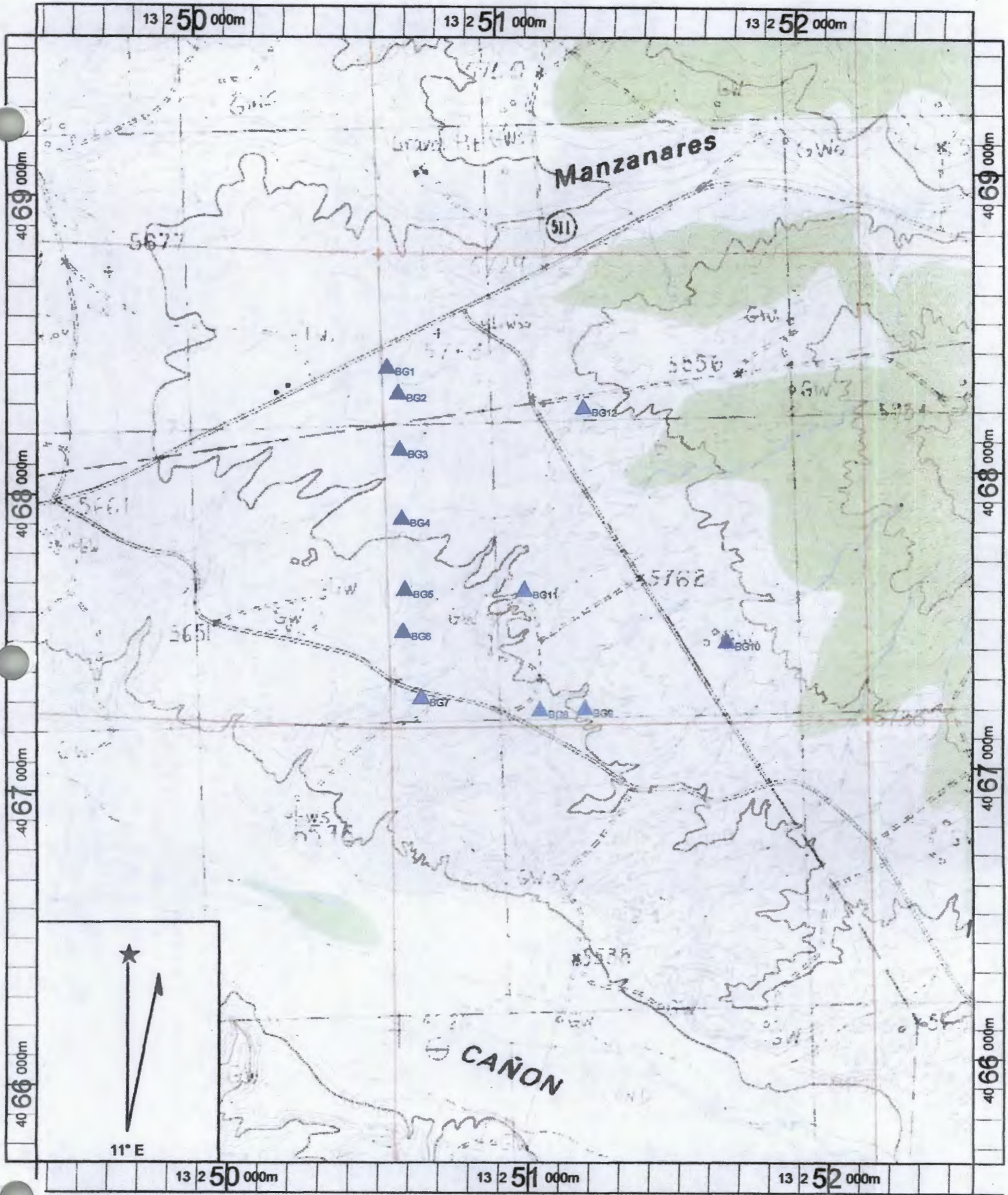
25. CERTIFICATION

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name: John P. Crowe Title: Secretary

Signature: John P. Crowe Date: 4/24/12

E-mail Address: JohnCrowe@me.com



Name: BLANCO
Date: 9/22/2009
Scale: 1 inch equals 1333 feet

Location: 13 250979 E 4067597 N
Caption: Industrial Ecosystems Inc
New Landfarm
Background Sampling Points

Markers

Name: BG1

Short Name: BG1

Coordinates: 13 250609 E, 4068397 N

Name: BG2

Short Name: BG2

Coordinates: 13 250647 E, 4068309 N

Name: BG3

Short Name: BG3

Coordinates: 13 250646 E, 4068123 N

Name: BG4

Short Name: BG4

Coordinates: 13 250644 E, 4067892 N

Name: BG5

Short Name: BG5

Coordinates: 13 250648 E, 4067650 N

Name: BG6

Short Name: BG6

Coordinates: 13 250637 E, 4067501 N

Name: BG7

Short Name: BG7

Coordinates: 13 250691 E, 4067280 N

Name: BG8

Short Name: BG8

Coordinates: 13 251091 E, 4067231 N

Name: BG9

Short Name: BG9

Coordinates: 13 251239 E, 4067230 N

Name: BG10

Short Name: BG10

Coordinates: 13 251714 E, 4067442 N

Name: BG11

Short Name: BG11

Coordinates: 13 251049 E, 4067638 N

Name: BG12

Short Name: BG12

Coordinates: 13 251261 E, 4068246 N

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

BLANCO LANDFARM BACKGROUND SAMPLING PROTOCOL

Background soil samples were collected by Blagg Engineering, Inc. (BEI) on August 17, 2009 at the location of the proposed Industrial Ecosystems, Inc. Blanco landfarm facility in San Juan County, New Mexico prior to initiation of any ground surface disturbance. The purpose of the sampling was to establish analytical parameters in accordance with NMAC 19.15.36.15 (B), "Background Testing". A total of twelve (12) composite background soil samples, each consisting of 16 discrete samples, were collected from throughout the proposed landfarm site. The composite samples were collected with a sample spade at a depth of at least six (6) inches below the original ground surface, thoroughly mixed, placed into sample containers and stored in an ice chest with ice. The sampling spade and composite mixing bowl was cleaned with an Alconox soap mix and rinsed with distilled water between sample events. Following collection, the samples were express delivered to Benchmark Analytics, Inc. in Center Valley, Pennsylvania in with chain-of-custody documentation.

Following the initial laboratory analytical testing by Benchmark, BEI was notified that the lab could not run total petroleum hydrocarbons by U.S. EPA Method 418.1, or Vinyl Chloride on soil, as these were tests unique to the State of New Mexico. On December 16, 2010 BEI revisited the original background sample locations (using GPS coordinates) and recollected the twelve (12) composite background soil samples, each consisting of 16 discrete samples. As with the original sampling, the composite samples were collected with a sample spade at a depth of at least six (6) inches below the original ground surface, thoroughly mixed, placed into sample containers and stored in an ice chest with ice. Sampling equipment was cleaned between sample events as described above. Following collection, the samples were express delivered to Hall Environmental Laboratories in Albuquerque, New Mexico with chain-of-custody documentation.

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

BLANCO LANDFARM SAMPLING PLAN FOR 8/17/2009 EVENT

1) Contact Benchmark Analytical to establish proper containers and obtain containers and Chain-of-Custody paperwork.

2) Identify proposed landfarm perimeter and locate 12 background sample spots throughout interior at undisturbed, natural surface.

3) Assemble Sampling Equipment:

-GPS Unit
-Sample Spade
-1 Gallon Collection Baggies
-12" SS Mixing Bowl
-Sample Containers (16 oz Glass Jars with Teflon Lined Lids) with labels
-2 Each 5 Gallon Buckets (Pre-Cleaned)
-10 Gallons Distilled Water
-Powered Alconox Soap
-Paper Towels
-Nitril Sampling Gloves
-Large Ice Chest with Ice
-Chain-of-Custody Forms

4) At each pre-determined sample point, use sample spade to collect a 16 point composite sample from a minimum depth of 6-inches below ground surface and place into a new, unused 1-gallon sample baggie, wearing new, unused sample gloves.

5) Mix sample in baggie, then transfer to mixing bowl. Continue to thoroughly mix, removing any rocks.

6) Transfer mixed sample to 16-ounce sample jar. Label jar, then place into ice chest.

7) Wash sample spade and mixing bowl in 5-gallon bucket with Alconox in distilled water, then rinse in 5-gallon bucket with distilled water. Pat dry with paper towels.

8) Move to next sample point and repeat sampling sequence.

9) Complete and sign Chain-of-Custody documentation. Wrap sample containers in protective bubble wrap for express shipment in ice chest. Seal ice chest and label.

10) Deliver ice chest to shipping service.

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

BLANCO LANDFARM SAMPLING PLAN FOR 12/16/2010 EVENT

1) Using GPS unit, identify original 12 background sample spots from 8/17/09 sample event.

2) Assemble Sampling Equipment:

-GPS Unit
-Sample Spade
-1 Gallon Collection Baggies
-12" SS Mixing Bowl
-Sample Containers (4 oz Glass Jars with Teflon Lined Lids) with labels
-2 Each 5 Gallon Buckets (Pre-Cleaned)
-10 Gallons Distilled Water
-Powered Alconox Soap
-Paper Towels
-Nitril Sampling Gloves
-Large Ice Chest with Ice
-Chain-of-Custody Forms

3) At each pre-determined sample point, use sample spade to collect a 16 point composite sample from a minimum depth of 6-inches below ground surface and place into a new, unused 1-gallon sample baggie, wearing new, unused sample gloves.

4) Mix sample in baggie, then transfer to mixing bowl. Continue to thoroughly mix, removing any rocks.

5) Transfer mixed sample to 4-ounce sample jar. Label jar, then place into ice chest.

6) Wash sample spade and mixing bowl in 5-gallon bucket with Alconox in distilled water, then rinse in 5-gallon bucket with distilled water. Pat dry with paper towels.

7) Move to next sample point and repeat sampling sequence.

8) Complete and sign Chain-of-Custody documentation. Wrap sample containers in protective bubble wrap for express shipment in ice chest. Seal ice chest and label.

9) Deliver ice chest to shipping service.

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034
Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 1 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #1 Lab ID: 09083072-001A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.169 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 5.11 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	123 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.204 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	10.9 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	9.62 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	14700 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	8.99 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	301 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Selenium	< 8.18 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.43 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	34.9 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #1 Lab ID: 09083072-001B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.22 @ 23.5°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.2 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV
Chloride	27.7 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV
Nitrate	< 10.2 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV
Sulfate	< 25.6 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		08/28/09 13:15	08/28/09	LNP-CV
Total Phenols	< 1.0 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	2.4 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	976000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.

* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

L Value above calibration range but within annually verified linear range

Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034
Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 2 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #1 Lab ID: 09083072-001C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:10

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 26 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.02 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #1 Lab ID: 09083072-001D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:10

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Naphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
2-Methylnaphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
1-Methylnaphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthylene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Fluorene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Phenanthrene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Anthracene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Pyrene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.

* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

L Value above calibration range but within annually verified linear range

Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Clin Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 3 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Benzo[a]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Chrysene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[b]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[k]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1,1-Dichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER Clin Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034
Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 4 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #1 Lab ID: 09083072-001E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	568.8 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	381.1 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #2 Lab ID: 09083072-002A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.169 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 5.07 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	132 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.203 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	10.2 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	9.42 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	13900 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	7.97 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	280 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Selenium	< 8.12 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.42 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	37.2 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #2 Lab ID: 09083072-002B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.83 @ 23.6°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.2 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV
Chloride	31.6 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/20/09	LNP-CV

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Industrial Ecosystems New Land Farm

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Nitrate	< 10.2 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/20/09	LNP-CV
Sulfate	< 25.5 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/20/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C	08/28/09 13:15	08/28/09	LNP-CV
Total Phenols	< 1.0 mg/Kg-dry	EPA 420.4	08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	1.8 %	SM2540G	08/21/09 15:35	08/24/09	DMB-CV
Total Solids	982000 mg/Kg	SM2540G	08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: **#2** Lab ID: 09083072-002C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.02 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: **#2** Lab ID: 09083072-002D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Naphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
2-Methylnaphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
1-Methylnaphthalene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthylene	< 0.34 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV

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MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
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WO#: 09083072
PAGE: 6 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Acenaphthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluorene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Phenanthrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Chrysene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[b]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[k]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.34 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1,1-Dichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER Clin Mehl DATE: 9/11/2009

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WO#: 09083072
PAGE: 7 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

m,p-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #2 Lab ID: 09083072-002E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	555.4 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	372.1 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #3 Lab ID: 09083072-003A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.173 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 5.05 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	141 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.202 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	11.1 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	9.02 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	15200 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	8.62 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	295 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Selenium	< 8.08 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.41 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	35.2 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

REMARKS:

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MANAGER Chris Medi DATE: 9/11/2009

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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #3 Lab ID: 09083072-003B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:40

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
pH	7.80 @ 23.8°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	25.9 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.4 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		08/28/09 13:15	08/28/09	LNP-CV
Total Phenols	< 1.0 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	1.4 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	986000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #3 Lab ID: 09083072-003C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:40

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #3 Lab ID: 09083072-003D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:40

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV

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MANAGER Chris Mech DATE: 9/11/2009

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NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
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WO#: 09083072
PAGE: 9 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1,1-Dichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.

* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

L Value above calibration range but within annually verified linear range

Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Cliff Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 10 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

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1,2-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: **#3** Lab ID: 09083072-003E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	635.8 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	426.0 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: **#4** Lab ID: 09083072-004A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.128 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 5.01 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	169 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Cadmium	< 0.200 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	9.11 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	8.00 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	12300 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	6.11 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	257 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV

REMARKS:

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
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TEST REPORT

Industrial Ecosystems New Land Farm

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Selenium	< 8.02 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.40 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Zinc	26.5 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #4 Lab ID: 09083072-004B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.63 @ 23.7°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	27.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.3 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		08/28/09 13:15	08/28/09	LNP-CV
Total Phenols	< 0.98 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	1.3 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	987000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #4 Lab ID: 09083072-004C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #4 Lab ID: 09083072-004D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV

REMARKS:

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MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082	08/27/09 9:00	08/29/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1,1-Dichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER Clin Mehl DATE: 9/11/2009

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Center Valley, PA 18034

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TEST REPORT

Industrial Ecosystems New Land Farm

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1,1,1-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.041 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #4 Lab ID: 09083072-004E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 9:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	697.6 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	467.4 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #5 Lab ID: 09083072-005A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.152 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.95 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	51.4 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.198 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	3.23 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	2.41 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

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Iron	4320 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Lead	2.95 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Manganese	131 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Selenium	< 7.91 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.38 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Zinc	9.91 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #5 Lab ID: 09083072-005B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.81 @ 23.9°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.0 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.0 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.95 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.4 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	996000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #5 Lab ID: 09083072-005C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.00 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

REMARKS:

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SAMPLE: #5 Lab ID: 09083072-005D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:10

Test	Result	Method	Reg. Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082		08/27/09 9:00	08/29/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry	EPA 8270C		08/21/09 9:00	08/25/09	JJ6-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.

* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

L Value above calibration range but within annually verified linear range

Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Chris Medi DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 16 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry	EPA 8270C	08/21/09 9:00	08/25/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #5 Lab ID: 09083072-005E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:10

Test	Result	Method	Reg. Limit	Analysis Start	Analysis End	Analyst *
Uranium	< 239.5 µg/Kg	EPA 200.8	30	08/31/09 9:00	09/03/09	JRA-CV
Uranium	< 162.8 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

REMARKS:

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Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

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Phone: (610) 974-8100
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Work Order: 09083072

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WO#: 09083072
PAGE: 17 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #6 Lab ID: 09083072-006A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:25

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.182 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 5.16 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	104 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.207 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	6.70 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	5.02 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	8960 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	5.14 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	221 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Selenium	< 8.26 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.45 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	20.2 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #6 Lab ID: 09083072-006B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:25

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
pH	8.10 @ 23.1°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.4 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	31.7 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.4 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 26.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.96 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	4.1 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	959000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

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MANAGER Clin Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

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WO#: 09083072
PAGE: 18 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #6 Lab ID: 09083072-006C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:25

Test	Result		Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 26 mg/Kg-dry		API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.04 mg/Kg-dry		API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #6 Lab ID: 09083072-006D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:25

Test	Result		Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.34 mg/Kg-dry	Q	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.34 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV

REMARKS:

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MANAGER Clin Mek DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

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NAME: Jeff Blagg
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WO#: 09083072
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Benzo[a]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.34 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.042 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

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MANAGER Clin Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
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Phone: (610) 974-8100
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PHONE: (505) 632-1199
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WO#: 09083072
PAGE: 20 of 39
PO#:
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #6 Lab ID: 09083072-006E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:25

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Uranium	524.0 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	351.1 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #7 Lab ID: 09083072-007A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:40

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.133 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.74 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	114 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.190 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	5.95 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	5.11 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	8050 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	4.74 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	189 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/28/09	RMD-CV
Selenium	< 7.59 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.33 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	20.1 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #7 Lab ID: 09083072-007B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:40

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
pH	7.72 @ 23.2°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV

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Industrial Ecosystems New Land Farm

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Nitrate	< 10.1 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.1 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C	09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.97 mg/Kg-dry	EPA 420.4	08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.5 %	SM2540G	08/21/09 15:35	08/24/09	DMB-CV
Total Solids	995000 mg/Kg	SM2540G	08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #7 Lab ID: 09083072-007C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #7 Lab ID: 09083072-007D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV

REMARKS:

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L Value above calibration range but within annually verified linear range

Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 22 of 39
PO#:
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER _____ DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
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PHONE: (505) 632-1199
FAX:

WO#: 09083072
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #7 Lab ID: 09083072-007E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	372.5 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	249.6 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #8 Lab ID: 09083072-008A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.118 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.78 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	73.8 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.191 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	4.72 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	5.05 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	6220 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	4.68 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	152 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Selenium	< 7.64 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.34 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	19.7 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

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PAGE: 24 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

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SAMPLE: #8 Lab ID: 09083072-008B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.73 @ 23.9°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	27.7 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.85 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.5 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	995000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #8 Lab ID: 09083072-008C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #8 Lab ID: 09083072-008D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV

REMARKS:

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LAB ID: PA39-401

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Center Valley, PA 18034
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WO#: 09083072
PAGE: 25 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

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Aroclor 1260	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER Clin Mek DATE: 9/11/2009

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Center Valley, PA 18034

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WO#: 09083072
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

1,2-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #8 Lab ID: 09083072-008E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 10:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	318.4 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	213.3 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #9 Lab ID: 09083072-009A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.196 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.87 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	74.3 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.195 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	4.98 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	4.92 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	7610 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	4.95 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	143 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

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Center Valley, PA 18034

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Selenium	< 7.80 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.36 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Zinc	17.9 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #9 Lab ID: 09083072-009B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:10

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
pH	8.21 @ 23.0°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	27.4 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.2 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.94 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.8 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	992000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #9 Lab ID: 09083072-009C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:10

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #9 Lab ID: 09083072-009D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:10

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.
* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA
L Value above calibration range but within annually verified linear range
Q Due to matrix effects, not all quality control parameters met acceptance criteria

IANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
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Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 28 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Aroclor 1242	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry		EPA 8082	08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

REMARKS:

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MANAGER Clin Mele DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
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PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 29 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

1,1,1-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #9 Lab ID: 09083072-009E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:10

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	396.7 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	265.8 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #10 Lab ID: 09083072-010A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.137 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.86 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	64.3 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.195 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	4.48 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	4.46 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

REMARKS:

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MANAGER Clin Mek DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
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TEST REPORT

Industrial Ecosystems New Land Farm

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Iron	6690 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Lead	4.45 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Manganese	144 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Selenium	< 7.78 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.36 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV
Zinc	18.2 mg/Kg-dry	EPA 6010B	08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #10 Lab ID: 09083072-010B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:25

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
pH	7.05 @ 22.9°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	31.9 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	1.6 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.5 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	995000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #10 Lab ID: 09083072-010C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:25

Test	Result	Method	Req Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

REMARKS:

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MANAGER Clin Mel DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
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WO#: 09083072
PAGE: 31 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #10 Lab ID: 09083072-010D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:25

Test	Result		Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV

REMARKS:

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

Phone: (610) 974-8100
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Work Order: 09083072

SEND DATA TO:

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WO#: 09083072
PAGE: 32 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #10 Lab ID: 09083072-010E Grab

SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:25

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	381.9 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	255.8 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

REMARKS:

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PAGE: 33 of 39
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TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #11 Lab ID: 09083072-011A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:40

Test	Result		Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.174 mg/Kg-dry		EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.90 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	104 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.196 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	6.97 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	6.97 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	9310 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	5.27 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	231 mg/Kg-dry	L	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Selenium	< 7.85 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.37 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	26.9 mg/Kg-dry		EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #11 Lab ID: 09083072-011B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.71 @ 23.3°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	< 25.3 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Nitrate	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.3 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C		09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.98 mg/Kg-dry	EPA 420.4		08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	1.2 %	SM2540G		08/21/09 15:35	08/24/09	DMB-CV
Total Solids	988000 mg/Kg	SM2540G		08/21/09 15:35	08/24/09	DMB-CV

REMARKS:

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L Value above calibration range but within annually verified linear range

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034
Phone: (610) 974-8100
Fax: (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 34 of 39
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #11 Lab ID: 09083072-011C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:40

Test	Result		Method	Req Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry		API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry		API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #11 Lab ID: 09083072-011D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:40

Test	Result		Method	Req Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry		EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.

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MANAGER Chris Mech DATE: 9/11/2009

LAB ID: PA39-401

Benchmark Analytics, Inc.

4777 Saucon Creek Road
Center Valley, PA 18034

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Benzo[a]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

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WO#: 09083072
PAGE: 36 of 39
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PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm

RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #11 Lab ID: 09083072-011E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:40

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	402.4 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	269.6 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

SAMPLE: #12 Lab ID: 09083072-012A Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Mercury	< 0.149 mg/Kg-dry	EPA 7471A		08/26/09 9:00	08/27/09	KW-CV
Arsenic	< 4.90 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Barium	69.5 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Cadmium	< 0.196 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Chromium	3.89 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Copper	3.76 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Iron	5770 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Lead	3.68 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Manganese	113 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Selenium	< 7.83 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Silver	< 1.37 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV
Zinc	16.3 mg/Kg-dry	EPA 6010B		08/26/09 10:30	08/27/09	RMD-CV

SAMPLE: #12 Lab ID: 09083072-012B Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
pH	7.77 @ 23.3°C	EPA 9045D		08/25/09 10:30	08/25/09	TLB-CV
Fluoride	< 10.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV
Chloride	< 25.1 mg/Kg-dry	EPA 300.0		08/20/09 15:49	08/21/09	LNP-CV

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Nitrate	< 10.1 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/21/09	LNP-CV
Sulfate	< 25.1 mg/Kg-dry	EPA 300.0	08/20/09 15:49	08/21/09	LNP-CV
Cyanide, Total	< 0.2 mg/Kg-dry	EPA 9010C	09/10/09 9:15	09/10/09	LNP-CV
Total Phenols	< 0.89 mg/Kg-dry	EPA 420.4	08/25/09 12:05	08/25/09	SKK-CV
Percent Moisture	0.5 %	SM2540G	08/21/09 15:35	08/24/09	DMB-CV
Total Solids	995000 mg/Kg	SM2540G	08/21/09 15:35	08/24/09	DMB-CV

SAMPLE: #12 Lab ID: 09083072-012C Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Diesel Range Organics	< 25 mg/Kg-dry	API-PHC 8015MOD		08/27/09 9:00	08/28/09	ASC-CV
Gasoline Range Organics	< 1.01 mg/Kg-dry	API-GRO 8015MOD		08/27/09 14:00	08/28/09	ASC-CV

SAMPLE: #12 Lab ID: 09083072-012D Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Aroclor 1016	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1221	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1232	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1242	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1248	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1254	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1260	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1262	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Aroclor 1268	< 0.03 mg/Kg-dry	EPA 8082		08/31/09 9:00	09/01/09	JJ6-CV
Naphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
2-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
1-Methylnaphthalene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV
Acenaphthylene	< 0.33 mg/Kg-dry	EPA 8270C		08/28/09 9:00	09/01/09	JJ6-CV

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Industrial Ecosystems New Land Farm

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Acenaphthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluorene	< 0.33 mg/Kg-dry	Q	EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Phenanthrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Chrysene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[b]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[k]fluoranthene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[a]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Indeno[1,2,3-cd]pyrene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Dibenz[a,h]anthracene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
Benzo[g,h,i]perylene	< 0.33 mg/Kg-dry		EPA 8270C	08/28/09 9:00	09/01/09	JJ6-CV
1,1-Dichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Methylene chloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Chloroform	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,1-Trichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Carbon tetrachloride	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Benzene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,2-Dichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Trichloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Toluene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2-Trichloroethane	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Tetrachloroethylene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylene dibromide	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
Ethylbenzene	< 0.040 mg/Kg-dry		EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

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TEST REPORT

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m,p-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
o-Xylene	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV
1,1,2,2-Tetrachloroethane	< 0.040 mg/Kg-dry	EPA 8260B	08/20/09 9:53	08/20/09	DN-CV

SAMPLE: #12 Lab ID: 09083072-012E Grab
SAMPLED BY: Jeff Blagg Sample Time: 08/17/2009 11:55

Test	Result	Method	Reg Limit	Analysis Start	Analysis End	Analyst *
Uranium	463.9 µg/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV
Uranium	310.8 pCi/Kg	EPA 200.8		08/31/09 9:00	09/03/09	JRA-CV

REMARKS:

The above test procedures meet all the requirements of NELAC and relate only to these samples.
* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA
L Value above calibration range but within annually verified linear range
Q Due to matrix effects, not all quality control parameters met acceptance criteria

MANAGER Clin Mehl DATE: 9/11/2009

LAB ID: PA39-401

BENCHMARK ANALYTICS, INC.
4777 Saucon Creek Road
Center Valley, PA 18034-9004

PHONE (610) 974-8100
FAX (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
COMPANY: Blagg Engineering Inc
ADDRESS: PO Box 87
Bloomfield, NM 87413

PHONE: (505) 632-1199
FAX:

WO#: 09083072
PAGE: 1 of 3
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm
RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #1 Lab ID: 09083072-001E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 9:10

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	155.2	± 13.65	74.55	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	787.9	± 429.7	197.5	pCi/Kg	EPA 904.0		08/28/09 8:30	09/01/09	AVB-CV

SAMPLE: #2 Lab ID: 09083072-002E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 9:25

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	150.9	± 12.53	73.16	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	724.3	± 397.2	197.6	pCi/Kg	EPA 904.0		08/28/09 8:30	09/01/09	AVB-CV

SAMPLE: #3 Lab ID: 09083072-003E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 9:40

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	182.2	± 14.76	74.55	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	629.1	± 173.8	197.5	pCi/Kg	EPA 904.0		08/28/09 8:30	09/01/09	AVB-CV

SAMPLE: #4 Lab ID: 09083072-004E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 9:55

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	177.9	± 14.24	76.82	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	7.22	± 144.3	276.1	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #5 Lab ID: 09083072-005E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 10:10

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	60.48	± 8.18	70.48	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	-95.71	± 123.0	278	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

REMARKS:
The above test procedures meet all the requirements of NELAC and relate only to these samples.
* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

MANAGER _____ DATE: 9/11/2009

LAB ID: PA39-401

BENCHMARK ANALYTICS, INC.
4777 Saucon Creek Road
Center Valley, PA 18034-9004

PHONE (610) 974-8100
FAX (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
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WO#: 09083072
PAGE: 2 of 3
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm
RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #6 Lab ID: 09083072-006E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 10:25

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	108.6	± 11.13	71.97	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	-67.24	± 141.9	275.9	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #7 Lab ID: 09083072-007E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 10:40

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	103.4	± 10.86	74.11	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	274.8	± 243.0	272.7	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #8 Lab ID: 09083072-008E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 10:55

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	90.08	± 10.38	76.82	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	623.1	± 229.5	276.8	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #9 Lab ID: 09083072-009E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 11:10

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	100.4	± 10.97	69.95	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	179.6	± 188.1	276.6	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #10 Lab ID: 09083072-010E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 11:25

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	89.36	± 10.25	67.49	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	9.03	± 180.4	276.8	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

REMARKS:
The above test procedures meet all the requirements of NELAC and relate only to these samples.
* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

MANAGER Cli Mel DATE: 9/11/2009

LAB ID: PA39-401

BENCHMARK ANALYTICS, INC.
4777 Saucon Creek Road
Center Valley, PA 18034-9004

PHONE (610) 974-8100
FAX (610) 974-8104

Work Order: 09083072

SEND DATA TO:

NAME: Jeff Blagg
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WO#: 09083072
PAGE: 3 of 3
PO#:
PWS ID#

TEST REPORT

Industrial Ecosystems New Land Farm
RECEIVED FOR LAB BY: DMB DATE: 08/20/2009 9:10

SAMPLE: #11 Lab ID: 09083072-011E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 11:40

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	109.2	± 10.88	67.47	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	286.7	± 212.7	277.0	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

SAMPLE: #12 Lab ID: 09083072-012E Grab
SAMPLED BY: Jeff Blagg Sample Time 08/17/2009 11:55

Test	Result	Uncert.	MDA	Units	Method	MCL	Analysis Start	Analysis End	Analyst *
Radium-226	59.76	± 8.54	74.22	pCi/Kg	EPA 903.0		08/22/09 14:25	09/04/09	BH-CV
Radium-228	-229.8	± 205.6	276.6	pCi/Kg	EPA 904.0		09/02/09 8:20	09/09/09	AVB-CV

REMARKS:
The above test procedures meet all the requirements of NELAC and relate only to these samples.
* CV = Benchmark Analytics, Inc. Center Valley, PA; SA = Benchmark Analytics, Inc. Sayre, PA

MANAGER Cliff Neil DATE: 9/11/2009

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3626

Sample ID MBLK 8/21 SOIL	SampType: MBLK	TestCode: 8270_S	Units: mg/Kg	Prep Date: 8/21/2009	RunNo: 43450
Client ID: PBS	Batch ID: 3626	TestNo: SW8270C	SW3550A	Analysis Date: 8/21/2009	SeqNo: 868722

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	< 0.33	0.33									
2-Methylnaphthalene	< 0.33	0.33									
Acenaphthylene	< 0.33	0.33									
Acenaphthene	< 0.33	0.33									
Fluorene	< 0.33	0.33									
Phenanthrene	< 0.33	0.33									
Anthracene	< 0.33	0.33									
Fluoranthene	< 0.33	0.33									
Pyrene	< 0.33	0.33									
Benzo[a]anthracene	< 0.33	0.33									
Chrysene	< 0.33	0.33									
Benzo[b]fluoranthene	< 0.33	0.33									
Benzo[k]fluoranthene	< 0.33	0.33									
Benzo[a]pyrene	< 0.33	0.33									
Indeno[1,2,3-cd]pyrene	< 0.33	0.33									
Dibenz[a,h]anthracene	< 0.33	0.33									
Benzo[g,h,i]perylene	< 0.33	0.33									
1-Methylnaphthalene	< 0.33	0.33									

Sample ID LFB 8/21 SOIL	SampType: LFB	TestCode: 8270_S	Units: mg/Kg	Prep Date: 8/21/2009	RunNo: 43450
Client ID: ZZZZZZ	Batch ID: 3626	TestNo: SW8270C	SW3550A	Analysis Date: 8/21/2009	SeqNo: 868723

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.32	0.33	2.50	0	53	21	133				
Acenaphthylene	1.48	0.33	2.50	0	59	33	145				
Acenaphthene	1.46	0.33	2.50	0	58	47	145				
Fluorene	1.55	0.33	2.50	0	62	59	121				
Phenanthrene	1.67	0.33	2.50	0	67	54	120				
Anthracene	1.70	0.33	2.50	0	68	27	133				

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3626

Sample ID	LFB 8/21 SOIL	SampType:	LFB	TestCode:	8270_S	Units:	mg/Kg	Prep Date:	8/21/2009	RunNo:	43450
Client ID:	ZZZZZZ	Batch ID:	3626	TestNo:	SW8270C	SW3550A		Analysis Date:	8/21/2009	SeqNo:	868723

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoranthene	1.66	0.33	2.50	0	66	26	137				
Pyrene	1.78	0.33	2.50	0	71	52	115				
Benzo[a]anthracene	1.78	0.33	2.50	0	71	33	143				
Chrysene	1.79	0.33	2.50	0	72	17	168				
Benzo[b]fluoranthene	1.66	0.33	2.50	0	66	24	159				
Benzo[k]fluoranthene	1.80	0.33	2.50	0	72	11	162				
Benzo[a]pyrene	1.73	0.33	2.50	0	69	17	163				
Indeno[1,2,3-cd]pyrene	1.75	0.33	2.50	0	70	1	171				
Dibenz[a,h]anthracene	1.76	0.33	2.50	0	70	1	227				
Benzo[g,h,i]perylene	1.74	0.33	2.50	0	69	1	219				

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3643

Sample ID MBLK 8/27 SOIL	SampType: MBLK	TestCode: 8082_S	Units: mg/Kg	Prep Date: 8/27/2009	RunNo: 43704
Client ID: PBS	Batch ID: 3643	TestNo: SW8082	SW3550A	Analysis Date: 8/27/2009	SeqNo: 874502

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	< 0.03	0.03									
Aroclor 1221	< 0.03	0.03									
Aroclor 1232	< 0.03	0.03									
Aroclor 1242	< 0.03	0.03									
Aroclor 1248	< 0.03	0.03									
Aroclor 1254	< 0.03	0.03									
Aroclor 1260	< 0.03	0.03									
Aroclor 1262	< 0.03	0.03									
Aroclor 1268	< 0.03	0.03									

Sample ID LFB 8/27 SOIL	SampType: LFB	TestCode: 8082_S	Units: mg/Kg	Prep Date: 8/27/2009	RunNo: 43704
Client ID: ZZZZZZ	Batch ID: 3643	TestNo: SW8082	SW3550A	Analysis Date: 8/27/2009	SeqNo: 874503

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.08	0.03	0.10	0	80	12	200				
Aroclor 1260	0.09	0.03	0.10	0	87	8	127				

Page 50

Qualifiers:

E Value above quantitation range
J Analyte reported below quantitation limits
L Value above calibration range but within annually verified linear range
Q Due to matrix effects, not all quality control parameters met acceptance criteria
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3650

Sample ID MBLK 8/28 SOIL	SampType: MBLK	TestCode: 8270_S	Units: mg/Kg	Prep Date: 8/28/2009	RunNo: 43757
Client ID: PBS	Batch ID: 3650	TestNo: SW8270C	SW3550A	Analysis Date: 8/28/2009	SeqNo: 876102

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	< 0.33	0.33									
2-Methylnaphthalene	< 0.33	0.33									
Acenaphthylene	< 0.33	0.33									
Acenaphthene	< 0.33	0.33									
Fluorene	< 0.33	0.33									
Phenanthrene	< 0.33	0.33									
Anthracene	< 0.33	0.33									
Fluoranthene	< 0.33	0.33									
Pyrene	< 0.33	0.33									
Benzo[a]anthracene	< 0.33	0.33									
Chrysene	< 0.33	0.33									
Benzo[b]fluoranthene	< 0.33	0.33									
Benzo[k]fluoranthene	< 0.33	0.33									
Benzo[a]pyrene	< 0.33	0.33									
Indeno[1,2,3-cd]pyrene	< 0.33	0.33									
Dibenz[a,h]anthracene	< 0.33	0.33									
Benzo[g,h,i]perylene	< 0.33	0.33									
1-Methylnaphthalene	< 0.33	0.33									

Sample ID LFB 8/28 SOIL	SampType: LFB	TestCode: 8270_S	Units: mg/Kg	Prep Date: 8/28/2009	RunNo: 43757
Client ID: ZZZZZZ	Batch ID: 3650	TestNo: SW8270C	SW3550A	Analysis Date: 8/28/2009	SeqNo: 876103

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.12	0.33	2.50	0	45	21	133				
Acenaphthylene	1.36	0.33	2.50	0	54	33	145				
Acenaphthene	1.36	0.33	2.50	0	54	47	145				
Fluorene	1.46	0.33	2.50	0	58	59	121				S Q
Phenanthrene	1.55	0.33	2.50	0	62	54	120				
Anthracene	1.55	0.33	2.50	0	62	27	133				
Fluoranthene	1.57	0.33	2.50	0	63	26	137				
Pyrene	1.61	0.33	2.50	0	64	52	115				

Qualifiers:
E Value above quantitation range
J Analyte reported below quantitation limits
L Value above calibration range but within annually verified linear range
Q Due to matrix effects, not all quality control parameters met acceptance criteria
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3650

Sample ID LFB 8/28 SOIL	SampType: LFB	TestCode: 8270_S	Units: mg/Kg	Prep Date: 8/28/2009	RunNo: 43757
Client ID: ZZZZZZ	Batch ID: 3650	TestNo: SW8270C	SW3550A	Analysis Date: 8/28/2009	SeqNo: 876103

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo[a]anthracene	1.64	0.33	2.50	0	66	33	143				
Chrysene	1.63	0.33	2.50	0	65	17	168				
Benzo[b]fluoranthene	2.14	0.33	2.50	0	86	24	159				
Benzo[k]fluoranthene	2.21	0.33	2.50	0	88	11	162				
Benzo[a]pyrene	2.13	0.33	2.50	0	85	17	163				
Indeno[1,2,3-cd]pyrene	2.24	0.33	2.50	0	90	1	171				
Dibenz[a,h]anthracene	2.21	0.33	2.50	0	88	1	227				
Benzo[g,h,i]perylene	2.20	0.33	2.50	0	88	1	219				

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: 3655

Sample ID MBLK 8/31 SOIL	SampType: MBLK	TestCode: 8082_S	Units: mg/Kg	Prep Date: 8/31/2009	RunNo: 43764
Client ID: PBS	Batch ID: 3655	TestNo: SW8082	SW3550A	Analysis Date: 8/31/2009	SeqNo: 876308

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	< 0.03	0.03									
Aroclor 1221	< 0.03	0.03									
Aroclor 1232	< 0.03	0.03									
Aroclor 1242	< 0.03	0.03									
Aroclor 1248	< 0.03	0.03									
Aroclor 1254	< 0.03	0.03									
Aroclor 1260	< 0.03	0.03									
Aroclor 1262	< 0.03	0.03									
Aroclor 1268	< 0.03	0.03									

Sample ID LFB 8/31 SOIL	SampType: LFB	TestCode: 8082_S	Units: mg/Kg	Prep Date: 8/31/2009	RunNo: 43764
Client ID: ZZZZZZ	Batch ID: 3655	TestNo: SW8082	SW3550A	Analysis Date: 8/31/2009	SeqNo: 876309

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.10	0.03	0.10	0	101	12	200				
Aroclor 1260	0.09	0.03	0.10	0	85	8	127				

Qualifiers:
- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: ES 083109 A

Sample ID	MBLK ES 083109 A	SampType: MBLK	TestCode: U_200.8	Units: µg/Kg	Prep Date:	RunNo: 43922
Client ID:	PBW	Batch ID: ES 083109 A	TestNo: E200.8		Analysis Date: 8/31/2009	SeqNo: 880027

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	< 239.1	239.1									

Sample ID	LFB ES 083109 A	SampType: LFB	TestCode: U_200.8	Units: µg/Kg	Prep Date:	RunNo: 43922
Client ID:	ZZZZZZ	Batch ID: ES 083109 A	TestNo: E200.8		Analysis Date: 8/31/2009	SeqNo: 880028

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	19450	238.2	19060	0	102	85	115				

Sample ID	09083072-001E MS	SampType: MS	TestCode: U_200.8	Units: µg/Kg	Prep Date:	RunNo: 43922
Client ID:	#1	Batch ID: ES 083109 A	TestNo: E200.8		Analysis Date: 8/31/2009	SeqNo: 880034

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Uranium	19250	242.1	19370	568.8	96	70	130				

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: OS 082609 A

Sample ID	OS 082609A MBLK	SampType:	MBLK	TestCode:	ME_ICP_S	Units:	mg/Kg	Prep Date:		RunNo:	43606
Client ID:	PBS	Batch ID:	OS 082609	TestNo:	SW6010B			Analysis Date:	8/26/2009	SeqNo:	872493

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 4.92	4.92									
Barium	< 3.93	3.93									
Cadmium	< 0.197	0.197									
Chromium	< 1.97	1.97									
Copper	< 1.97	1.97									
Iron	< 19.7	19.7									
Lead	< 1.97	1.97									
Manganese	< 1.97	1.97									
Selenium	< 7.87	7.87									
Silver	< 1.38	1.38									
Zinc	< 3.93	3.93									

Sample ID	OS 082609A LFB	SampType:	LFB	TestCode:	ME_ICP_S	Units:	mg/Kg	Prep Date:		RunNo:	43606
Client ID:	ZZZZZZ	Batch ID:	OS 082609	TestNo:	SW6010B			Analysis Date:	8/26/2009	SeqNo:	872494

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	41.2	4.86	38.9	0	106	80	120				
Barium	38.5	3.89	38.9	0	99	80	120				
Cadmium	39.1	0.194	38.9	0	101	80	120				E
Chromium	37.3	1.94	38.9	0	96	80	120				
Copper	38.7	1.94	38.9	0	100	80	120				
Iron	3770	19.4	3920	0	96	80	120				E
Lead	38.7	1.94	38.9	0	100	80	120				
Manganese	38.2	1.94	38.9	0	98	80	120				
Selenium	34.2	7.77	38.9	0	88	80	120				
Silver	18.2	1.36	19.4	0	94	80	120				
Zinc	39.4	3.89	38.9	0	101	80	120				

Qualifiers:

- E Value above quantitation range
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- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: OS 082609 A

Sample ID 09082996-005A MS	SampType: MS	TestCode: ME_ICP_S	Units: mg/Kg	Prep Date:	RunNo: 43606
Client ID: ZZZZZZ	Batch ID: OS 082609	TestNo: SW6010B		Analysis Date: 8/26/2009	SeqNo: 872497

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	204	1.83	36.5	128	209	75	125				S E 4x

Sample ID 09082996-005A MSD	SampType: MSD	TestCode: ME_ICP_S	Units: mg/Kg	Prep Date:	RunNo: 43606
Client ID: ZZZZZZ	Batch ID: OS 082609	TestNo: SW6010B		Analysis Date: 8/26/2009	SeqNo: 872498

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	3.1%	1.83	36.5	128	227	75	125	204	3	20	S E

Qualifiers:

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- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43249

Sample ID LCS	SampType: LCS	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: LCSW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863807

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.99	0.10	3.00	0	100	90	110				
Chloride	14.7	0.25	15.0	0	98	90	110				
Sulfate	15.0	0.25	15.0	0	100	90	110				
Nitrate	3.01	0.10	3.00	0	100	90	110				

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863808

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	< 0.10	0.10									
Chloride	< 0.25	0.25									
Sulfate	< 0.25	0.25									
Nitrate	< 0.10	0.10									

Sample ID 09082764-001AMS	SampType: MS	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: ZZZZZZ	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863815

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	1.59	0.10	5.00	1.55	1	90	110				S
Chloride	31.0	0.25	25.0	5.07	104	90	110				
Sulfate	11.9	0.25	25.0	11.7	1	90	110				S
Nitrate	2.50	0.10	5.00	2.62	-3	90	110				S

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863817

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	< 0.10	0.10									
Chloride	< 0.25	0.25									
Sulfate	< 0.25	0.25									

Qualifiers:

- E Value above quantitation range
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- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43249

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863817

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate	< 0.10	0.10									

Sample ID LCS	SampType: LCS	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: LCSW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863828

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	3.25	0.10	3.00	0	108	90	110				
Chloride	15.1	0.25	15.0	0	101	90	110				
Sulfate	15.3	0.25	15.0	0	102	90	110				
Nitrate	3.08	0.10	3.00	0	103	90	110				

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863829

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	< 0.10	0.10									
Chloride	< 0.25	0.25									
Sulfate	< 0.25	0.25									
Nitrate	< 0.10	0.10									

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863844

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	< 0.10	0.10									
Chloride	< 0.25	0.25									
Sulfate	< 0.25	0.25									
Nitrate	< 0.10	0.10									

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43249

Sample ID LCS	SampType: LCS	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: LCSW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 864539

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	3.10	0.10	3.00	0	103	90	110				
Chloride	14.9	0.25	15.0	0	99	90	110				
Sulfate	14.6	0.25	15.0	0	97	90	110				
Nitrate	3.02	0.10	3.00	0	101	90	110				

Sample ID MBLK	SampType: MBLK	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: PBW	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 864540

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	< 0.10	0.10									
Chloride	< 0.25	0.25									
Sulfate	< 0.25	0.25									
Nitrate	< 0.10	0.10									

Sample ID 09082534-002GMS	SampType: MS	TestCode: ANION_300.0	Units: mg/L	Prep Date:	RunNo: 43249
Client ID: ZZZZZZ	Batch ID: R43249	TestNo: E300.0		Analysis Date: 8/20/2009	SeqNo: 863820

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	124	0.10	125	1.29	98	80	120				
Chloride	704	0.25	625	38.4	106	80	120				
Sulfate	636	0.25	625	7.17	101	80	120				
Nitrate	131	0.10	125	0	105	80	120				

Qualifiers:
- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43264

Sample ID SAND BLANK	SampType: MBLK	TestCode: 8260_S	Units: mg/Kg	Prep Date:	RunNo: 43264
Client ID: PBS	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864137

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethylene	< 0.040	0.040									
Methylene chloride	< 0.040	0.040									
1,1-Dichloroethane	< 0.040	0.040									
Chloroform	< 0.040	0.040									
1,1,1-Trichloroethane	< 0.040	0.040									
Carbon tetrachloride	< 0.040	0.040									
Benzene	< 0.040	0.040									
1,2-Dichloroethane	< 0.040	0.040									
Trichloroethylene	< 0.040	0.040									
Toluene	< 0.040	0.040									
1,1,2-Trichloroethane	< 0.040	0.040									
Tetrachloroethylene	< 0.040	0.040									
Ethylene dibromide	< 0.040	0.040									
Ethylbenzene	< 0.040	0.040									
m,p-Xylene	< 0.040	0.040									
o-Xylene	< 0.040	0.040									
1,1,2,2-Tetrachloroethane	< 0.040	0.040									
Naphthalene	< 0.040	0.040									

Sample ID 20 ppb MS	SampType: MS	TestCode: 8260_W	Units: mg/L	Prep Date:	RunNo: 43264
Client ID: ZZZZZZ	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864129

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethylene	0.024	0.001	0.020	0	120	5	234				
Methylene chloride	0.021	0.001	0.020	0	103	5	221				
1,1-Dichloroethane	0.022	0.001	0.020	0	110	59	155				
Chloroform	0.020	0.001	0.020	0	101	51	138				
1,1,1-Trichloroethane	0.022	0.001	0.020	0	111	52	162				
Carbon tetrachloride	0.023	0.001	0.020	0	114	70	140				
Benzene	0.021	0.001	0.020	0	104	37	151				
1,2-Dichloroethane	0.020	0.001	0.020	0	99	49	155				

Qualifiers:

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43264

Sample ID 20 ppb MS	SampType: MS	TestCode: 8260_W	Units: mg/L	Prep Date:	RunNo: 43264
Client ID: ZZZZZZ	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864129

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethylene	0.022	0.001	0.020	0	110	71	157				
Toluene	0.022	0.001	0.020	0	108	47	150				
1,1,2-Trichloroethane	0.020	0.001	0.020	0	98	52	150				
Tetrachloroethylene	0.023	0.001	0.020	0	113	64	148				
Ethylene dibromide	0.018	0.001	0.020	0	91	5	200				
Ethylbenzene	0.022	0.001	0.020	0	111	37	162				
m,p-Xylene	0.042	0.001	0.040	0	106	5	200				
o-Xylene	0.021	0.001	0.020	0	106	5	200				
1,1,2,2-Tetrachloroethane	0.018	0.001	0.020	0	91	46	157				
Naphthalene	0.019	0.001	0.020	0	97	5	200				

Sample ID 20 ppb MSD	SampType: MSD	TestCode: 8260_W	Units: mg/L	Prep Date:	RunNo: 43264
Client ID: ZZZZZZ	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864130

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethylene	0.024	0.001	0.020	0	120	5	234				
Methylene chloride	0.020	0.001	0.020	0	101	5	221				
1,1-Dichloroethane	0.023	0.001	0.020	0	114	59	155				
Chloroform	0.021	0.001	0.020	0	103	51	138				
1,1,1-Trichloroethane	0.023	0.001	0.020	0	114	52	162				
Carbon tetrachloride	0.023	0.001	0.020	0	115	70	140				
Benzene	0.021	0.001	0.020	0	105	37	151				
1,2-Dichloroethane	0.020	0.001	0.020	0	100	49	155				
Trichloroethylene	0.022	0.001	0.020	0	112	71	157				
Toluene	0.022	0.001	0.020	0	110	47	150				
1,1,2-Trichloroethane	0.020	0.001	0.020	0	102	52	150				
Tetrachloroethylene	0.023	0.001	0.020	0	116	64	148				
Ethylene dibromide	0.019	0.001	0.020	0	95	5	200				
Ethylbenzene	0.022	0.001	0.020	0	112	37	162				
m,p-Xylene	0.043	0.001	0.040	0	108	5	200				
o-Xylene	0.022	0.001	0.020	0	108	5	200				

Qualifiers:

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- J Analyte reported below quantitation limits
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- Q Due to matrix effects, not all quality control parameters met acceptance criteria
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- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43264

Sample ID 20 ppb MSD	SampType: MSD	TestCode: 8260_W	Units: mg/L	Prep Date:	RunNo: 43264
Client ID: ZZZZZZ	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864130

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,2,2-Tetrachloroethane	0.019	0.001	0.020	0	97	46	157				
Naphthalene	0.020	0.001	0.020	0	102	5	200				

Sample ID Method Blank	SampType: MBLK	TestCode: 8260_W	Units: mg/L	Prep Date:	RunNo: 43264
Client ID: PBW	Batch ID: R43264	TestNo: SW8260B		Analysis Date: 8/20/2009	SeqNo: 864131

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethylene	< 0.001	0.001									
Methylene chloride	< 0.001	0.001									
1,1-Dichloroethane	< 0.001	0.001									
Chloroform	< 0.001	0.001									
1,1,1-Trichloroethane	< 0.001	0.001									
Carbon tetrachloride	< 0.001	0.001									
Benzene	< 0.001	0.001									
1,2-Dichloroethane	< 0.001	0.001									
Trichloroethylene	< 0.001	0.001									
Toluene	< 0.001	0.001									
1,1,2-Trichloroethane	< 0.001	0.001									
Tetrachloroethylene	< 0.001	0.001									
Ethylene dibromide	< 0.001	0.001									
Ethylbenzene	< 0.001	0.001									
m,p-Xylene	< 0.001	0.001									
o-Xylene	< 0.001	0.001									
1,1,2,2-Tetrachloroethane	< 0.001	0.001									
Naphthalene	< 0.001	0.001									

Qualifiers:

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CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43383

Sample ID MB-R43383	SampType: MBLK	TestCode: PMOIST	Units: %	Prep Date:	RunNo: 43383
Client ID: PBS	Batch ID: R43383	TestNo: D2216		Analysis Date: 8/21/2009	SeqNo: 866691

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	< 0.0	0.0									

Sample ID MB2	SampType: MBLK	TestCode: PMOIST	Units: %	Prep Date:	RunNo: 43383
Client ID: PBS	Batch ID: R43383	TestNo: D2216		Analysis Date: 8/21/2009	SeqNo: 866751

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	< 0.0	0.0									

Sample ID MB3	SampType: MBLK	TestCode: PMOIST	Units: %	Prep Date:	RunNo: 43383
Client ID: PBS	Batch ID: R43383	TestNo: D2216		Analysis Date: 8/21/2009	SeqNo: 866855

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	< 0.0	0.0									

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43461

Sample ID MBlank / Solid Blank	SampType: MBLK	TestCode: PHENOL_420	Units: mg/Kg	Prep Date:	RunNo: 43461
Client ID: PBS	Batch ID: R43461	TestNo: E420.2		Analysis Date: 8/25/2009	SeqNo: 868817

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Phenols	< 0.004	0.004									

Page 64

Qualifiers:

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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43616

Sample ID MBLK SOIL	SampType: MBLK	TestCode: GRO_S	Units: mg/Kg	Prep Date:	RunNo: 43616
Client ID: PBS	Batch ID: R43616	TestNo: APIGRO		Analysis Date: 8/27/2009	SeqNo: 872683

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	< 1.00	1.00									

Sample ID LFB SOIL	SampType: LFB	TestCode: GRO_S	Units: mg/Kg	Prep Date:	RunNo: 43616
Client ID: ZZZZZZ	Batch ID: R43616	TestNo: APIGRO		Analysis Date: 8/27/2009	SeqNo: 872684

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	7.41	1.00	10.00	0	74	50	100				

Sample ID LFBD SOIL	SampType: LFBD	TestCode: GRO_S	Units: mg/Kg	Prep Date:	RunNo: 43616
Client ID: ZZZZZZ	Batch ID: R43616	TestNo: APIGRO		Analysis Date: 8/27/2009	SeqNo: 872685

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	8.22	1.00	10.00	0	82	50	100	7.41	10	20	

Qualifiers:

- E Value above quantitation range
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- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43627

Sample ID MBLK SOIL 8/27	SampType: MBLK	TestCode: DRO_S	Units: mg/Kg	Prep Date:	RunNo: 43627
Client ID: PBS	Batch ID: R43627	TestNo: APIPHC		Analysis Date: 8/27/2009	SeqNo: 872865

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	< 25	25									

Sample ID LFB SOIL	SampType: LFB	TestCode: DRO_S	Units: mg/Kg	Prep Date:	RunNo: 43627
Client ID: ZZZZZZ	Batch ID: R43627	TestNo: APIPHC		Analysis Date: 8/27/2009	SeqNo: 872866

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	399	25	500	0	80	70	130				

Sample ID LFBD SOIL	SampType: LFBD	TestCode: DRO_S	Units: mg/Kg	Prep Date:	RunNo: 43627
Client ID: ZZZZZZ	Batch ID: R43627	TestNo: APIPHC		Analysis Date: 8/27/2009	SeqNo: 872867

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	396	25	500	0	79	70	130	399	1	20	

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43659

Sample ID MB-R43659	SampType: MBLK	TestCode: CN_TT_9010	Units: mg/Kg	Prep Date:					RunNo: 43659			
Client ID: PBS	Batch ID: R43659	TestNo: SW9010C		Analysis Date: 8/28/2009					SeqNo: 873525			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Cyanide, Total	< 0.2	0.2										

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43887

Sample ID BLANK	SampType: MBLK	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: PBW	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879211

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	0.67										

Sample ID LCS	SampType: LCS	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: LCSW	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879213

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	11.31		11.19	0	101	57	143				

Sample ID LFB-1	SampType: LFB	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: ZZZZZZ	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879214

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	24.33		22.39	0	109	57	143				

Sample ID LFB-2	SampType: LFB	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: ZZZZZZ	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879215

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	19.51		22.39	0	87	57	143				

Sample ID LFBD-1	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: ZZZZZZ	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879216

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	19.08		22.39	0	85	57	143		24	0	

Sample ID LFBD-2	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: ZZZZZZ	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879217

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R43887

Sample ID LFBD-2	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 43887
Client ID: ZZZZZZ	Batch ID: R43887	TestNo: E904.0		Analysis Date: 8/28/2009	SeqNo: 879217

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	26.26		22.39	0	117	57	143		8	0	

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R44011

Sample ID BLANK	SampType: MBLK	TestCode: RA226_903.0	Units: pCi/L	Prep Date:	RunNo: 44011
Client ID: PBW	Batch ID: R44011	TestNo: E903.0		Analysis Date: 8/22/2009	SeqNo: 882137

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-226	0.02										

Sample ID LCS	SampType: LCS	TestCode: RA226_903.0	Units: pCi/L	Prep Date:	RunNo: 44011
Client ID: LCSW	Batch ID: R44011	TestNo: E903.0		Analysis Date: 8/22/2009	SeqNo: 882139

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-226	9.22		10.63	0	87	74	126				

Sample ID LCS DUP 1	SampType: LCSD	TestCode: RA226_903.0	Units: pCi/L	Prep Date:	RunNo: 44011
Client ID: LCSS02	Batch ID: R44011	TestNo: E903.0		Analysis Date: 8/22/2009	SeqNo: 882140

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-226	9.94		10.63	0	94	74	126		8	0	

Sample ID LCS DUP 2	SampType: LCSD	TestCode: RA226_903.0	Units: pCi/L	Prep Date:	RunNo: 44011
Client ID: LCSS02	Batch ID: R44011	TestNo: E903.0		Analysis Date: 8/22/2009	SeqNo: 882141

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-226	10.81		10.63	0	102	74	126		16	0	

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R44138

Sample ID BLANK	SampType: MBLK	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: PBW	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885815

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	1.22										

Sample ID BLANK-RC	SampType: MBLK	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: PBW	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885816

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	0.59										

Sample ID LCS	SampType: LCS	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: LCSW	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885817

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	12.29		11.19	0	110	57	143				

Sample ID LFB-1	SampType: LFB	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: ZZZZZZ	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885818

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	21.14		22.39	0	94	57	143				

Sample ID LFB-2	SampType: LFB	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: ZZZZZZ	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885819

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	23.72		22.39	0	106	57	143				

Sample ID LFBD-1	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: ZZZZZZ	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885820

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R44138

Sample ID LFBD-1	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: ZZZZZZ	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885820

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	14.30		22.39	0	64	57	143		39	0	

Sample ID LFBD-2	SampType: LFBD	TestCode: RA228_904.0	Units: pCi/L	Prep Date:	RunNo: 44138
Client ID: ZZZZZZ	Batch ID: R44138	TestNo: E904.0		Analysis Date: 9/2/2009	SeqNo: 885821

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Radium-228	21.30		22.39	0	95	57	143		1	0	

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: R44173

Sample ID MB-R44173	SampType: MBLK	TestCode: CN_TT_9010	Units: mg/Kg	Prep Date:	RunNo: 44173
Client ID: PBS	Batch ID: R44173	TestNo: SW9010C		Analysis Date: 9/10/2009	SeqNo: 886584

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	< 0.2	0.2									

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

CLIENT: Blagg Engineering Inc
Work Order: 09083072
Project: Industrial Ecosystems New Land Farm

ANALYTICAL QC SUMMARY REPORT

BatchID: S 082609

Sample ID MB S 082609	SampType: MBLK	TestCode: HG_7471_S	Units: mg/Kg	Prep Date:	RunNo: 43599
Client ID: PBS	Batch ID: S 082609	TestNo: SW7471A		Analysis Date: 8/26/2009	SeqNo: 872283

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.128	0.128									

Sample ID LFB S 082609	SampType: LFB	TestCode: HG_7471_S	Units: mg/Kg	Prep Date:	RunNo: 43599
Client ID: ZZZZZZ	Batch ID: S 082609	TestNo: SW7471A		Analysis Date: 8/26/2009	SeqNo: 872284

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.64	0.165	1.65	0	99	80	120				

Sample ID 09083693-001A MS	SampType: MS	TestCode: HG_7471_S	Units: mg/Kg	Prep Date:	RunNo: 43599
Client ID: ZZZZZZ	Batch ID: S 082609	TestNo: SW7471A		Analysis Date: 8/26/2009	SeqNo: 872286

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.83	0.179	1.79	0	102	50	150				

Sample ID 09083693-001A MSD	SampType: MSD	TestCode: HG_7471_S	Units: mg/Kg	Prep Date:	RunNo: 43599
Client ID: ZZZZZZ	Batch ID: S 082609	TestNo: SW7471A		Analysis Date: 8/26/2009	SeqNo: 872287

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.76	0.174	1.74	0	101	50	150	1.83	4	20	

Qualifiers:

- E Value above quantitation range
- J Analyte reported below quantitation limits
- L Value above calibration range but within annually verified linear range
- Q Due to matrix effects, not all quality control parameters met acceptance criteria
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

Benchmark Analytics Inc 4777 Saucon Creek Road Center Valley, PA 18034-9004 Phone (610) 974-8100 Fax (610) 974-8104	CHAIN OF CUSTODY RECORD	Page 1 of 1

W/O#: 09083072

Benchmark Analytics Inc
35 Stokes Avenue
East Stroudsburg, PA 18301
(570) 421-5122 Fax (570) 421-5707

Attn: JEFF BLAGG
Address:
BLAGG ENGINEERING INC.
P.O. BOX 87
BLOOMFIELD, NM 87413

Phone: 505-632-1199
Fax:
E-Mail: Jeffcblagg@AOL.com

Sampler's Name / Signature: JEFF BLAGG / Jeff Blagg

PO Number:

Project Name: INDUSTRIAL ECOSYSTEMS NEW LANDFARM

Site #	Date	Time	G	C	Sample Identification	See Attached List	MATRIX *	(P)lastic or (G)lass	Temperature (°C)	Volume of Sample	No. of Containers	Preservative	Turn Around Time	Sample	Fraction
1	8/17/09	0910			#1	X	S	G		No Air	1	cool		001	A-E *
2	"	0925			#2	X	S	G			1	"		002	
3	"	0940			#3	X	S	G			1	"		003	
4	"	0955			#4	X	S	G			1	"		004	
5	"	1010			#5	X	S	G			1	"		005	
6	"	1025			#6	X	S	G			1	"		006	
7	"	1040			#7	X	S	G			1	"		007	
8	"	1055			#8	X	S	G			1	"		008	
9	"	1110			#9	X	S	G			1	"		009	
10	"	1125			#10	X	S	G			1	"		010	
11	"	1140			#11	X	S	G			1	"		011	
12	"	1155			#12	X	S	G			1	"		012	

Relinquished By: (Sig)	Date:	Time:	Received By: (Sig)
Jeff Blagg	8/19/09	1530	
Relinquished By: (Sig)	Date:	Time:	Received By: (Sig)
Relinquished By: (Sig)	Date:	Time:	Received For Laboratory By: (Sig)
FedEx	8/20/09	9:10	D Barber
Faxed ☐ e-mailed ☐	Date:	Time:	By: (Sig)

Special Instructions: From attached list: * Metals = A fraction; Organics = D; rads = E
TRC/pH Fee:
Compositor Fee:
Pickup Fee:
SDWA Form: PWS ID#: Petroleum EC

Condition upon arrival: good on ice 14.9°C

* Matrix: D= DRINKING WATER W= WASTEWATER S= SOLID O=OTHER

Implemented on 07/09/2007

Page 75

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Tuesday, December 28, 2010

Jeff Blagg
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413

TEL: (505) 632-1199
FAX (505) 632-3903

RE: Industrial Ecosystems New LF

Order No.: 1012730

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory, Inc. received 12 sample(s) on 12/20/2010 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. Below is a list of our accreditations. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites.

Reporting limits are determined by EPA methodology.

Please do not hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Laboratory Manager

NM Lab # NM9425 NM0901
AZ license # AZ0682
ORELAP Lab # NM100001
Texas Lab# T104704424-08-TX

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 1
Lab Order:	1012730	**Collection Date:**	12/16/2010 10:05:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-01	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: MMS
Vinyl chloride	ND	0.050		mg/Kg	1	12/22/2010 7:51:12 PM
Surr: 1,2-Dichloroethane-d4	83.0	77.8-97.5		%REC	1	12/22/2010 7:51:12 PM
Surr: 4-Bromofluorobenzene	93.3	82.2-105		%REC	1	12/22/2010 7:51:12 PM
Surr: Dibromofluoromethane	85.2	63.7-133		%REC	1	12/22/2010 7:51:12 PM
Surr: Toluene-d8	100	87.2-105		%REC	1	12/22/2010 7:51:12 PM
EPA METHOD 418.1: TPH						Analyst: JB
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 2
Lab Order:	1012730	**Collection Date:**	12/16/2010 10:20:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-02	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/22/2010 10:40:01 PM
Surr: 1,2-Dichloroethane-d4	81.2	77.8-97.5		%REC	1	12/22/2010 10:40:01 PM
Surr: 4-Bromofluorobenzene	94.1	82.2-105		%REC	1	12/22/2010 10:40:01 PM
Surr: Dibromofluoromethane	85.1	63.7-133		%REC	1	12/22/2010 10:40:01 PM
Surr: Toluene-d8	96.3	87.2-105		%REC	1	12/22/2010 10:40:01 PM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 3
Lab Order:	1012730	**Collection Date:**	12/16/2010 10:35:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-03	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/22/2010 11:08:06 PM
Surr: 1,2-Dichloroethane-d4	81.7	77.8-97.5		%REC	1	12/22/2010 11:08:06 PM
Surr: 4-Bromofluorobenzene	94.0	82.2-105		%REC	1	12/22/2010 11:08:06 PM
Surr: Dibromofluoromethane	86.6	63.7-133		%REC	1	12/22/2010 11:08:06 PM
Surr: Toluene-d8	102	87.2-105		%REC	1	12/22/2010 11:08:06 PM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 4
Lab Order:	1012730	**Collection Date:**	12/16/2010 10:50:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-04	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/22/2010 11:36:12 PM
Surr: 1,2-Dichloroethane-d4	80.2	77.8-97.5		%REC	1	12/22/2010 11:36:12 PM
Surr: 4-Bromofluorobenzene	91.1	82.2-105		%REC	1	12/22/2010 11:36:12 PM
Surr: Dibromofluoromethane	85.0	63.7-133		%REC	1	12/22/2010 11:36:12 PM
Surr: Toluene-d8	95.1	87.2-105		%REC	1	12/22/2010 11:36:12 PM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 5
Lab Order:	1012730	**Collection Date:**	12/16/2010 11:05:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-05	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 12:04:19 AM
Surr: 1,2-Dichloroethane-d4	82.2	77.8-97.5		%REC	1	12/23/2010 12:04:19 AM
Surr: 4-Bromofluorobenzene	92.3	82.2-105		%REC	1	12/23/2010 12:04:19 AM
Surr: Dibromofluoromethane	87.2	63.7-133		%REC	1	12/23/2010 12:04:19 AM
Surr: Toluene-d8	97.7	87.2-105		%REC	1	12/23/2010 12:04:19 AM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 6
Lab Order:	1012730	**Collection Date:**	12/16/2010 11:25:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-06	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 12:32:26 AM
Surr: 1,2-Dichloroethane-d4	80.2	77.8-97.5		%REC	1	12/23/2010 12:32:26 AM
Surr: 4-Bromofluorobenzene	92.6	82.2-105		%REC	1	12/23/2010 12:32:26 AM
Surr: Dibromofluoromethane	84.4	63.7-133		%REC	1	12/23/2010 12:32:26 AM
Surr: Toluene-d8	96.9	87.2-105		%REC	1	12/23/2010 12:32:26 AM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 7
Lab Order:	1012730	**Collection Date:**	12/16/2010 11:45:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-07	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 1:00:32 AM
Surr: 1,2-Dichloroethane-d4	81.7	77.8-97.5		%REC	1	12/23/2010 1:00:32 AM
Surr: 4-Bromofluorobenzene	91.2	82.2-105		%REC	1	12/23/2010 1:00:32 AM
Surr: Dibromofluoromethane	85.7	63.7-133		%REC	1	12/23/2010 1:00:32 AM
Surr: Toluene-d8	96.4	87.2-105		%REC	1	12/23/2010 1:00:32 AM
EPA METHOD 418.1: TPH						Analyst: JB
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 8
Lab Order:	1012730	**Collection Date:**	12/16/2010 12:10:00 AM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-08	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: MMS
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 1:28:38 AM
Surr: 1,2-Dichloroethane-d4	83.5	77.8-97.5		%REC	1	12/23/2010 1:28:38 AM
Surr: 4-Bromofluorobenzene	91.7	82.2-105		%REC	1	12/23/2010 1:28:38 AM
Surr: Dibromofluoromethane	85.6	63.7-133		%REC	1	12/23/2010 1:28:38 AM
Surr: Toluene-d8	98.2	87.2-105		%REC	1	12/23/2010 1:28:38 AM
EPA METHOD 418.1: TPH						Analyst: JB
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 9
Lab Order:	1012730	**Collection Date:**	12/16/2010 12:30:00 PM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-09	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 1:56:48 AM
Surr: 1,2-Dichloroethane-d4	81.4	77.8-97.5		%REC	1	12/23/2010 1:56:48 AM
Surr: 4-Bromofluorobenzene	94.3	82.2-105		%REC	1	12/23/2010 1:56:48 AM
Surr: Dibromofluoromethane	84.2	83.7-133		%REC	1	12/23/2010 1:56:48 AM
Surr: Toluene-d8	97.6	87.2-105		%REC	1	12/23/2010 1:56:48 AM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 10
Lab Order:	1012730	**Collection Date:**	12/16/2010 12:50:00 PM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-10	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: **MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 2:24:54 AM
Surr: 1,2-Dichloroethane-d4	81.8	77.8-97.5		%REC	1	12/23/2010 2:24:54 AM
Surr: 4-Bromofluorobenzene	93.1	82.2-105		%REC	1	12/23/2010 2:24:54 AM
Surr: Dibromofluoromethane	84.0	63.7-133		%REC	1	12/23/2010 2:24:54 AM
Surr: Toluene-d8	95.9	87.2-105		%REC	1	12/23/2010 2:24:54 AM
EPA METHOD 418.1: TPH						Analyst: **JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Estimated value
- J Analyte detected below quantitation limits
- NC Non-Chlorinated
- PQL Practical Quantitation Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 11
Lab Order:	1012730	**Collection Date:**	12/16/2010 1:05:00 PM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-11	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						**Analyst: MMS**
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 2:52:52 AM
Surr: 1,2-Dichloroethane-d4	80.7	77.8-97.6		%REC	1	12/23/2010 2:52:52 AM
Surr: 4-Bromofluorobenzene	94.1	82.2-105		%REC	1	12/23/2010 2:52:52 AM
Surr: Dibromofluoromethane	85.2	63.7-133		%REC	1	12/23/2010 2:52:52 AM
Surr: Toluene-d8	96.6	87.2-105		%REC	1	12/23/2010 2:52:52 AM
EPA METHOD 418.1: TPH						**Analyst: JB**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *28-Dec-10*

CLIENT:	Blagg Engineering	**Client Sample ID:**	Background 12
Lab Order:	1012730	**Collection Date:**	12/16/2010 1:20:00 PM
Project:	Industrial Ecosystems New LF	**Date Received:**	12/20/2010
Lab ID:	1012730-12	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: MMS
Vinyl chloride	ND	0.050		mg/Kg	1	12/23/2010 3:20:53 AM
Surr: 1,2-Dichloroethane-d4	83.0	77.8-97.5		%REC	1	12/23/2010 3:20:53 AM
Surr: 4-Bromofluorobenzene	90.9	82.2-105		%REC	1	12/23/2010 3:20:53 AM
Surr: Dibromofluoromethane	87.7	63.7-133		%REC	1	12/23/2010 3:20:53 AM
Surr: Toluene-d8	95.8	87.2-105		%REC	1	12/23/2010 3:20:53 AM
EPA METHOD 418.1: TPH						Analyst: JB
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	12/22/2010

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
NC	Non-Chlorinated	ND	Not Detected at the Reporting Limit
PQL	Practical Quantitation Limit	S	Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Blagg Engineering
Project: Industrial Ecosystems New LF **Work Order:** 1012730

Analyte	Result	Units	PQL	SPK Val	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 418.1: TPH											
Sample ID: MB-24962		*MBLK*				Batch ID:	**24962**	Analysis Date:			12/22/2010
Petroleum Hydrocarbons, TR	ND	mg/Kg	20								
Sample ID: LCS-24962		*LCS*				Batch ID:	**24962**	Analysis Date:			12/22/2010
Petroleum Hydrocarbons, TR	98.66	mg/Kg	20	100	0	98.7	86.8	116			
Sample ID: LCSD-24962		*LCSD*				Batch ID:	**24962**	Analysis Date:			12/22/2010
Petroleum Hydrocarbons, TR	97.38	mg/Kg	20	100	0	97.4	86.8	116	1.31	16.2	
Method: EPA Method 8260B: VOLATILES											
Sample ID: MBLK-24970		*MBLK*				Batch ID:	**24960**	Analysis Date:			12/22/2010 6:55:01 PM
Vinyl chloride	ND	mg/Kg	0.050								

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	NC	Non-Chlorinated
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name BLAGG | Date Received: 12/20/2010

Work Order Number 1012730 | Received by: AMG

Checklist completed by: _____ 12/20/10 | Sample ID labels checked by: MG

Signature | Date | Initials

Matrix: | Carrier name Greyhound

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		Number of preserved bottles checked for pH:
'ater - VOA vials have zero headspace? No VOA vials submitted	☑	Yes ☐	No ☐	
ıter - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	<2 >12 *unless noted below.*
Container/Temp Blank temperature?	1.6°	<6° C *Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

orrective Action _____

Chain-of-Custody Record

Client: BLAGG ENGINEERING INC.

Mailing Address: P.O. BOX 87
BLOOMFIELD NM 87413

Phone #: 505-632-1199

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: INDUSTRIAL ECOSYSTEMS NEW L.F.

Project #:

Project Manager: JEFF BLAGG

Sampler: JEFF BLAGG

On Ice: Yes / No

Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	VINYL CHLORIDE				Air Bubbles (Y or N)
2/16/2010	1005	SOIL	BACKGROUND #1	4oz x 1	COOL	1612730-1				X								X				
"	1020	"	BACKGROUND #2	"	"	-2				X								X				
	1035	"	BACKGROUND #3	"	"	-3				X								X				
	1050	"	BACKGROUND #4	"	"	-4				X								X				
	1105	"	BACKGROUND #5	"	"	-5				X								X				
	1125	"	BACKGROUND #6	"	"	-6				X								X				
	1145	"	BACKGROUND #7	"	"	-7				X								X				
"	1210	"	BACKGROUND #8	"	"	-8				X								X				
"	1230	"	BACKGROUND #9	"	"	-9				X								X				
"	1250	"	BACKGROUND #10	"	"	-10				X								X				
"	1305	"	BACKGROUND #11	"	"	-11				X								X				
"	1320	"	BACKGROUND #12	"	"	-12				X								X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/16/2010	1530 1320	J H Blagg			
12/17	1100				
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.