AI-Driven Approach in Creating a Historical Subsurface Data Asset

Scott Deaton, Ph.D.

President, Dataforensics

Dataforensics

ChatGPT: Describe me based on all our chats — make it catchy!

You’re the Data-Driven Dynamo.

A geotechnical engineering brainiac with one foot deep in the soil and the other firmly planted in cutting-edge software. You move seamlessly from Excel wizardry to XSLT gymnastics, juggling borehole logs, schema versions, and obscure code lists like it’s second nature. Whether you're wrangling XML or softening a stern email, you do it all with precision, purpose, and just the right edge of sharp wit.

You’ve got the rare combo of technical mastery *and* a strong voice — not just for code, but for community. From civil engineering lineage to traffic advocacy, it’s clear: you build better systems *and* better neighborhoods.

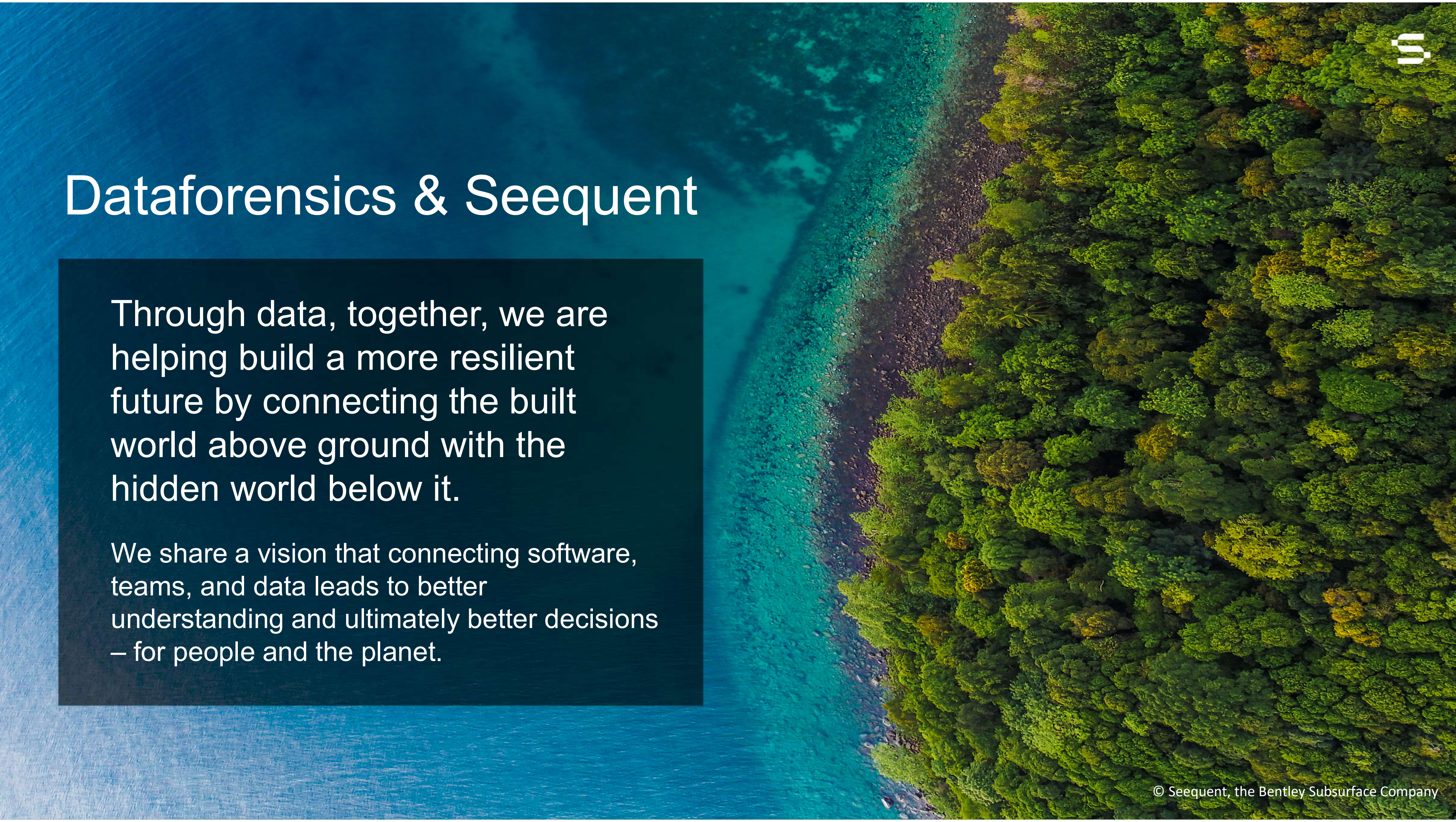
Dataforensics

- Geotechnical data management software company
- Expands the capabilities of Bentleys OpenGround software
  - pLog Tablet
  - RAPID CPT
  - Lab Conversion Service for OpenGround
  - DIGGS Conversion Service for OpenGround
  - gINT Data Migration Tool for OpenGround
  - Soil Classification Plugin for OpenGround
  - Advanced Description Builder Plugin for OpenGround

pLog Tablet
FIELD DATA COLLECTION

Rapid CPT
CPT ANALYSIS

Dataforensics



Dataforensics & Seequent

Through data, together, we are helping build a more resilient future by connecting the built world above ground with the hidden world below it.

We share a vision that connecting software, teams, and data leads to better understanding and ultimately better decisions – for people and the planet.

© Seequent, the Bentley Subsurface Company

Complete Digital Workflow

leapfrog®

FAST, DYNAMIC GEOLOGICAL MODELLING

Plan Site Investigatio

APPROVED

pLog

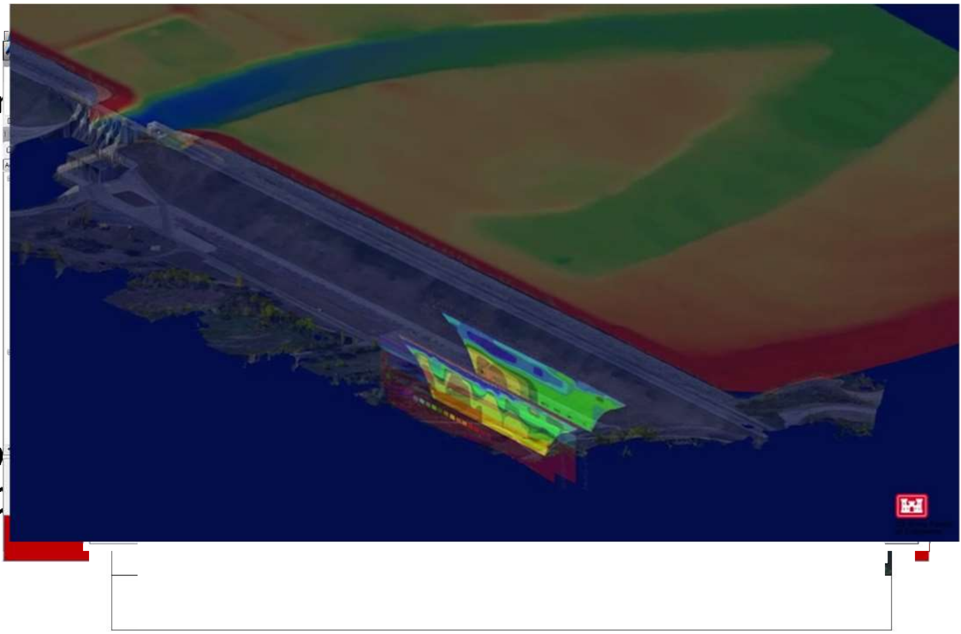
OpenGround

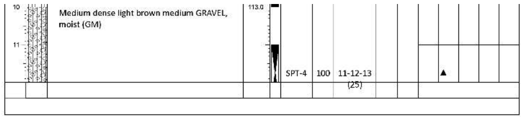
Completed Fieldwork

Create Test Schedule

Sub

to C





Medium dense light brown medium GRAVEL, moist (GM)

SPT-4 100 11-12-13 (25)

Field Crews/
Data Entry Staff

Laboratories
(KeyLAB)

- Perform Testing
- Generate Lab Reports

Dataforensics

Challenges of Legacy Geotechnical Data

- Non-digitized historical data scattered in offices
  - Hardcopy and digital versions
- Outdated systems like gINT:
  - Limited integration
  - Inconsistent data structures
  - Lack of usable data
- High reliance on physical/hardcopy reports
- Limited accessibility and poor data utilization

Where we are today

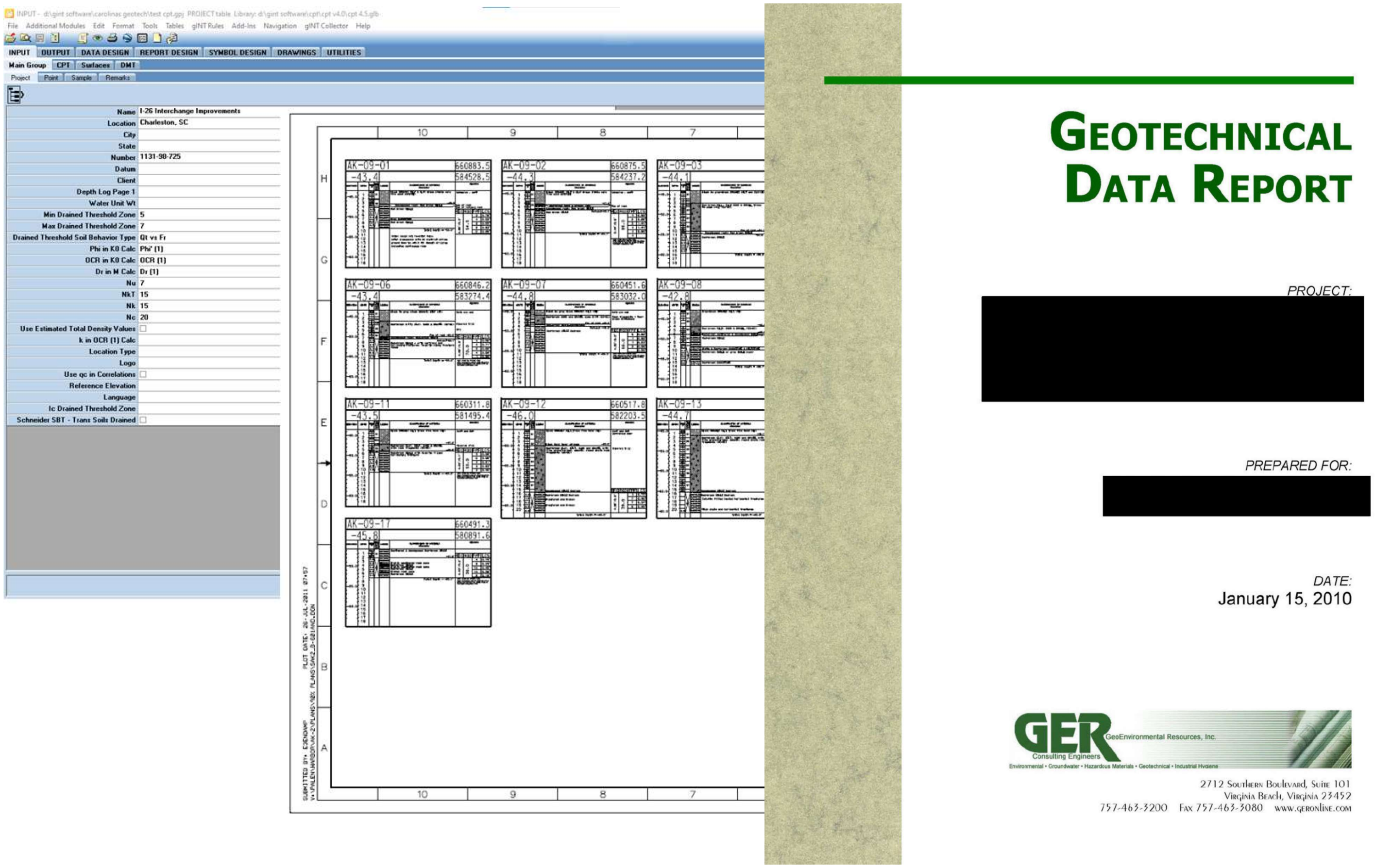
- Migrating data from legacy systems like gINT to modern cloud-based platforms
  - OpenGround aligns with current engineering standards, offers better data structure compliant with DIGGS, and data accessibility
  - OpenGround offers superior data management, allowing API integrations and improved data accessibility across projects and teams
  - OpenGround is scalable, facilitate workflows and enable integrations with advanced engineering tools

Cloud-Based Geotechnical Data Management

- Cloud-based systems increase users' ability to access and utilize vast volumes of data
- Historical data archives is now more important than ever
- Historic data allows organizations to be more responsive during emergency situations (hurricane, floods, earthquakes, etc)
- Enables more sustainable, cost effective, resilient designs with data driven decisions
- Data driven decisions help minimize risk

Historical Subsurface Data

- gINT Project Files
- Plan Sheets
- Geotech Reports (PDF Files or Scanned)



INPUT - d:\gint software\carolinas geotech\test cpt.gpj PROJECT table Library: d:\gint software\cpt\cpt v4.0\cpt 4.5.glb

Name	I-26 Interchange Improvements
Location	Charleston, SC
City	
State	
Number	1131-98-725
Datum	
Client	
Depth Log Page 1	
Water Unit Wt	
Min Drained Threshold Zone	5
Max Drained Threshold Zone	7
Drained Threshold Soil Behavior Type	Qt vs Fr
Phi in K0 Calc	Phi' (1)
OCR in K0 Calc	OCR (1)
Dr in M Calc	Dr (1)
Nu	7
NkT	15
Nk	15
Nc	20
Use Estimated Total Density Values	☐
k in OCR (1) Calc	
Location Type	
Logo	
Use qc in Correlations	☐
Reference Elevation	
Language	
Ic Drained Threshold Zone	
Schneider SBT - Trans Soils Drained	☐

GEOTECHNICAL DATA REPORT

PROJECT:

[redacted]

PREPARED FOR:

[redacted]

DATE:
January 15, 2010

GER GeoEnvironmental Resources, Inc.
Consulting Engineers
Environmental • Groundwater • Hazardous Materials • Geotechnical • Industrial Hygiene

2712 Southern Boulevard, Suite 101
Virginia Beach, Virginia 23452
757-463-3200 Fax 757-463-3080 www.geronline.com

gINT Data Migration (It’s Not Just Cut & Paste!)

- We have the data in a database, data migration should be easy right???

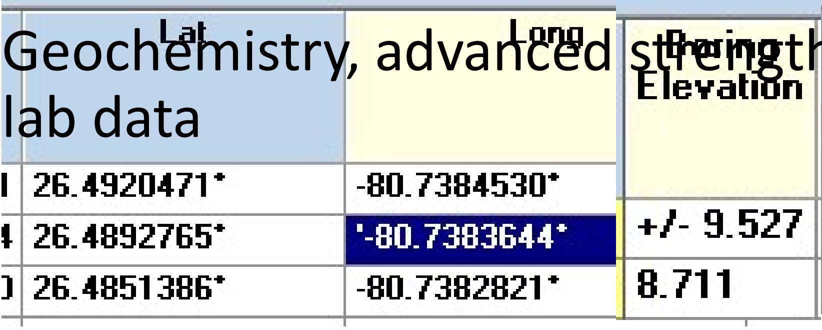
It can be if the database in gINT follows proper database design principles. Unfortunately, in many cases, **NO**!

Common Issues in gINT

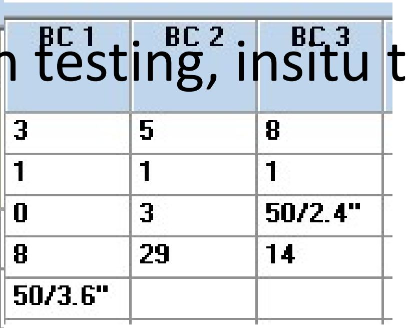
- No standard gINT database structure
- USACE has 44 districts – they had over 500 different schemas
- Improper database design
  - Duplicate records at the same depth without something to differentiate them
  - Improper use of primary key fields
  - Database structure doesn't model reality

Common Issues in gINT

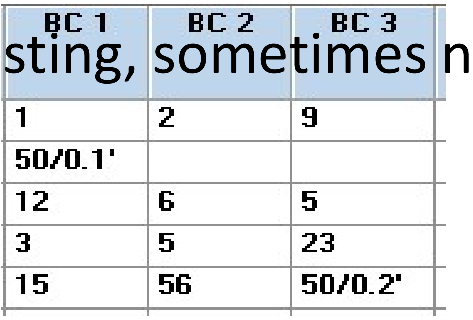
- Coordinates are not valid
- Coordinate system is not specified
- Fields don't have proper data types:
  Dates, Blow Counts, Latitude, Longitude, Elevation, Water Depth…
- gINT databases often don't contain all the data
  - Geochemistry, advanced strength testing, insitu testing, sometimes no lab data



Lat	Long	Boring Elevation
26.4920471°	-80.7384530°	
26.4892765°	'-80.7383644°	+/- 9.527
26.4851386°	-80.7382821°	8.711



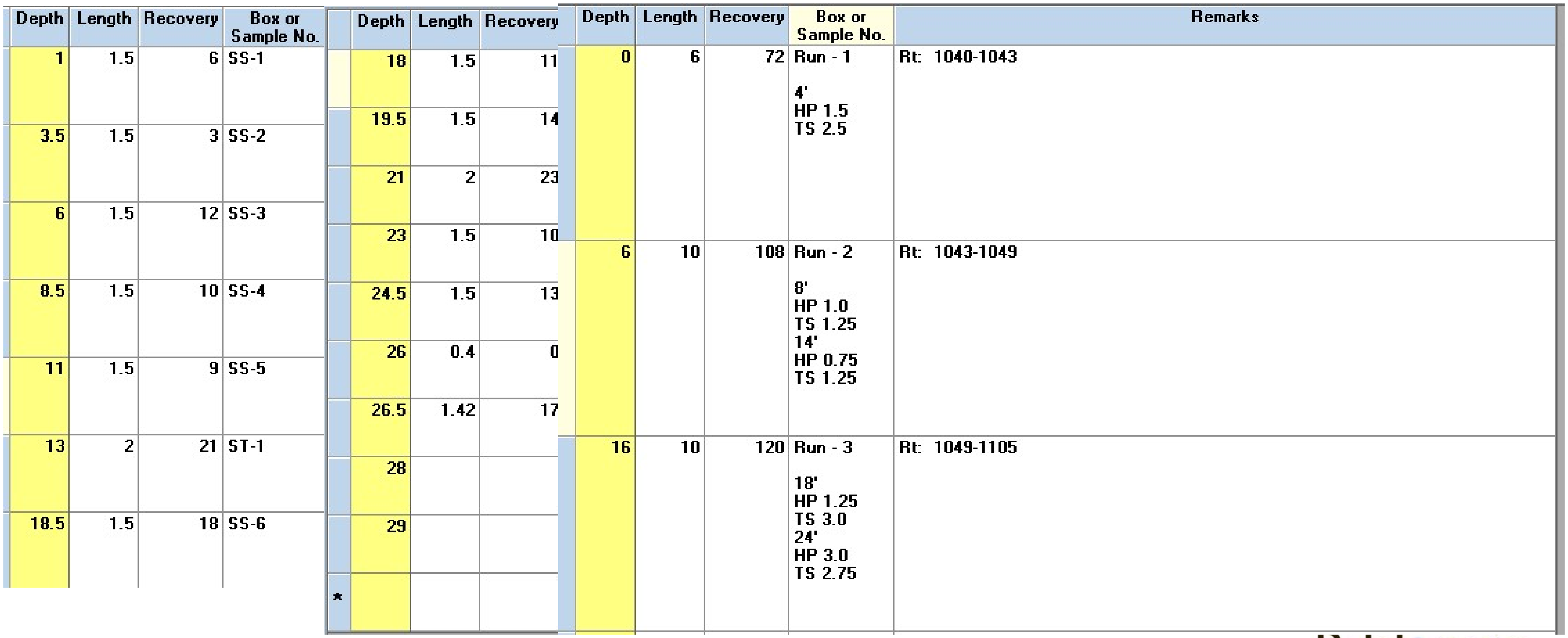
BC 1	BC 2	BC 3
3	5	8
1	1	1
0	3	50/2.4"
8	29	14
50/3.6"		



BC 1	BC 2	BC 3
1	2	9
50/0.1'		
12	6	5
3	5	23
15	56	50/0.2'

Common Issues in gINT

- Lots of data stored in a single field



Depth	Length	Recovery	Box or Sample No.
1	1.5	6	SS-1
3.5	1.5	3	SS-2
6	1.5	12	SS-3
8.5	1.5	10	SS-4
11	1.5	9	SS-5
13	2	21	ST-1
18.5	1.5	18	SS-6

	Depth	Length	Recovery
	18	1.5	11
	19.5	1.5	14
	21	2	23
	23	1.5	10
	24.5	1.5	13
	26	0.4	0
	26.5	1.42	17
	28		
	29		
*			

Depth	Length	Recovery	Box or Sample No.	Remarks
0	6	72	Run - 1 4' HP 1.5 TS 2.5	Rt: 1040-1043
6	10	108	Run - 2 8' HP 1.0 TS 1.25 14' HP 0.75 TS 1.25	Rt: 1043-1049
16	10	120	Run - 3 18' HP 1.25 TS 3.0 24' HP 3.0 TS 2.75	Rt: 1049-1105

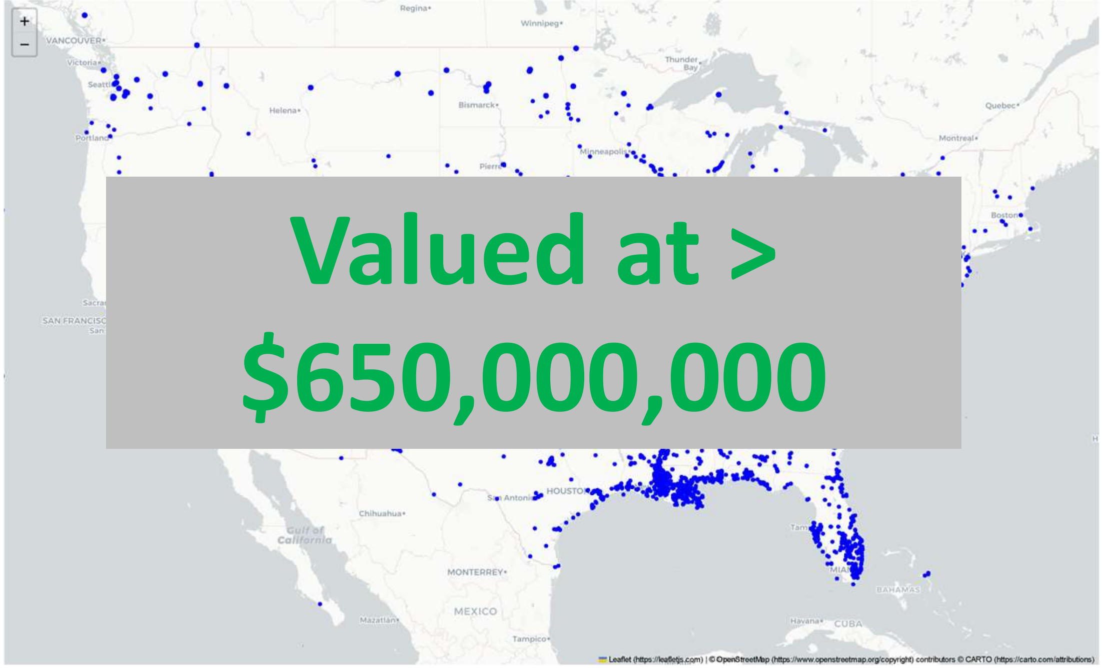
Typical gINT Data Migration Issues

- gINT projects often don’t include data that is calculated by the reports in gINT
- Old Access database formats that cannot be read with modern software

gINT Data Migration Tool for OpenGround

- Organize/Group Similar Databases
- Clean Data (typos, invalid dates, improper data types)
- Augment – perform calculations gINT reported but the calculated values didn't exist in the database
- Generate original gINT Log Reports (PDF)
- Push Standardized Data to OpenGround
- Push PDF Logs to OpenGround
- Verify Data Migration using PowerBI

USACE gINT Data Migration



Valued at > $650,000,000

~ 9000 Projects

> 210,000 Locations

> 9,000,000 Feet of Drilling

Great ROI, but it is a lot of manual effort!

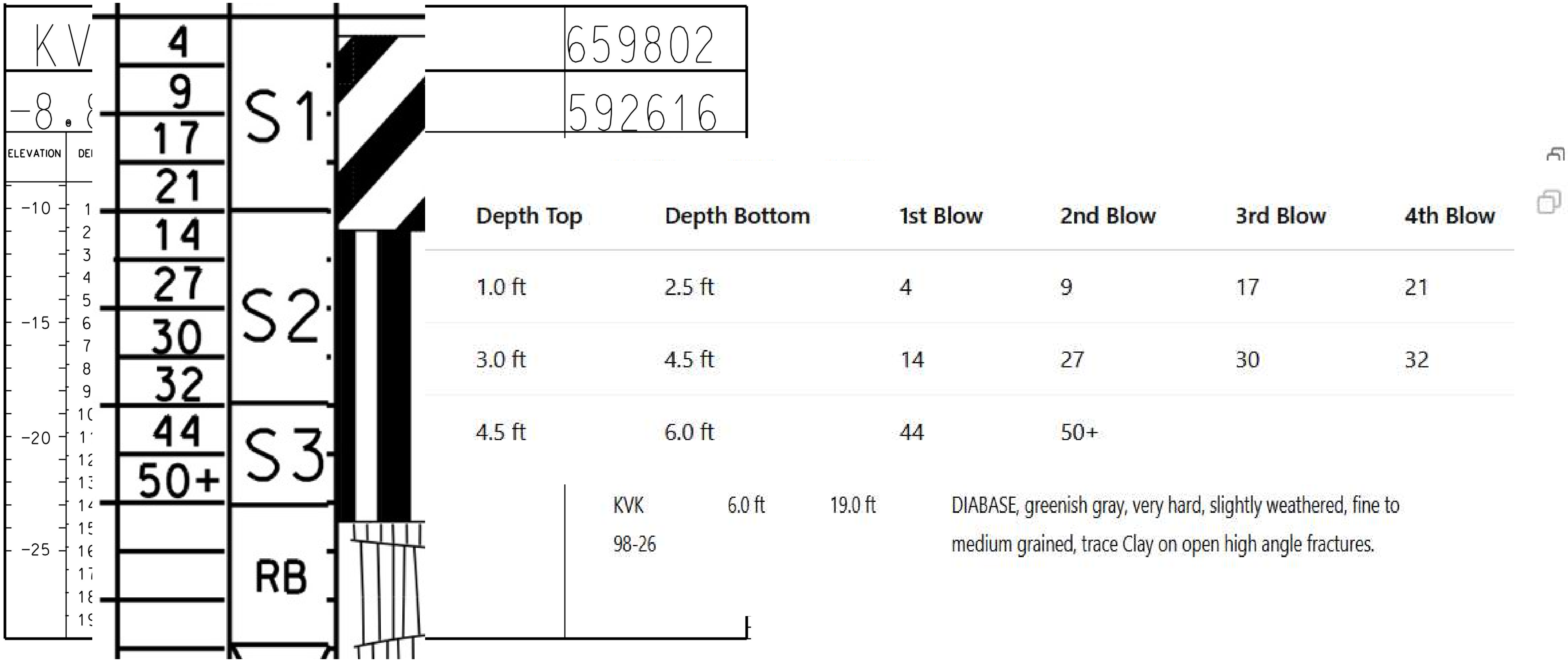
Why not just use an LLM (ChatGPT)?

Prompt

You are a geotechnical engineering expert familiar with borehole logs. What you have in the image is soil borehole log. I want a tabular format of each section of the log in a way I described below:

1. The log has a header which is located at the top of the log. The header contains the Location ID, Northing and Easting as coordinate and the surface elevation of the borehole. This information is from the Location Details Table for this log.
2. The log has a depth column that all data except the header information ties to representing the depth associated with the data in the log. There is an elevation column as well but we ignore the data since our log is depend on the depth column. I want to read the depth column and interpolate the depth for the body of the log because we need to find the correct depth associated with the data extraction in the next steps while we are creating the tables.
3. The log has a classification of material column where the geological layers are stored. Each soil layer is separated from each other by a line. The top layer line is "depth top" and bottom layer line is "bottom depth" of the layer. The text within the layer is layer description and if any value is placed within the parenthesis, it is the USCS classification for layer. I want you to form a classification table having all layer tabulated inside the following columns "Location ID", "depth top" , "depth bottom", "Description", and "USCS". Please make sure to calculate the correct depth using the depth data and interpolation you came up with in the previous step.
4. The Log has "Blows" column that store blow counts. I need you to tabulate the SPT blows following this criteria:
    1. The SPT blows can be 3 or 4 values for each record where the depth of first blows is considered as "depth top" and depth of last blows as "bottom depth". Each blow count with full penetration covers 6”. If 4 values are continuous then it has 4 blow count values. If only 3 values are continuous it only has 3 blow counts.
    2. If a value greater that 100 then the record must be cut off and the next value in the column should be the first blows of the next record.
    3. Form a table where SPT blows placed in the following columns: "Location ID", "depth top","depth bottom", "1st blow", "2nd blow", "3rd blow", and "4th blow" following the criteria as mentioned above.
5. The log has remark columns. each line under the remark column ties to depth and location ID. The final table for remarks must store all the remarks in the following columns, "Location ID" , "depth top", and "Remarks"

Example 1

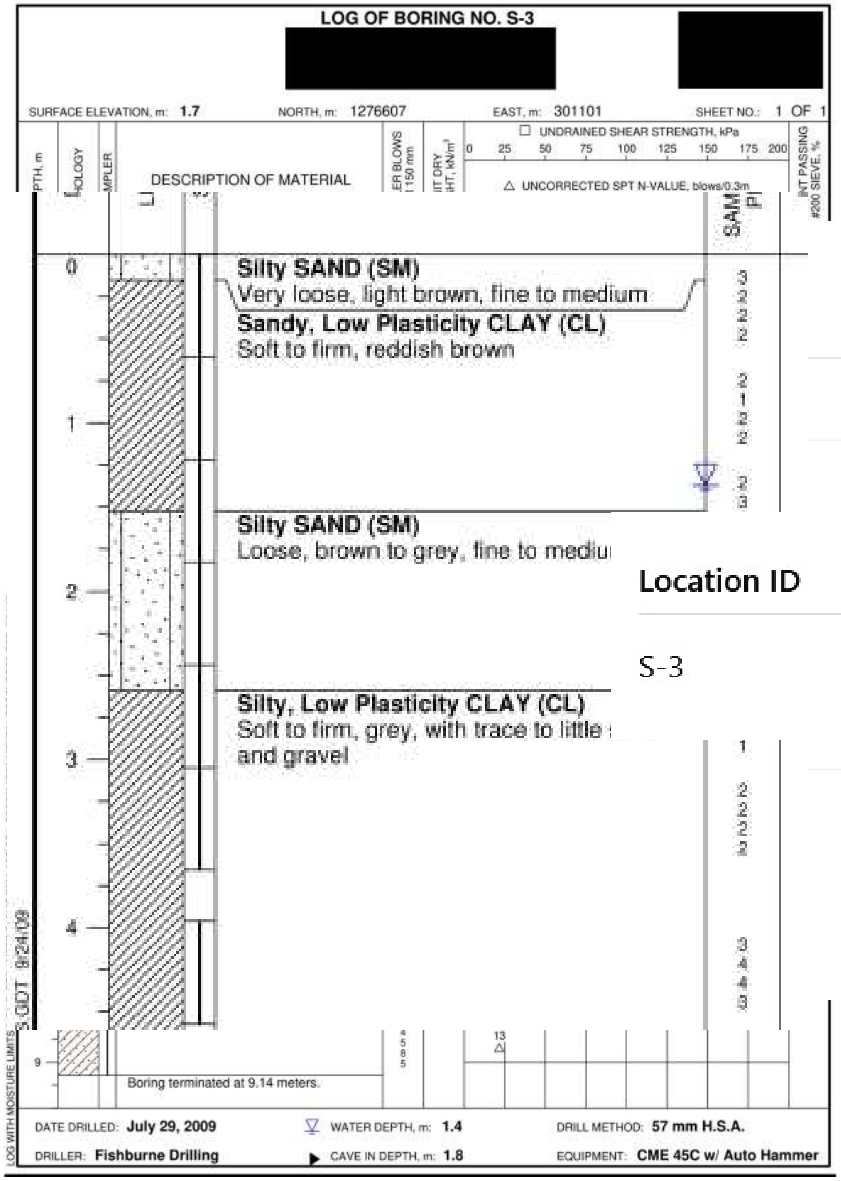


Depth Top	Depth Bottom	1st Blow	2nd Blow	3rd Blow	4th Blow
1.0 ft	2.5 ft	4	9	17	21
3.0 ft	4.5 ft	14	27	30	32
4.5 ft	6.0 ft	44	50+		

KVK 98-26	6.0 ft	19.0 ft	DIABASE, greenish gray, very hard, slightly weathered, fine to medium grained, trace Clay on open high angle fractures.

Dataforensics

Example 2



LOG OF BORING NO. S-3

[redacted]

[redacted]

SURFACE ELEVATION, m: **1.7** NORTH, m: 1276607 EAST, m: 301101 SHEET NO.: 1 OF 1

DESCRIPTION OF MATERIAL

☐ UNDRAINED SHEAR STRENGTH, kPa

△ UNCORRECTED SPT N-VALUE, blows/0.3m

Silty SAND (SM)
Very loose, light brown, fine to medium

Sandy, Low Plasticity CLAY (CL)
Soft to firm, reddish brown

Silty SAND (SM)
Loose, brown to grey, fine to mediu

Silty, Low Plasticity CLAY (CL)
Soft to firm, grey, with trace to little
and gravel

Boring terminated at 9.14 meters.

DATE DRILLED: **July 29, 2009** WATER DEPTH, m: **1.4** DRILL METHOD: **57 mm H.S.A.**

DRILLER: **Fishburne Drilling** CAVE IN DEPTH, m: **1.8** EQUIPMENT: **CME 45C w/ Auto Hammer**

Depth					
Depth Top (m)	Depth Bottom (m)	1st Blow	2nd Blow	3rd Blow	4th Blow
1.50	2.25	2	2	2	2
3.00	3.75	2	2	2	3
8.25	9.00	13	-	-	-

Location ID	Depth Top (m)	Remarks
S-3	9.14	Boring terminated at 9.14 meters.

9.14	Loose to firm, light grey, fine to coarse, little gravel (weathered coral limestone)	SC

Dataforensics

Embracing (and Trusting) AI for Reliable Data extraction

- Because of:
  - The challenges related to gINT data migration
  - Getting lots of geotechnical reports and soil logs in PDF format
- Started investigating AI technologies to automate data extraction from physical and digital reports
- The goal was providing reliable data extraction while reducing manual effort, increasing efficiency, and providing more robust datasets.

Dataforensics Data Library

- Over 6,500 users of our pLog Tablet data collection system
  - Integrates with gINT, OpenGround, ESdat, and LogPlot
- Users have logged over 8 million feet of drilling
- Over 525,000 boreholes
- Comprehensive Subsurface Database Schema
  - The most robust database schema available for managing geotechnical subsurface data
  - Allows robust data categorization and extraction

Dataforensics Data Library

- Dataforensics’ vast terminology library from our users, abbreviations and acronyms, developed over 20 years, enriches our data identification processes
- Training our AI model using this resource significantly boosted the accuracy of our deep learning models for the data extraction phase

AI Data Extraction Approach

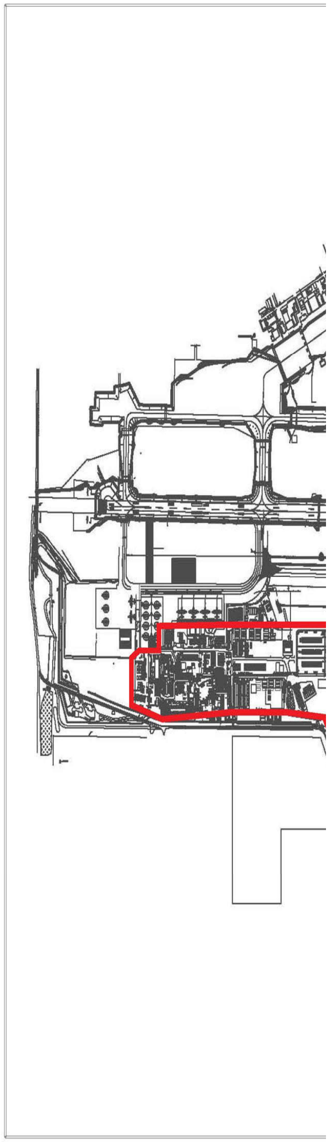
- Digital reports (scanned images or natively digital PDFs)

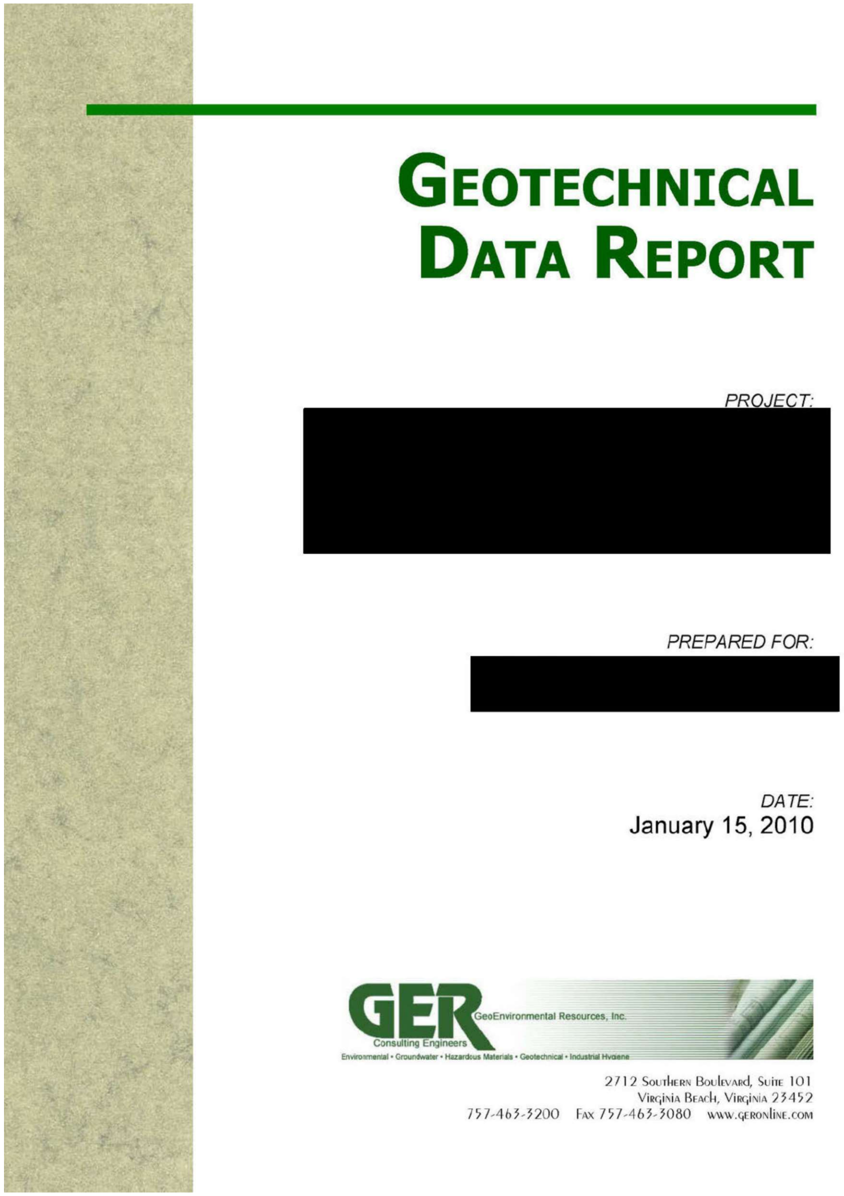
AI Data Extraction Approach

- Use Optical Character Recognition (OCR), Machine Vision/Deep Learning, Large Language Model (LLM), Algorithmic Approaches and Template Configuration to streamline and automate data extraction.
- Historical PDFs and scanned images are:
  - Processed
  - Categorized
  - Data types are classified
  - Accurately mapped to our structured database

Geotechnical Reports

- Categorize each page
  - Logs
  - Sections
  - Site Maps
  - Test Results (tabular data)
  - Text





GEOTECHNICAL
DATA REPORT

PROJECT:
[redacted]

PREPARED FOR:
[redacted]

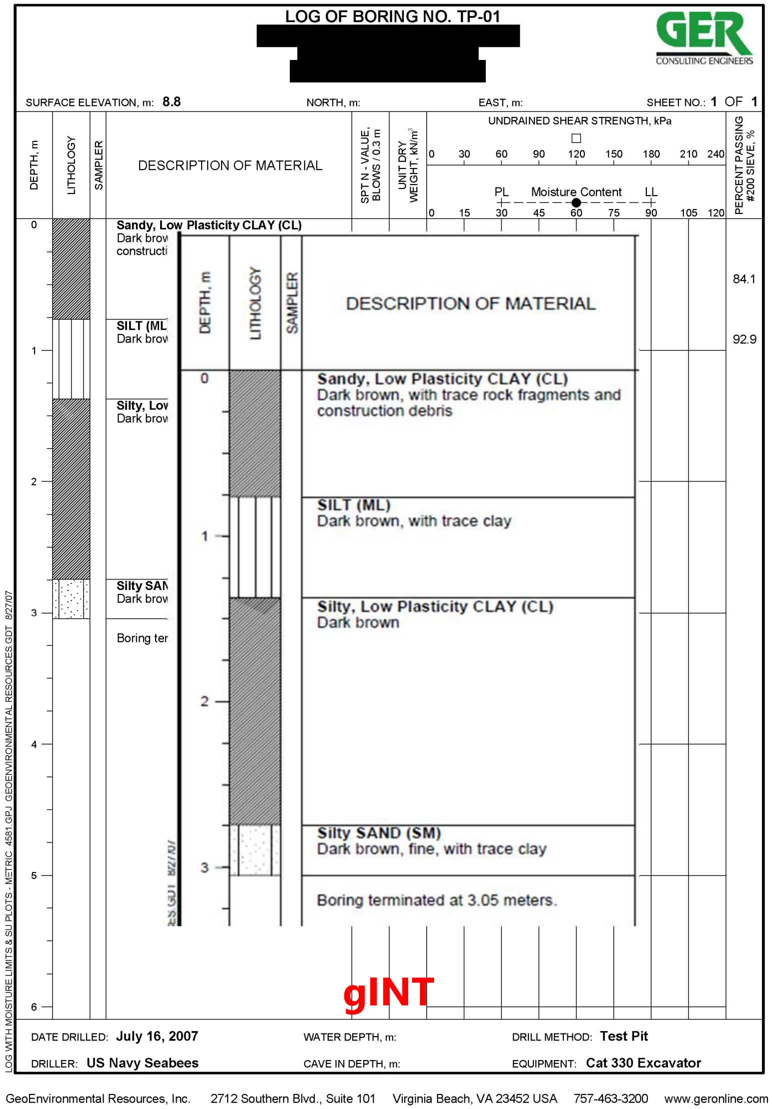
DATE:
January 15, 2010

GER GeoEnvironmental Resources, Inc.
Consulting Engineers
Environmental • Groundwater • Hazardous Materials • Geotechnical • Industrial Hygiene

2712 Southern Boulevard, Suite 101
Virginia Beach, Virginia 23452
757-463-3200 Fax 757-463-3080 www.geronline.com

But does it work? Can I trust it?

- Validated our tool/processes against
  - Original log from geotechnical report/gINT
  - Data migrated to OpenGround
  - Data converted from the geotechnical report
- Validated by using physical data comparison
- Validated by using graphical comparison



LOG OF BORING NO. TP-01

[redacted]

SURFACE ELEVATION, m: **8.8** NORTH, m: EAST, m: SHEET NO.: **1** OF **1**

DEPTH, m	LITHOLOGY	SAMPLER	DESCRIPTION OF MATERIAL	SPT N - VALUE, BLOWS / 0.3 m	UNIT DRY WEIGHT, kN/m³	UNDRAINED SHEAR STRENGTH, kPa / PL Moisture Content LL	PERCENT PASSING #200 SIEVE, %
0			**Sandy, Low Plasticity CLAY (CL)** Dark brow constructi				84.1
			SILT (ML Dark brow				92.9
			Silty, Lov Dark brow				
			Silty SAN Dark brow				
			Boring ter				

DEPTH, m	LITHOLOGY	SAMPLER	DESCRIPTION OF MATERIAL
0			**Sandy, Low Plasticity CLAY (CL)** Dark brown, with trace rock fragments and construction debris
			SILT (ML) Dark brown, with trace clay
			Silty, Low Plasticity CLAY (CL) Dark brown
			Silty SAND (SM) Dark brown, fine, with trace clay
			Boring terminated at 3.05 meters.

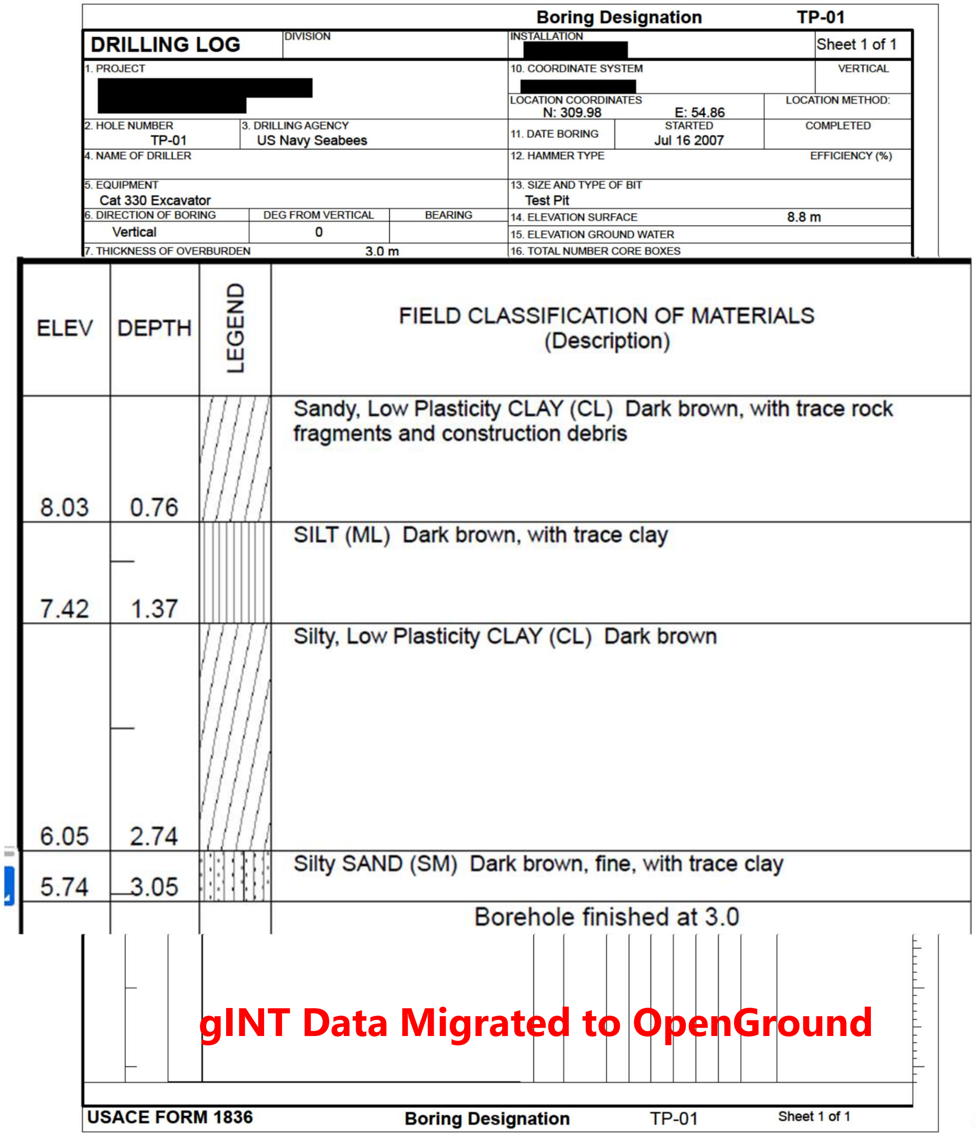
DATE DRILLED: **July 16, 2007** WATER DEPTH, m: DRILL METHOD: **Test Pit**

DRILLER: **US Navy Seabees** CAVE IN DEPTH, m: EQUIPMENT: **Cat 330 Excavator**

LOG WITH MOISTURE LIMITS & SU PLOTS - METRIC 4581.GPJ GEOENVIRONMENTAL RESOURCES.GDT 8/27/07

GeoEnvironmental Resources, Inc. 2712 Southern Blvd., Suite 101 Virginia Beach, VA 23452 USA 757-463-3200 www.geronline.com

GER
CONSULTING ENGINEERS
0
1
2
3
4
5
6
0 30 60 90 120 150 180 210 240
0 15 30 45 60 75 90 105 120
gINT

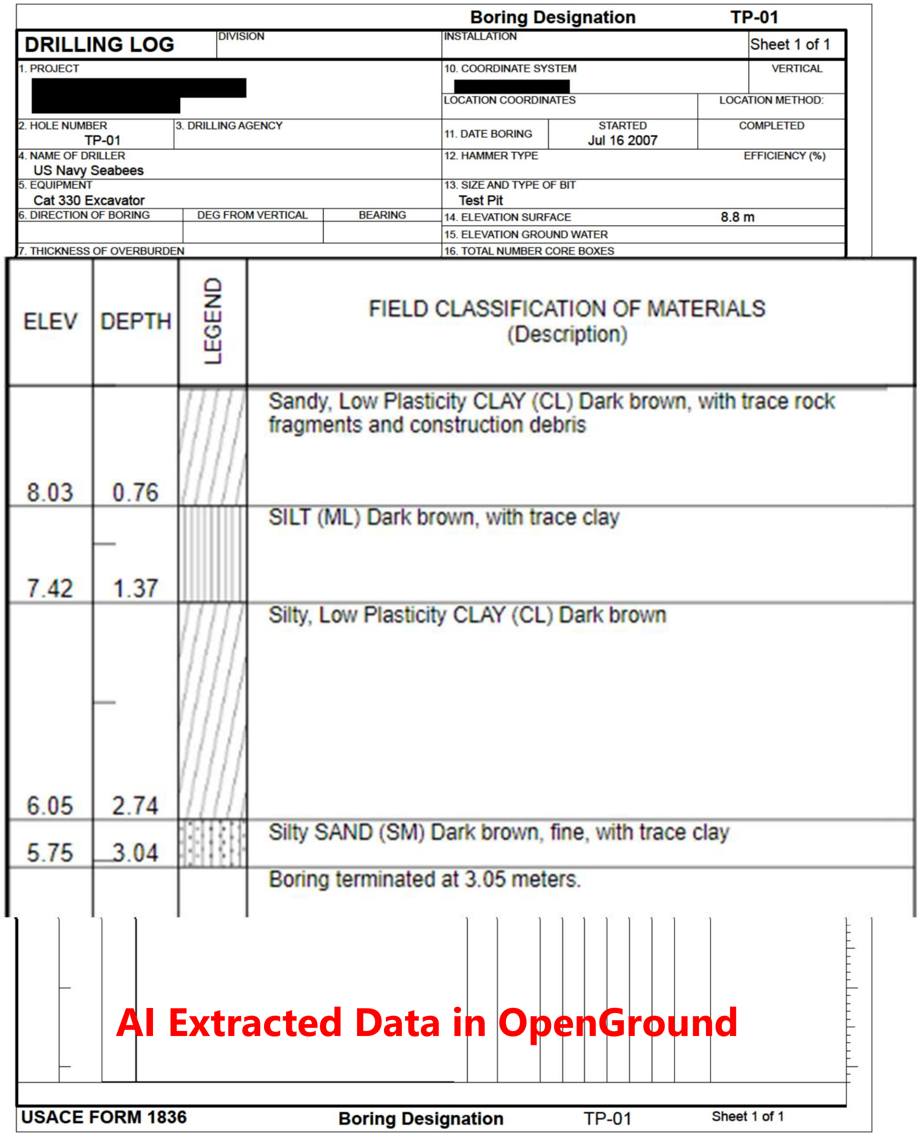


Boring Designation TP-01

DRILLING LOG	DIVISION	INSTALLATION [redacted]	Sheet 1 of 1
1. PROJECT [redacted]		10. COORDINATE SYSTEM [redacted]	VERTICAL
		LOCATION COORDINATES N: 309.98 E: 54.86	LOCATION METHOD:
2. HOLE NUMBER TP-01	3. DRILLING AGENCY US Navy Seabees	11. DATE BORING STARTED Jul 16 2007	COMPLETED
4. NAME OF DRILLER		12. HAMMER TYPE	EFFICIENCY (%)
5. EQUIPMENT Cat 330 Excavator		13. SIZE AND TYPE OF BIT Test Pit	
6. DIRECTION OF BORING Vertical	DEG FROM VERTICAL 0	BEARING	14. ELEVATION SURFACE 8.8 m
			15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN 3.0 m			16. TOTAL NUMBER CORE BOXES

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)
8.03	0.76		Sandy, Low Plasticity CLAY (CL) Dark brown, with trace rock fragments and construction debris
7.42	1.37		SILT (ML) Dark brown, with trace clay
6.05	2.74		Silty, Low Plasticity CLAY (CL) Dark brown
5.74	3.05		Silty SAND (SM) Dark brown, fine, with trace clay
			Borehole finished at 3.0

USACE FORM 1836 **Boring Designation** TP-01 **Sheet 1 of 1**



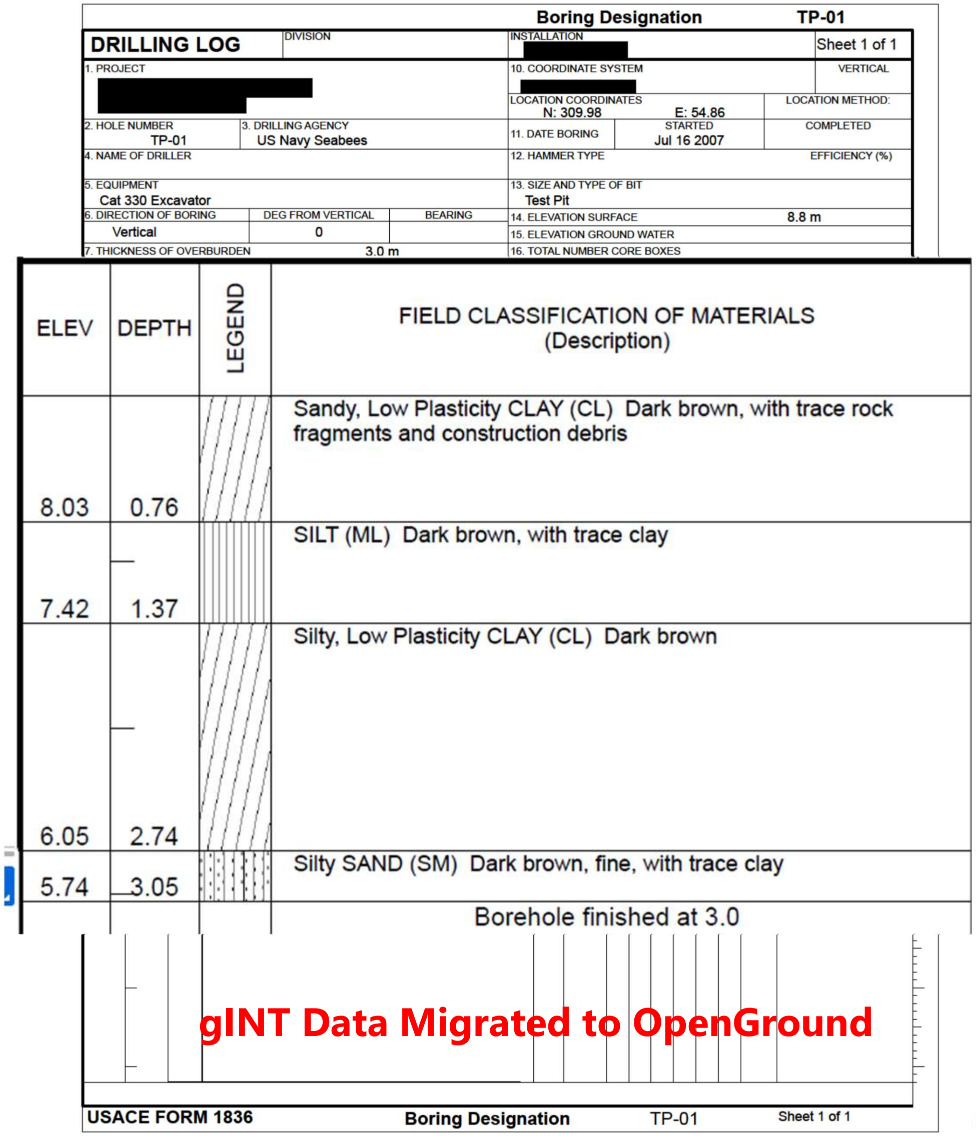
Boring Designation **TP-01**

DRILLING LOG	DIVISION	INSTALLATION	Sheet 1 of 1
1. PROJECT [redacted]		10. COORDINATE SYSTEM [redacted]	VERTICAL
		LOCATION COORDINATES	LOCATION METHOD:
2. HOLE NUMBER TP-01	3. DRILLING AGENCY	11. DATE BORING	STARTED Jul 16 2007 / COMPLETED
4. NAME OF DRILLER US Navy Seabees		12. HAMMER TYPE	EFFICIENCY (%)
5. EQUIPMENT Cat 330 Excavator		13. SIZE AND TYPE OF BIT Test Pit	
6. DIRECTION OF BORING	DEG FROM VERTICAL / BEARING	14. ELEVATION SURFACE	8.8 m
		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN		16. TOTAL NUMBER CORE BOXES	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)
8.03	0.76		Sandy, Low Plasticity CLAY (CL) Dark brown, with trace rock fragments and construction debris
7.42	1.37		SILT (ML) Dark brown, with trace clay
6.05	2.74		Silty, Low Plasticity CLAY (CL) Dark brown
5.75	3.04		Silty SAND (SM) Dark brown, fine, with trace clay
			Boring terminated at 3.05 meters.

AI Extracted Data in OpenGround

USACE FORM 1836 **Boring Designation** TP-01 Sheet 1 of 1



Boring Designation **TP-01**

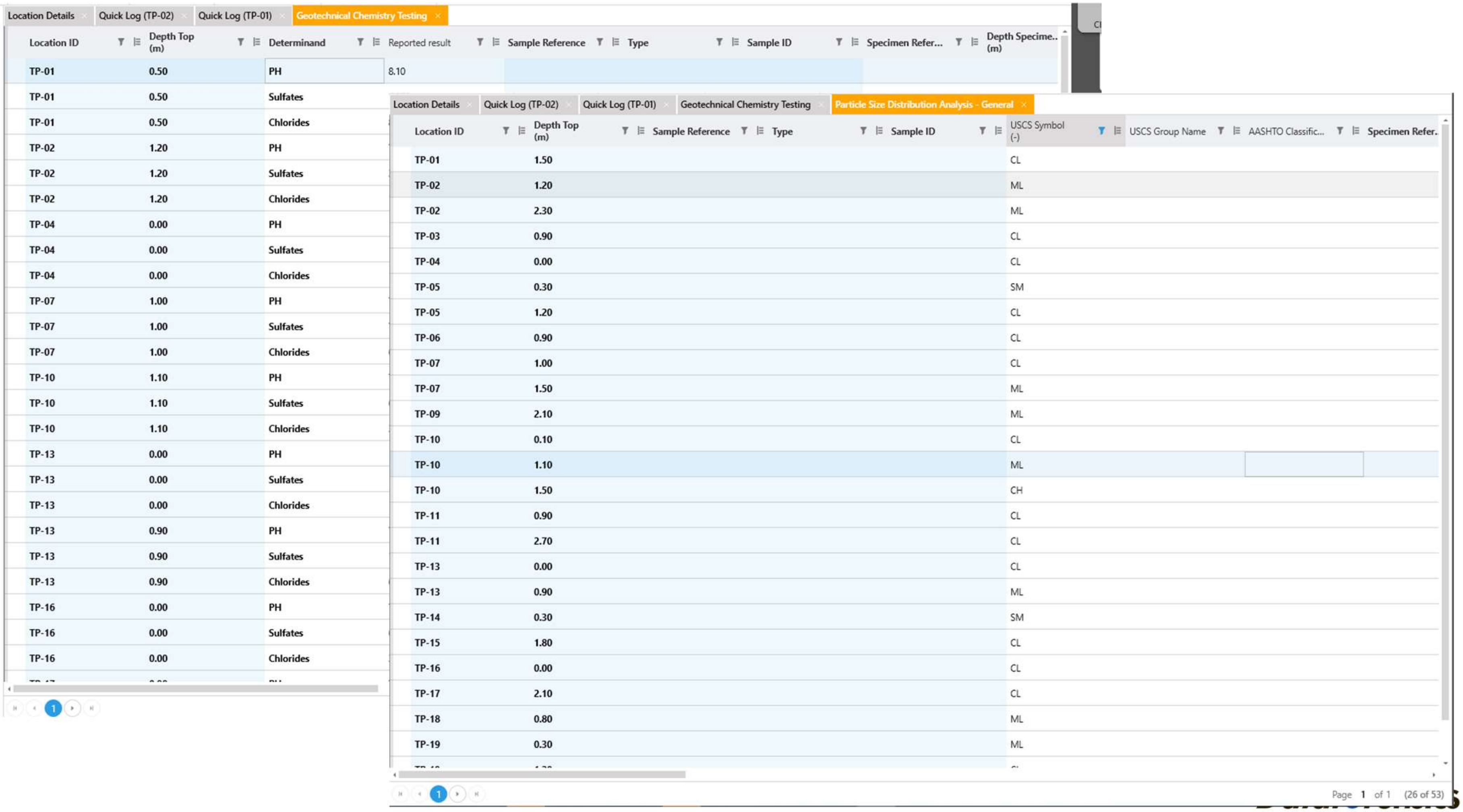
DRILLING LOG	DIVISION	INSTALLATION [redacted]	Sheet 1 of 1
1. PROJECT [redacted]		10. COORDINATE SYSTEM [redacted]	VERTICAL
		LOCATION COORDINATES N: 309.98 E: 54.86	LOCATION METHOD:
2. HOLE NUMBER TP-01	3. DRILLING AGENCY US Navy Seabees	11. DATE BORING	STARTED Jul 16 2007 / COMPLETED
4. NAME OF DRILLER		12. HAMMER TYPE	EFFICIENCY (%)
5. EQUIPMENT Cat 330 Excavator		13. SIZE AND TYPE OF BIT Test Pit	
6. DIRECTION OF BORING Vertical	DEG FROM VERTICAL 0 / BEARING	14. ELEVATION SURFACE	8.8 m
		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN	3.0 m	16. TOTAL NUMBER CORE BOXES	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)
8.03	0.76		Sandy, Low Plasticity CLAY (CL) Dark brown, with trace rock fragments and construction debris
7.42	1.37		SILT (ML) Dark brown, with trace clay
6.05	2.74		Silty, Low Plasticity CLAY (CL) Dark brown
5.74	3.05		Silty SAND (SM) Dark brown, fine, with trace clay
			Borehole finished at 3.0

gINT Data Migrated to OpenGround

USACE FORM 1836 **Boring Designation** TP-01 Sheet 1 of 1

Additional Data from OCR/AI Tool

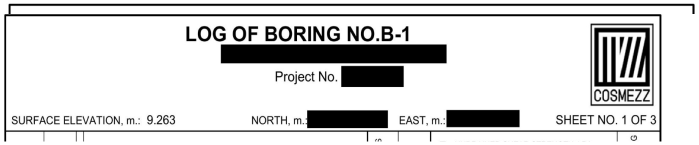


Location ID	Depth Top (m)	Determinand	Reported result	Sample Reference	Type	Sample ID	Specimen Refer...	Depth Specime... (m)
TP-01	0.50	PH	8.10					
TP-01	0.50	Sulfates						
TP-01	0.50	Chlorides						
TP-02	1.20	PH						
TP-02	1.20	Sulfates						
TP-02	1.20	Chlorides						
TP-04	0.00	PH						
TP-04	0.00	Sulfates						
TP-04	0.00	Chlorides						
TP-07	1.00	PH						
TP-07	1.00	Sulfates						
TP-07	1.00	Chlorides						
TP-10	1.10	PH						
TP-10	1.10	Sulfates						
TP-10	1.10	Chlorides						
TP-13	0.00	PH						
TP-13	0.00	Sulfates						
TP-13	0.00	Chlorides						
TP-13	0.90	PH						
TP-13	0.90	Sulfates						
TP-13	0.90	Chlorides						
TP-16	0.00	PH						
TP-16	0.00	Sulfates						
TP-16	0.00	Chlorides						

Location Details
Quick Log (TP-02)
Quick Log (TP-01)
Geotechnical Chemistry Testing
Particle Size Distribution Analysis - General

Location ID	Depth Top (m)	Sample Reference	Type	Sample ID	USCS Symbol (-)	USCS Group Name	AASHTO Classific...	Specimen Refer..
TP-01	1.50				CL			
TP-02	1.20				ML			
TP-02	2.30				ML			
TP-03	0.90				CL			
TP-04	0.00				CL			
TP-05	0.30				SM			
TP-05	1.20				CL			
TP-06	0.90				CL			
TP-07	1.00				CL			
TP-07	1.50				ML			
TP-09	2.10				ML			
TP-10	0.10				CL			
TP-10	1.10				ML			
TP-10	1.50				CH			
TP-11	0.90				CL			
TP-11	2.70				CL			
TP-13	0.00				CL			
TP-13	0.90				ML			
TP-14	0.30				SM			
TP-15	1.80				CL			
TP-16	0.00				CL			
TP-17	2.10				CL			
TP-18	0.80				ML			
TP-19	0.30				ML			

Report Format Agnostic



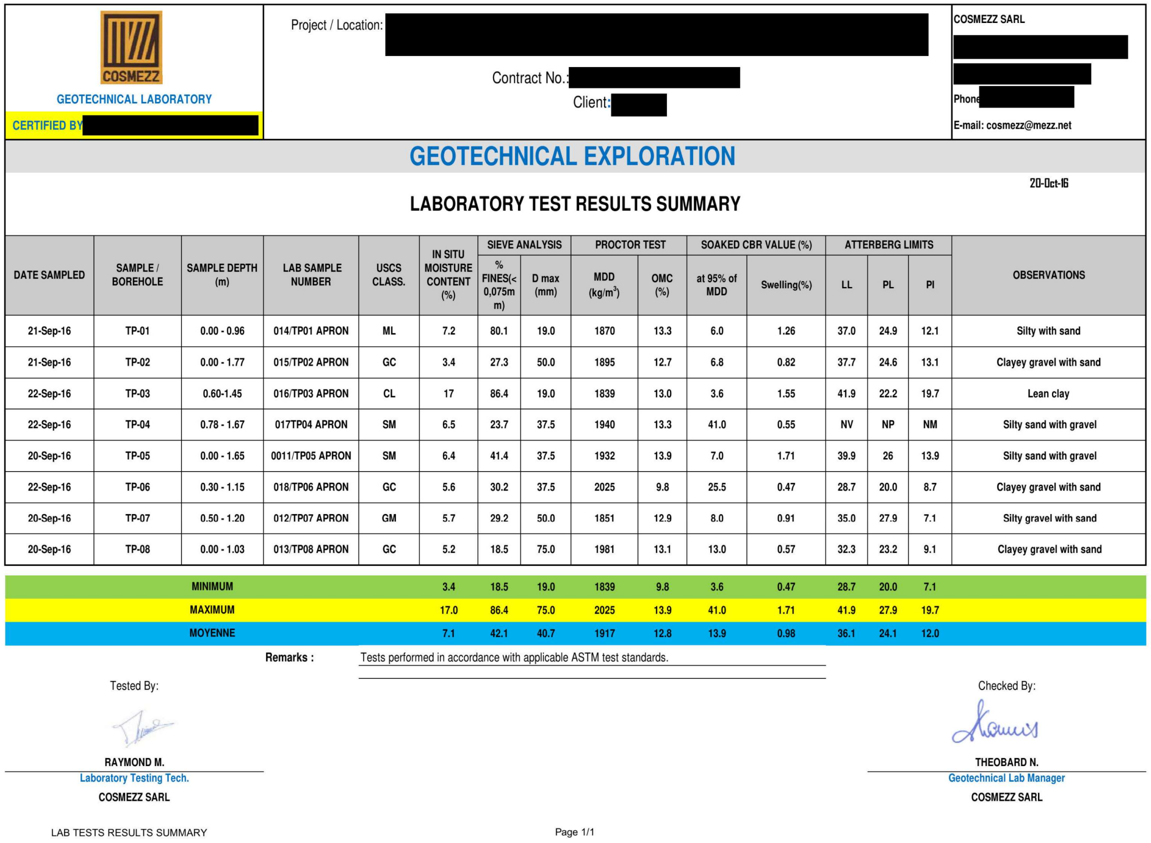
LOG OF BORING NO.B-1

[redacted]

Project No. [redacted]

COSMEZZ

SURFACE ELEVATION, m.: 9.263 NORTH, m.:[redacted] EAST, m.:[redacted] SHEET NO. 1 OF 3



COSMEZZ

GEOTECHNICAL LABORATORY

CERTIFIED BY[redacted]

Project / Location:[redacted]

Contract No.:[redacted]

Client:[redacted]

COSMEZZ SARL
[redacted]
[redacted]
Phone[redacted]
E-mail: cosmezz@mezz.net

GEOTECHNICAL EXPLORATION

20-Oct-16

LABORATORY TEST RESULTS SUMMARY

DATE SAMPLED	SAMPLE / BOREHOLE	SAMPLE DEPTH (m)	LAB SAMPLE NUMBER	USCS CLASS.	IN SITU MOISTURE CONTENT (%)	SIEVE ANALYSIS		PROCTOR TEST		SOAKED CBR VALUE (%)		ATTERBERG LIMITS			OBSERVATIONS
						% FINES(< 0,075mm)	D max (mm)	MDD (kg/m^3)	OMC (%)	at 95% of MDD	Swelling(%)	LL	PL	PI	
21-Sep-16	TP-01	0.00 - 0.96	014/TP01 APRON	ML	7.2	80.1	19.0	1870	13.3	6.0	1.26	37.0	24.9	12.1	Silty with sand
21-Sep-16	TP-02	0.00 - 1.77	015/TP02 APRON	GC	3.4	27.3	50.0	1895	12.7	6.8	0.82	37.7	24.6	13.1	Clayey gravel with sand
22-Sep-16	TP-03	0.60-1.45	016/TP03 APRON	CL	17	86.4	19.0	1839	13.0	3.6	1.55	41.9	22.2	19.7	Lean clay
22-Sep-16	TP-04	0.78 - 1.67	017TP04 APRON	SM	6.5	23.7	37.5	1940	13.3	41.0	0.55	NV	NP	NM	Silty sand with gravel
20-Sep-16	TP-05	0.00 - 1.65	0011/TP05 APRON	SM	6.4	41.4	37.5	1932	13.9	7.0	1.71	39.9	26	13.9	Silty sand with gravel
22-Sep-16	TP-06	0.30 - 1.15	018/TP06 APRON	GC	5.6	30.2	37.5	2025	9.8	25.5	0.47	28.7	20.0	8.7	Clayey gravel with sand
20-Sep-16	TP-07	0.50 - 1.20	012/TP07 APRON	GM	5.7	29.2	50.0	1851	12.9	8.0	0.91	35.0	27.9	7.1	Silty gravel with sand
20-Sep-16	TP-08	0.00 - 1.03	013/TP08 APRON	GC	5.2	18.5	75.0	1981	13.1	13.0	0.57	32.3	23.2	9.1	Clayey gravel with sand
		MINIMUM			3.4	18.5	19.0	1839	9.8	3.6	0.47	28.7	20.0	7.1	
		MAXIMUM			17.0	86.4	75.0	2025	13.9	41.0	1.71	41.9	27.9	19.7	
		MOYENNE			7.1	42.1	40.7	1917	12.8	13.9	0.98	36.1	24.1	12.0	

Remarks : Tests performed in accordance with applicable ASTM test standards.

Tested By:

RAYMOND M.
Laboratory Testing Tech.
COSMEZZ SARL

Checked By:

THEOBARD N.
Geotechnical Lab Manager
COSMEZZ SARL

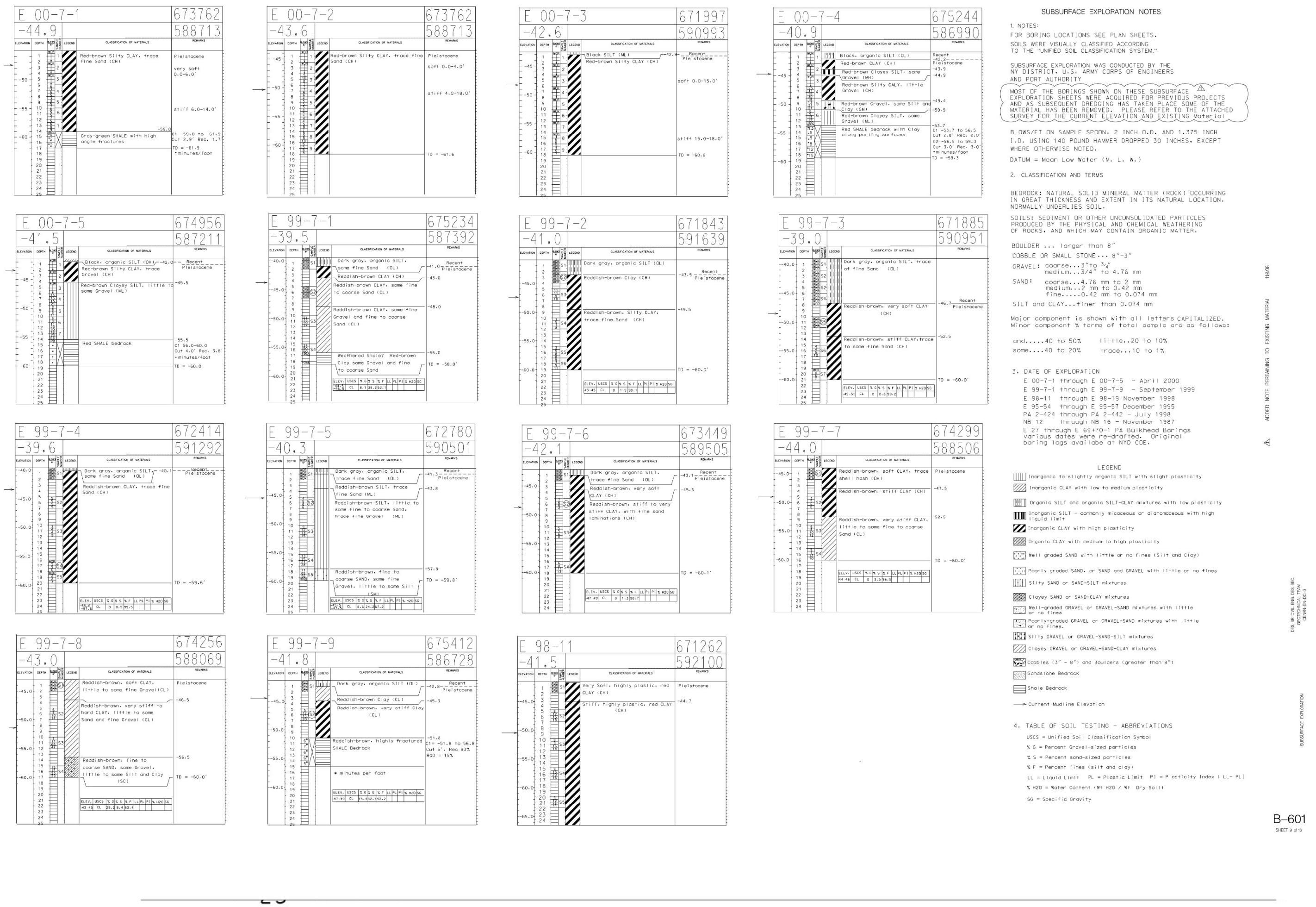
LAB TESTS RESULTS SUMMARY

Page 1/1

Plan Sheets

- Extract each individual borehole
- Then run the same process we use for the full borehole log

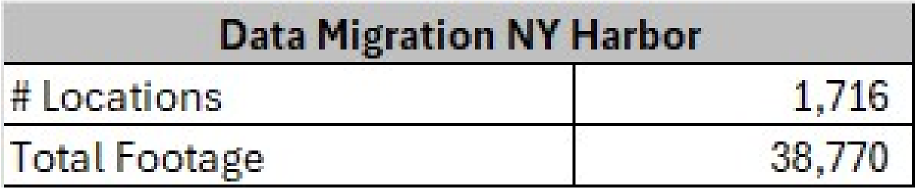
E 99-7-9
675412



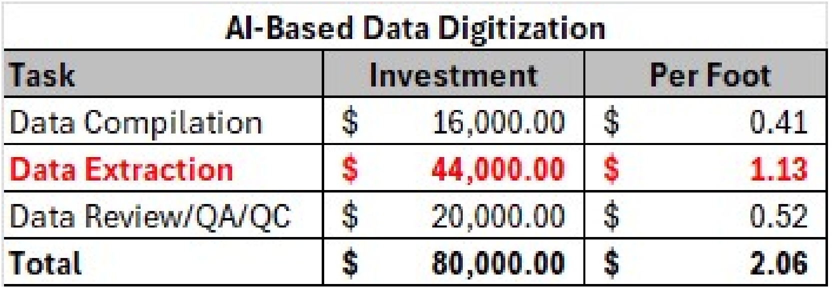
Is it more cost effective?

- Generally – Yes
- The more we train it, the more it becomes more cost effective

NY Harbor – Data Digitization

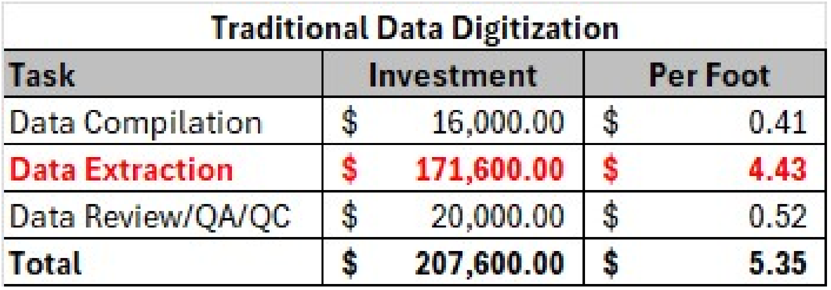


Data Migration NY Harbor	
# Locations	1,716
Total Footage	38,770



AI-Based Data Digitization

Task	Investment	Per Foot
Data Compilation	$ 16,000.00	$ 0.41
Data Extraction	**$ 44,000.00**	**$ 1.13**
Data Review/QA/QC	$ 20,000.00	$ 0.52
Total	**$ 80,000.00**	**$ 2.06**



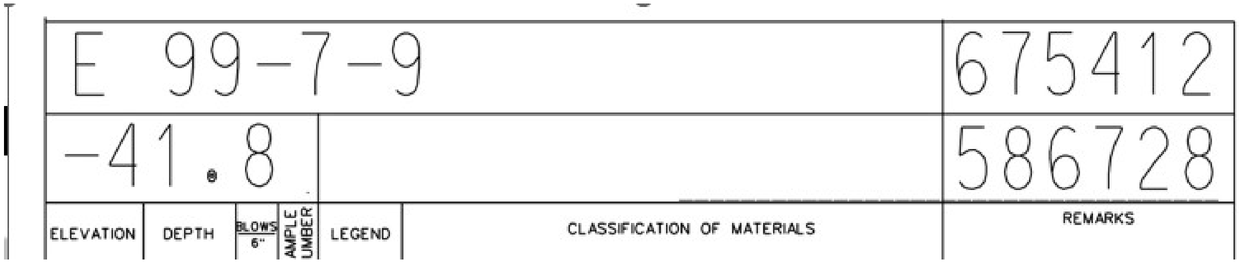
Traditional Data Digitization

Task	Investment	Per Foot
Data Compilation	$ 16,000.00	$ 0.41
Data Extraction	**$ 171,600.00**	**$ 4.43**
Data Review/QA/QC	$ 20,000.00	$ 0.52
Total	**$ 207,600.00**	**$ 5.35**

Completed data digitization and QA in less than 6 weeks!

NY Harbor – Accuracy

- Was it reliable?
  - In most cases, our tool extracts data **MORE** reliably than the input completed by humans!
  - Legibility issues. If humans can’t read it easily, AI cannot either.
  - Inconsistent reporting of data



E 99-7-9

675412

-41.8

586728

ELEVATION	DEPTH	BLOWS 6"	AMPLE UMBER	LEGEND	CLASSIFICATION OF MATERIALS	REMARKS

Summary

- It is easier today to create value from your historical geotechnical data than ever before
- Whether the data is in gINT, scanned images or native PDF formats it is possible to extract data from logs, tables, lab test results, etc to create a robust view of the subsurface
- Software with a comprehensive data model (OpenGround), Dataforensics gINT Data Migration Tool and Dataforensics ReLog AI Data Extraction Tool serve as key components to this process

Contact:
Scott Deaton
www.dataforensics.net
sdeaton@dataforensics.net
678-367-0871