APPALACHIAN STORAGE HUB (ASH) PROJECT

STRATEGY 1: DATA COLLECTION

Jessica Pierson Moore
West Virginia Geological and Economic Survey

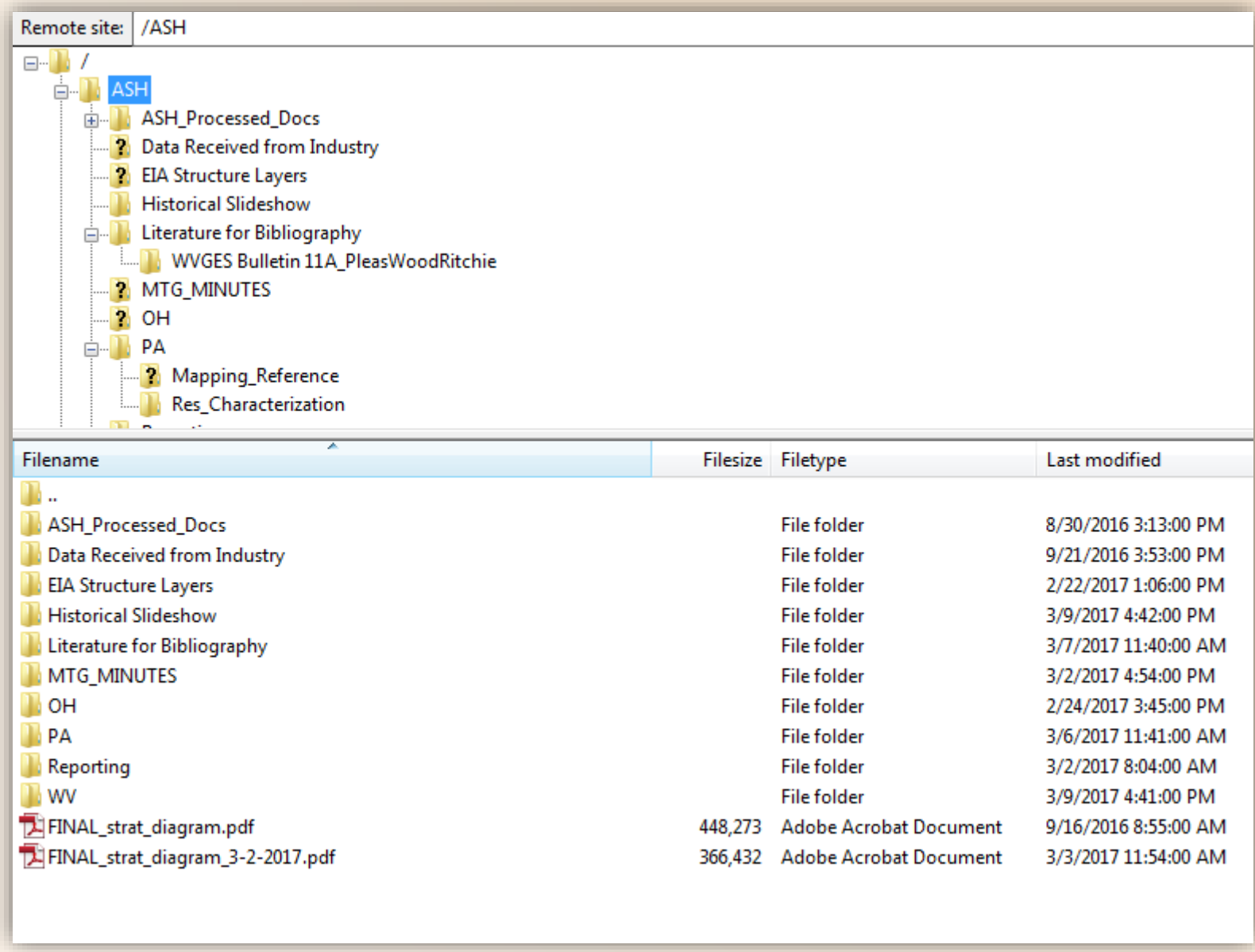
WVGES
GEOLOGY UNDERLIES IT ALL

DATA COLLECTION

- Flexible, iterative process that can be modified depending on project needs
- Uses format and template derived from previous work
- Database will be built to ensure maximum efficiency of technology transfers
- 3 Main Tasks:
  - Identify and assemble well log and core data
  - Identify previous studies of interest
  - Create a project database

FILE SHARING

- Researchers submit information as it is gathered/interpreted
- Each folder organized by state
- Linked to online searchable database



PROJECT WEBSITE

https://gisonline.wvgs.wvnet.edu/ASH/securepages/Default.aspx — ASH -Main Page

Appalachian Storage Hub

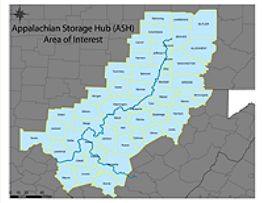
Appalachian Storage Hub Main Page
Welcome jmoore
◇ Profile ◇ Logout

MAIN › Data › Resources ›

- ASH Document Search
- File Naming Conventions
- File Category List/Codes
- AOI State/County Codes
- AOI Formation List/Codes
- Document Identifier (PDF)
- Header Data Format

New

Project Info



Area of Interest Map (PDF)

ASH Quarterly Reports

◇ Feb 2017, Appalachian Storage Hub (ASH) Quarterly Report (PDF)
◇ Oct 2016, Appalachian Storage Hub (ASH) Quarterly Report (PDF)

ASH Meeting Minutes

◇ 02-07-17 Meeting (PDF)
◇ 01-05-17 Meeting (PDF)
◇ 12-07-16 Meeting (PDF)
◇ 11-09-16 Meeting (PDF)
◇ 10-05-16 Meeting (PDF)
◇ 09-08-16 Meeting (PDF)

Dates to Remember

- March 14, 2017 Appalachian Storage Hub (ASH) Project Semi-Annual Meeting (Agenda)

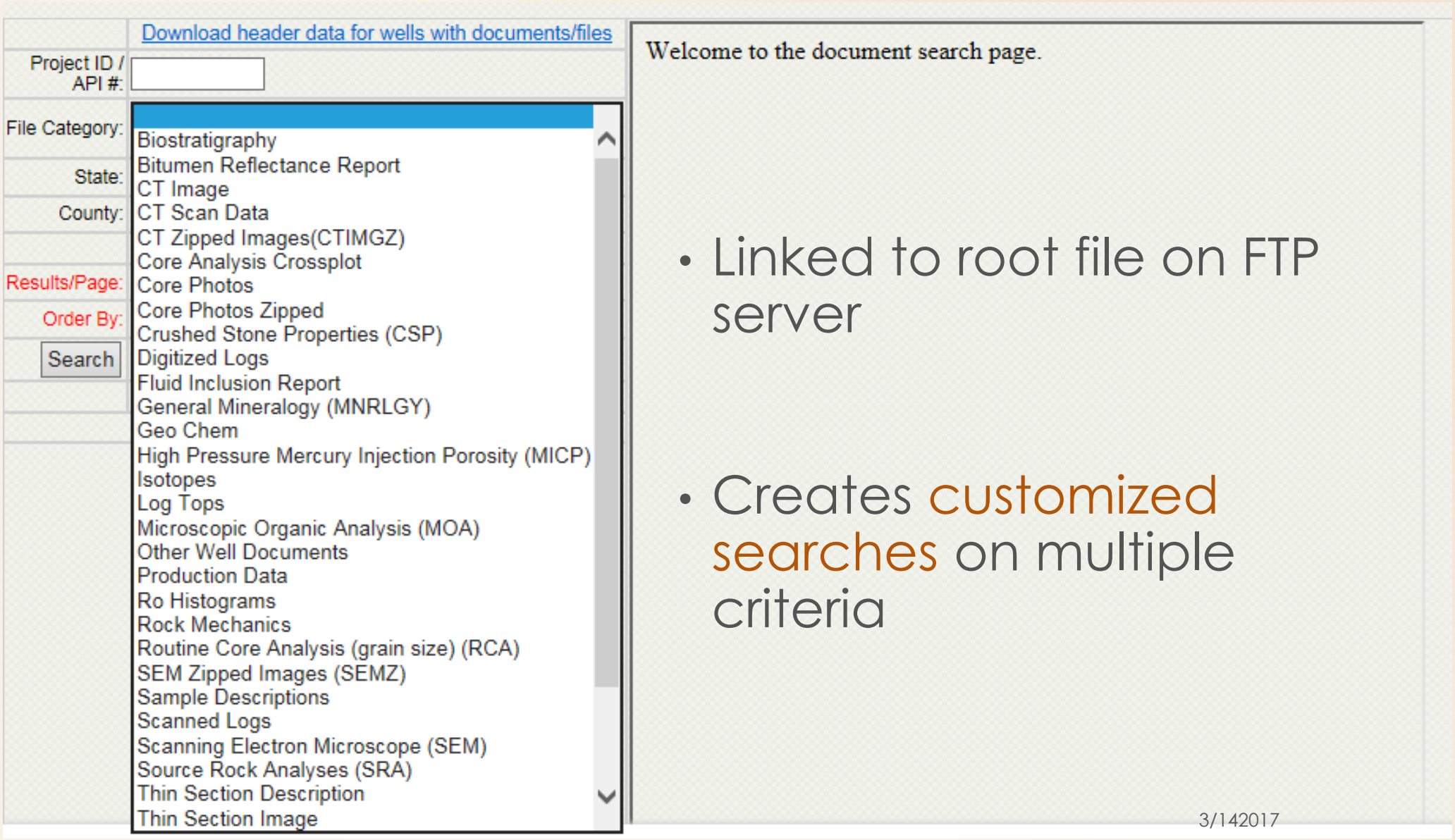
https://gisonline.wvgs.wvnet.edu/ASH/

Consortium Member Research Geological Surveys:

ASH Partners:

AEP ◇ Antero ◇ Blue Racer ◇ Charleston Area Alliance ◇ Chevron ◇ Dominion ◇ EQT ◇ First Energy ◇ Mountaineer NGL Storage LLC ◇ Noble Energy ◇ Southwestern ◇ XTO Energy ◇ WVONGA

WELL FILE DOCUMENT SEARCH



- Linked to root file on FTP server
- Creates customized searches on multiple criteria

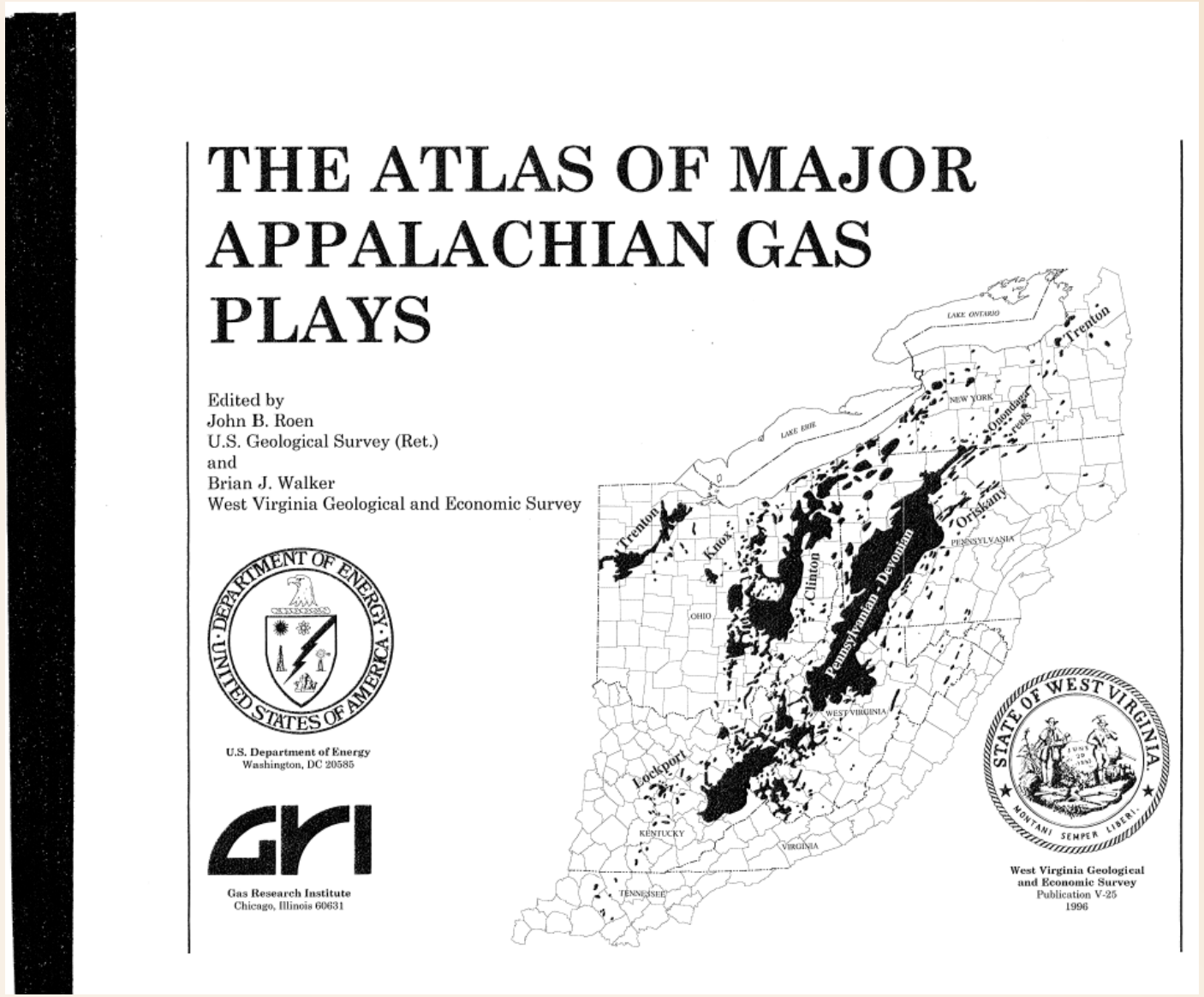
ASH Document File Counts as of March 9, 2017

File number will increase as Mapping and Reservoir Characterization strategies proceed

As of March 9, 2017		
807 documents (785 well, 22 multi), 1455 document records (when cross APIs)		
File Category	Code	Counts
Biostratigraphy	BIOSTRAT	0
Bitumen Reflectance Report	BRR	28
CT Image	CTIMG	0
CT Scan Data	CTDAT	0
CT Zipped Images(CTIMGZ)	CTIMGZ	0
Core Analysis Crossplot	CRANXPLT	29
Core Photos	CRPH	236
Core Photos Zipped	CRPHZ	4
Crushed Stone Properties (CSP)	CSP	0
Digitized Logs	DLOG	66
Fluid Inclusion Report	FIR	0
General Mineralogy (MNRLGY)	MNRLGY	4
Geo Chem	GEOCHEM	19
High Pressure Mercury Injection Porosity (MICP)	MICP	2
Isotopes	ISO	1
Log Tops	LOGT	1
Microscopic Organic Analysis (MOA)	MOA	7
Non-Well Document	NWDOC	0
Other Well Documents	OTHR	570
Permeability	PERM	0
Porosity	PORO	0
Production Data	PROD	533
Ro Histograms	ROHIST	7
Rock Mechanics	RKMECH	0
Routine Core Analysis (grain size) (RCA)	RCA	1
SEM Zipped Images (SEMZ)	SEMZ	6
Sample Descriptions	SMDS	4
Scanned Logs	ELOG	135
Scanning Electron Microscope (SEM)	SEM	219
Source Rock Analyses (SRA)	SRA	106
Thin Section Description	TSDESC	1
Thin Section Image	TSIMG	14
Thin Section Zipped Images	TSIMGZ	0
Tight Rock Analysis (TRA)	TRA	1
Total Organic Carbon (TOC)	TOC	89
X-Ray Defraction (XRD)	XRD	62
X-Ray Fluorescence (XRF)	XRF	1

BIBLIOGRAPHY, COMPLETED PROJECTS, AND LINKS TO PUBLICATIONS

- Annotated bibliography is being compiled to enable keyword searches of pertinent literature
- Robust legacy dataset available, including many completed projects
- Publications usually reserved for purchase will also be made available



Also available:

Oil and Gas Bulletins for selected counties within the ASH area of interest

TIGHT GAS SANDS

Appalachian Basin Tight Gas Reservoirs Project Disclaimer Contact/Comments

Appalachian Oil and Natural Gas Research Consortium (About)

Project Info | System Overview | Interactive Mapping | Well Header Data | Well-Based E-Files (Logs) | Play-Based E-Files

Play-Based E-File search

Play Category: Clinton-Medina

Data Type:

Author (like):

Results/Page: 25

Order By: Data Type

Search Reset Export To Excel

8 Records Found, showing page 1 of 1 at 25 records per page

Details	Play Category	Data Type	Year	Author	File Name
Details	Clinton-Medina	Cross Section	1982	Diecchio, R.J.	MDIN_xsec_Diecchio_1983.pdf
Details	Clinton-Medina	Cross Section	1996	McCormac, M.P., Mychkovsky, G.O., Opritza, S.T., Riley R.A., Wolfe, M.E., Larsen, G.E., and Baranoski, M.T.	MDIN_xsec_McCormac_1996_p158_figScm-5.pdf
Details	Clinton-Medina	Cross Section	1996	McCormac, M.P., Mychkovsky, G.O., Opritza, S.T., Riley R.A., Wolfe, M.E., Larsen, G.E., and Baranoski, M.T.	MDIN_xsec_McCormac_1996_p157_figScm-4.pdf
Details	Clinton-Medina	Cross Section	2000	Ryder, R.T.	MDIN_xsec_Ryder_2000_i-2726_Sheet1.pdf
Details	Clinton-Medina	Report	2004	Burruss, R.C., and Ryder, R.T.	MDIN_rprt_USGS_2003.pdf
Details	Clinton-Medina	Report	1982	Diecchio, R.J.	MDIN_rprt_Diecchio_1982.pdf
Details	Clinton-Medina	Report	1984	Finley, R.J.	MDIN_rprt_Finley_1982.pdf
Details	Clinton-Medina	Stratigraphy	1996	McCormac, M.P., Mychkovsky, G.O., Opritza, S.T., Riley R.A., Wolfe, M.E., Larsen, G.E., and Baranoski, M.T.	MDIN_strd_McCormac_1996_p157_figScm-3.pdf

http://www.wvgs.wvnet.edu/atg/ProjectInfo.aspx

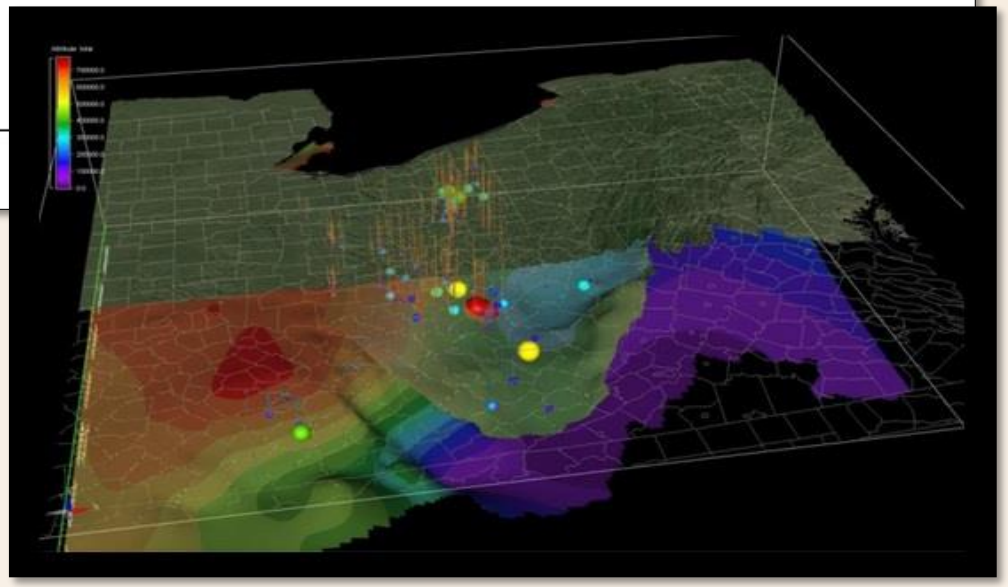
BRINE DISPOSAL FRAMEWORK

Final Report to

RPSEA

Research Partnership to Secure Energy for America

Development of Subsurface Brine Disposal Framework in the Northern Appalachian Basin



http://www.rpsea.org/projects/11122-73/

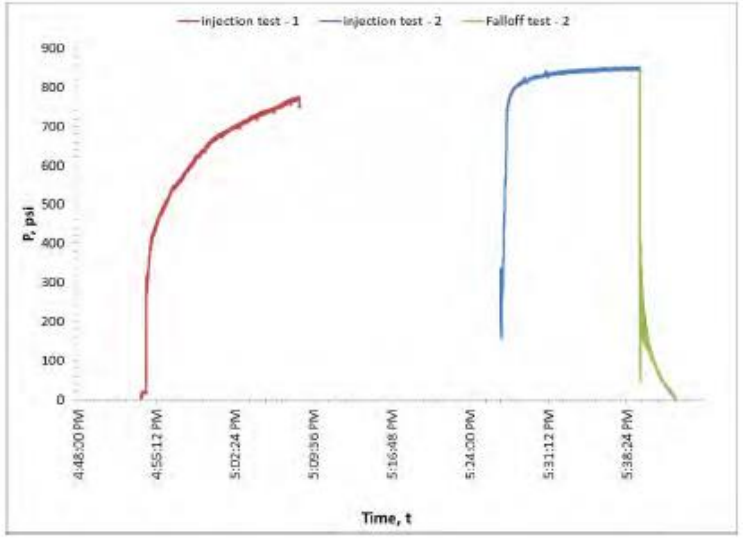


Figure 2-15. Wellhead pressure monitoring results from Clinton-Medina brine disposal well in the east-central Appalachian Basin.

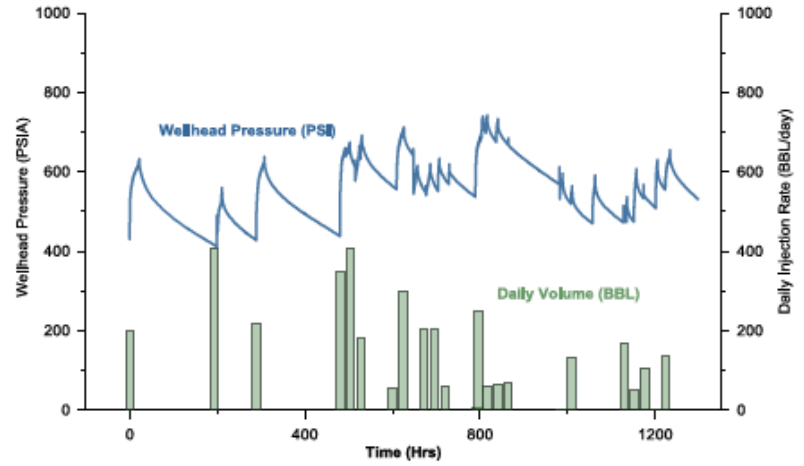
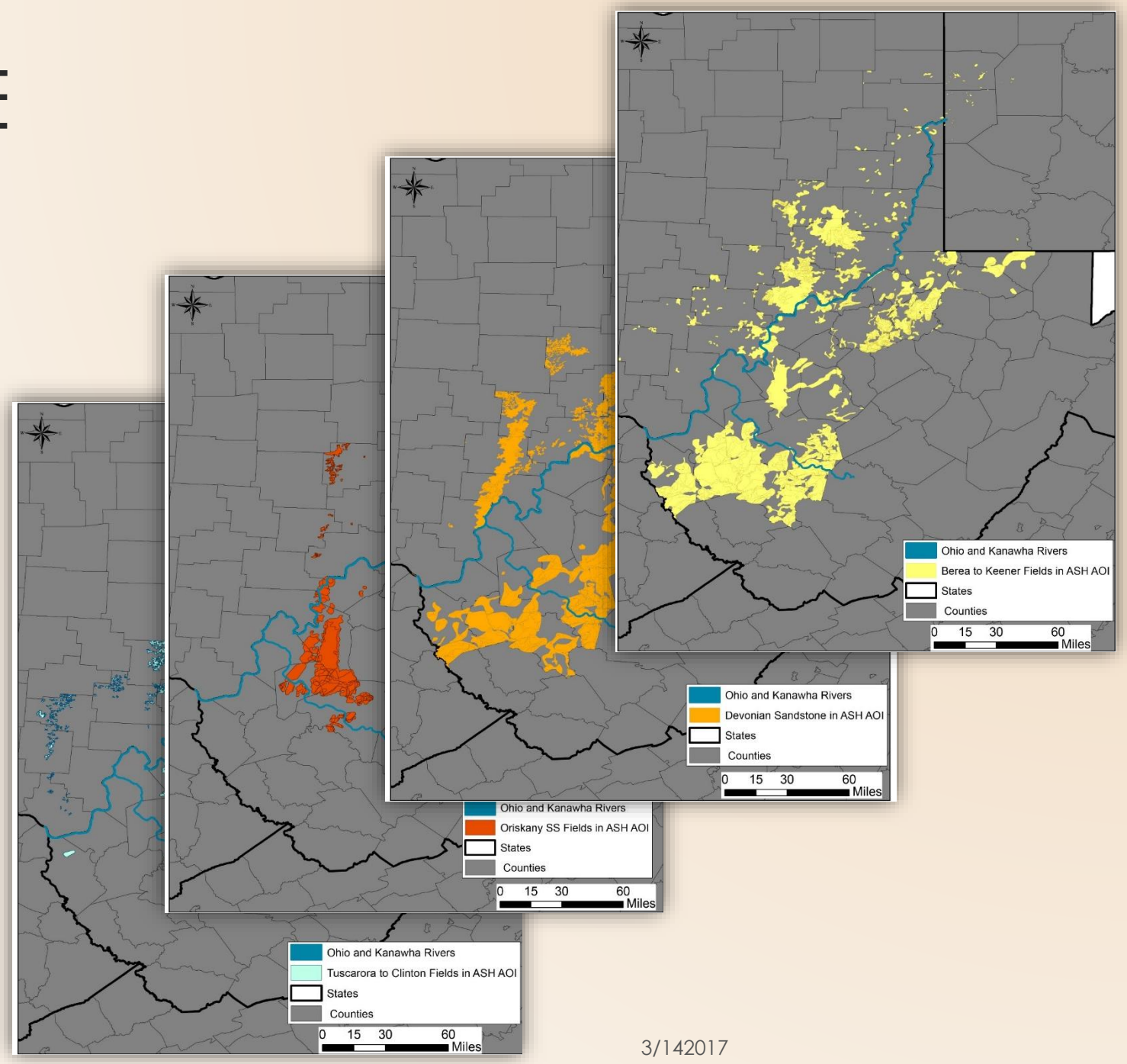


Figure 2-16. Wellhead pressure monitoring results from Newburg brine disposal well in the east-central Appalachian Basin.

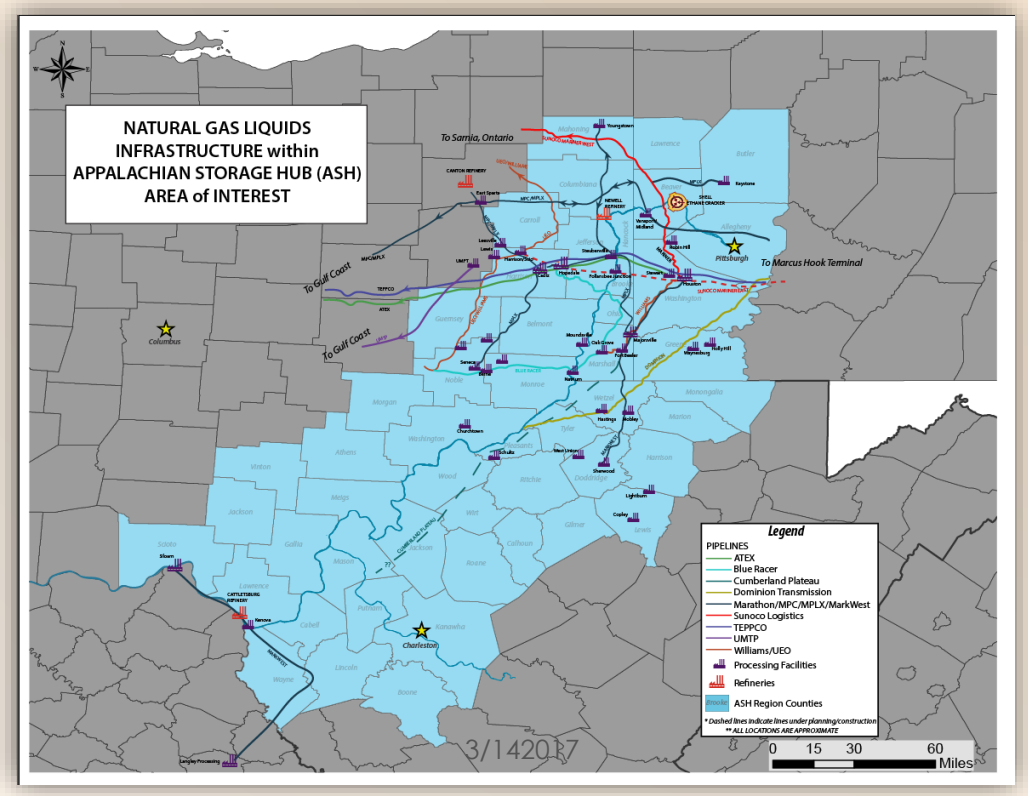
CARBON STORAGE

- Midwest Regional Carbon Sequestration Partnership
- Ongoing, collaborative research encompassing a ten-state region
- Includes detailed reservoir data at the field level as well as regional cross-sections



STATIC MAPS AND MAPPING FILES

- Master Petra project file; .las files and header data will be exported periodically and made available via data search
- Static maps: NGL Infrastructure, production, horizontal well locations
- Final maps of selected targets



APPALACHIAN STORAGE HUB (ASH) PROJECT

The Role of Petroleum Geology and Salt Production on Manufacturing and Development in the Appalachian Basin

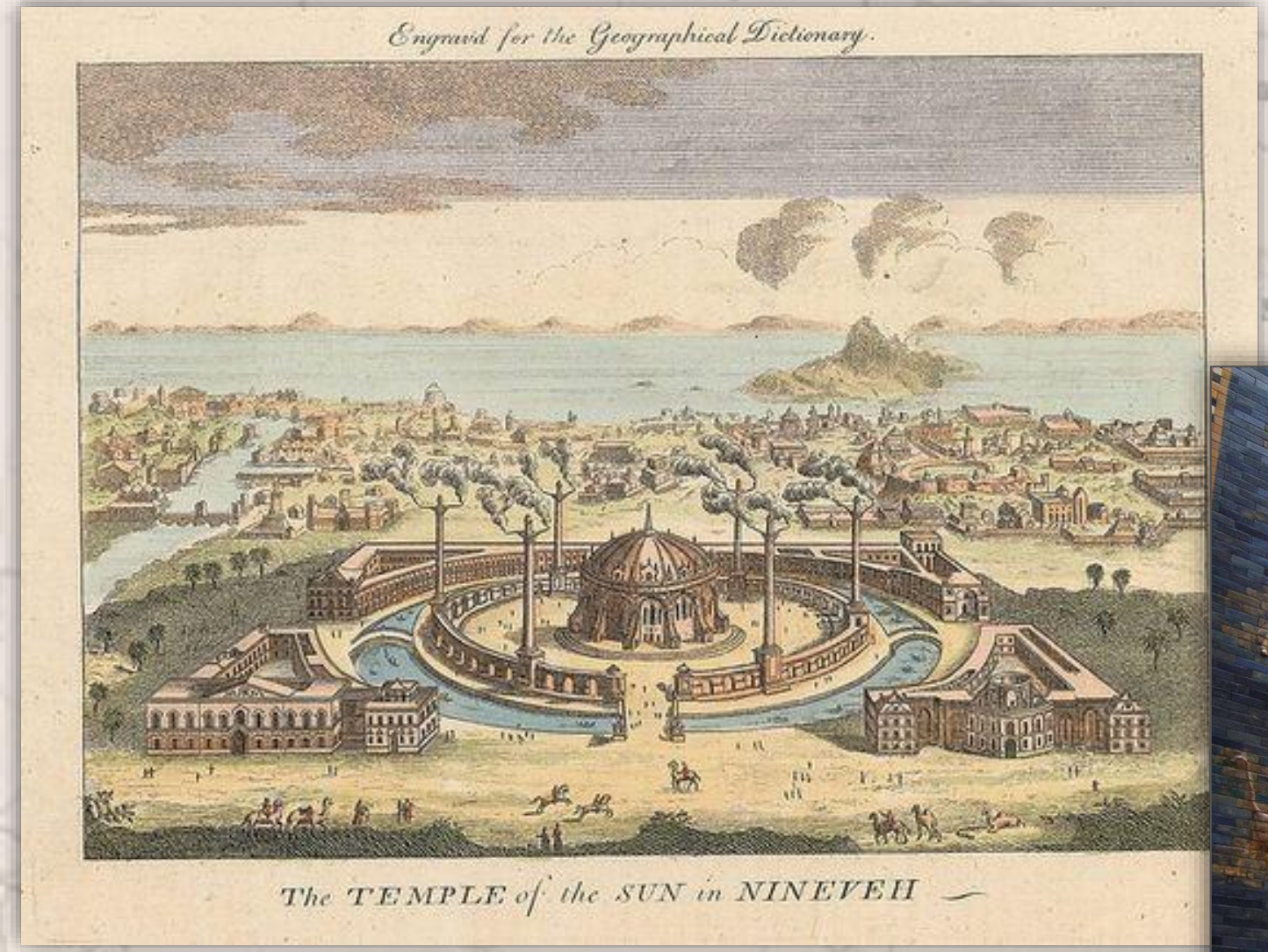
Dr. Israel Charles (I.C.) White, circa 1898

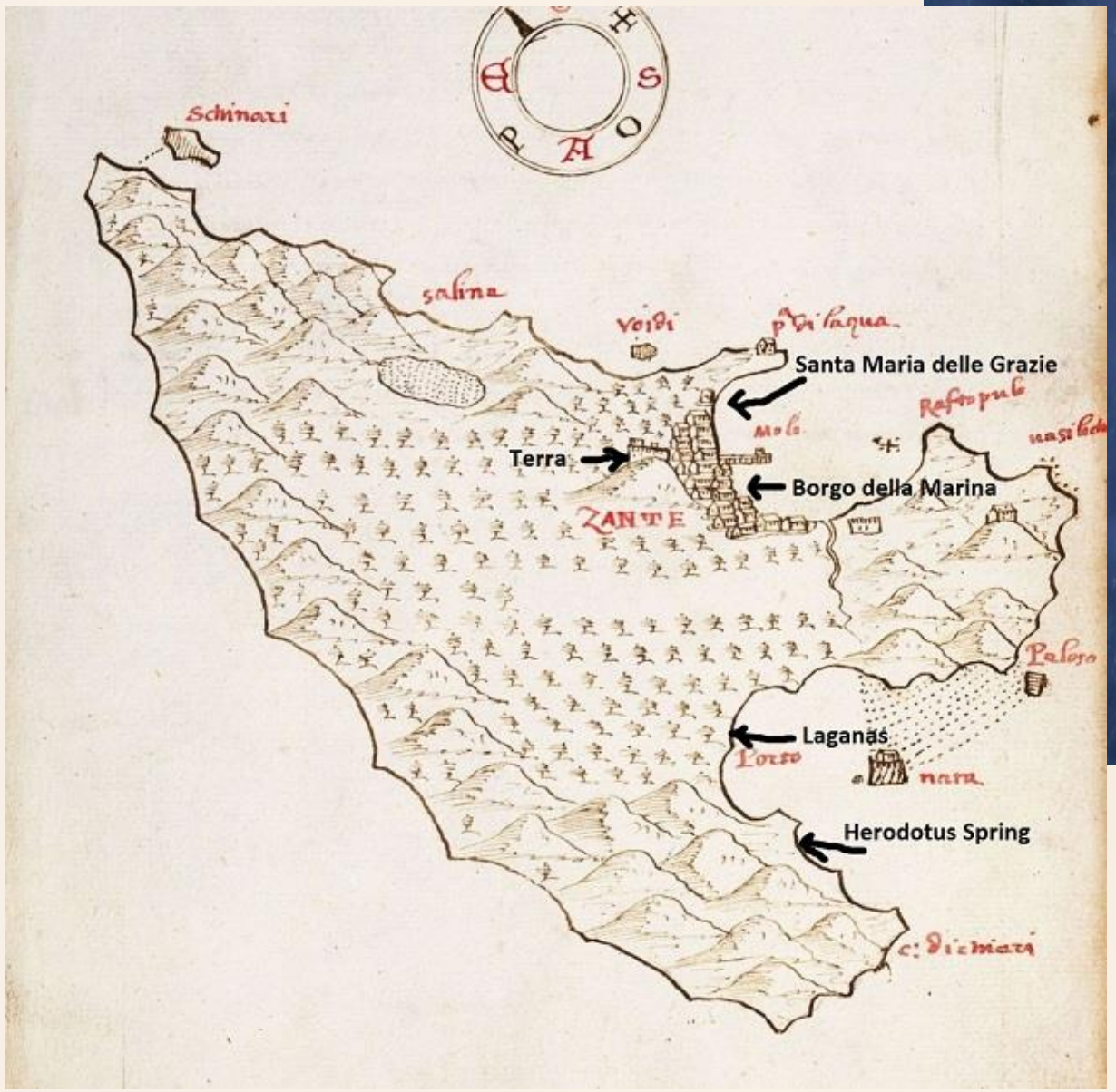
THE
NATURAL-GAS
JOURNAL

SUBSCRIPTION—
$2.00 EVERYWHERE

CONTENTS FOR SEPTEMBER, 1911

VOLUME 5
THIS NUMBER 9


Engraved for the Geographical Dictionary.
The TEMPLE of the SUN in NINEVEH


Schinari
salina
Voidi
p'ti Paqua
Santa Maria delle Grazie
Molo
Terra
Borgo della Marina
ZANTE
Laganas
Herodotus Spring

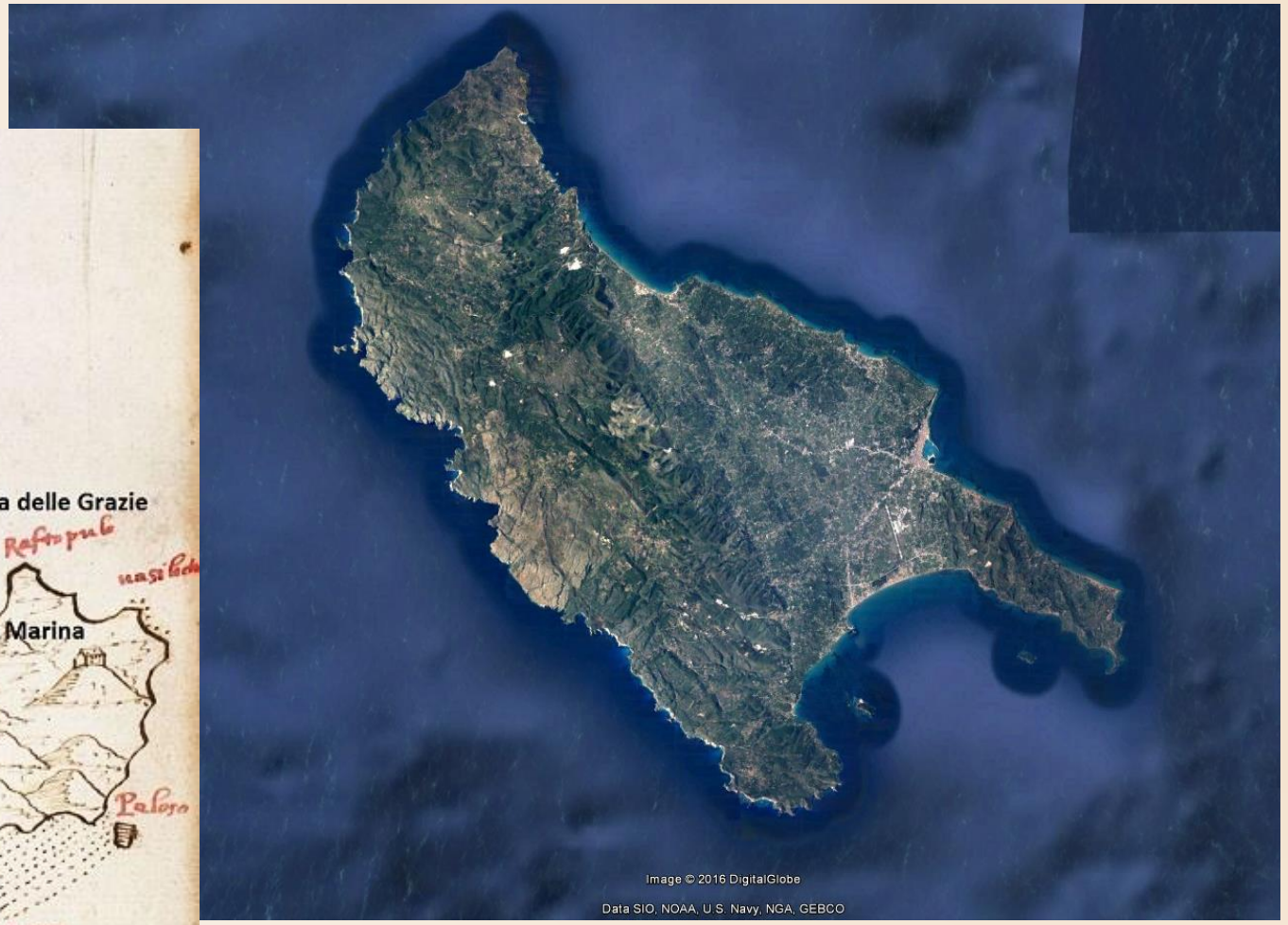


Image © 2016 DigitalGlobe
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

БЫВШІЙ ХРАМЪ ОГНЕПОКЛОННИКОВЪ (Въ Сураханахъ близъ Баку).

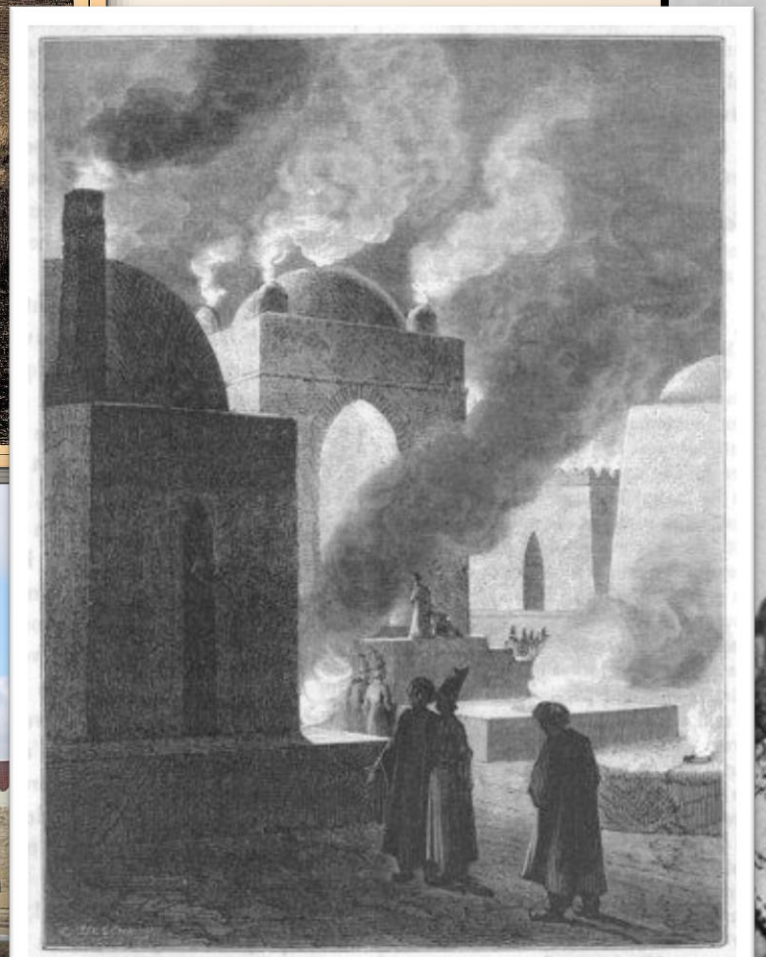
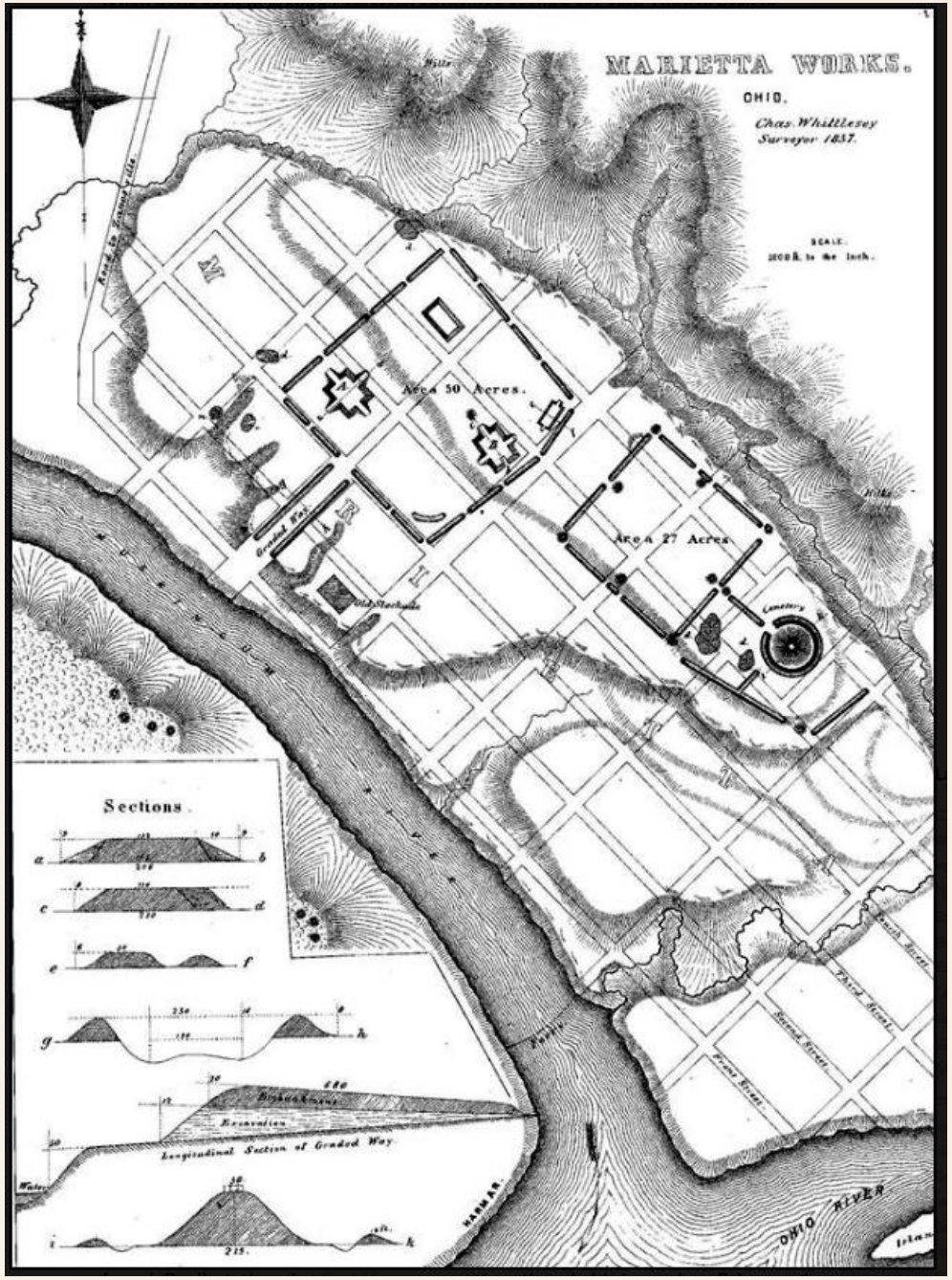
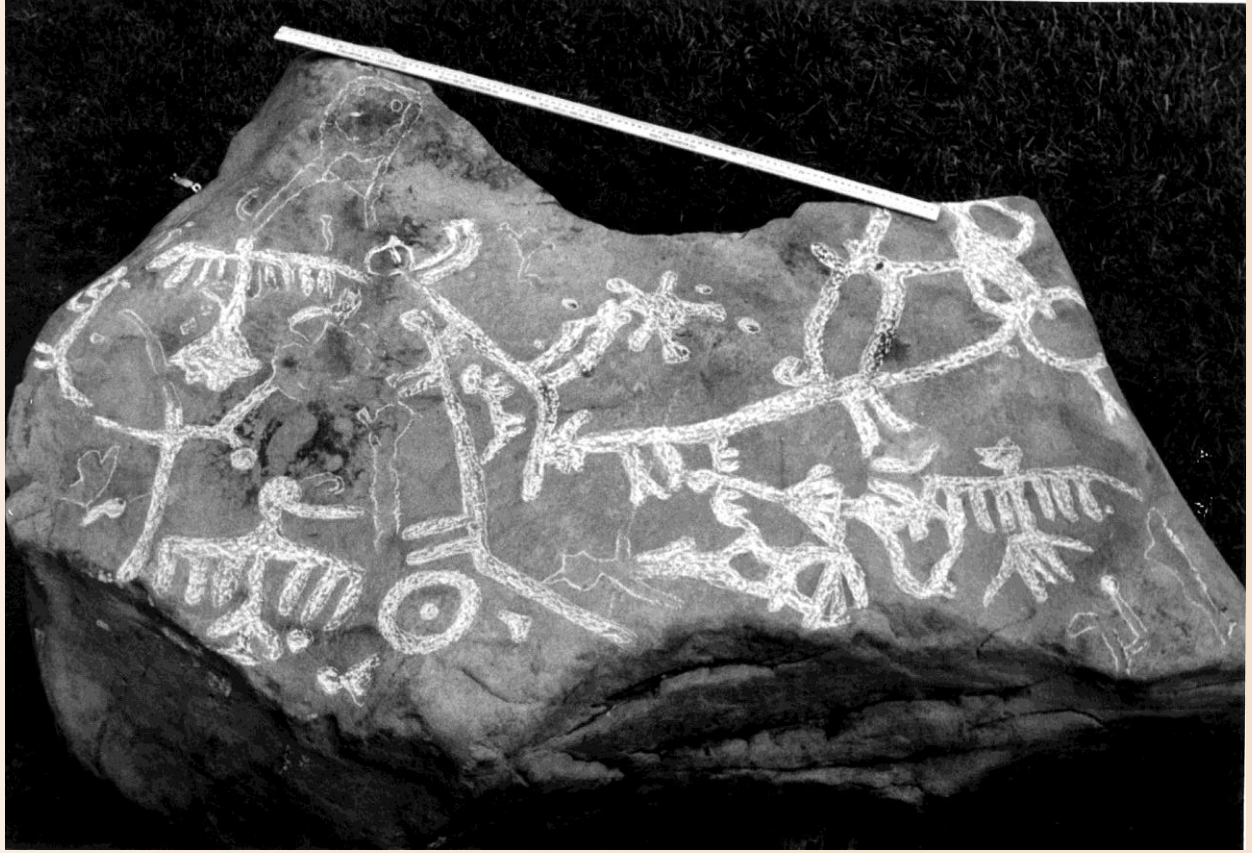


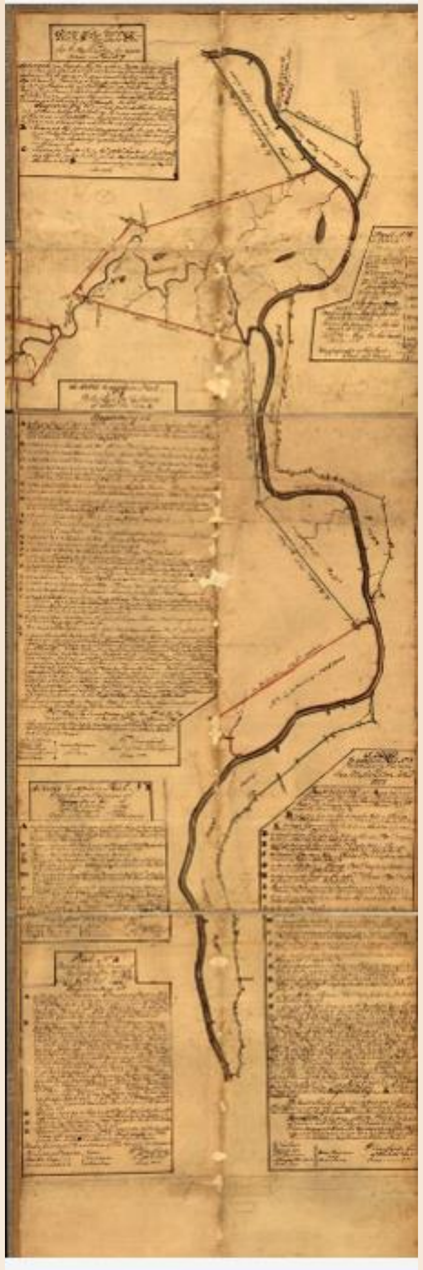
Fig. 106. — Un *temple du feu* a Bakou.

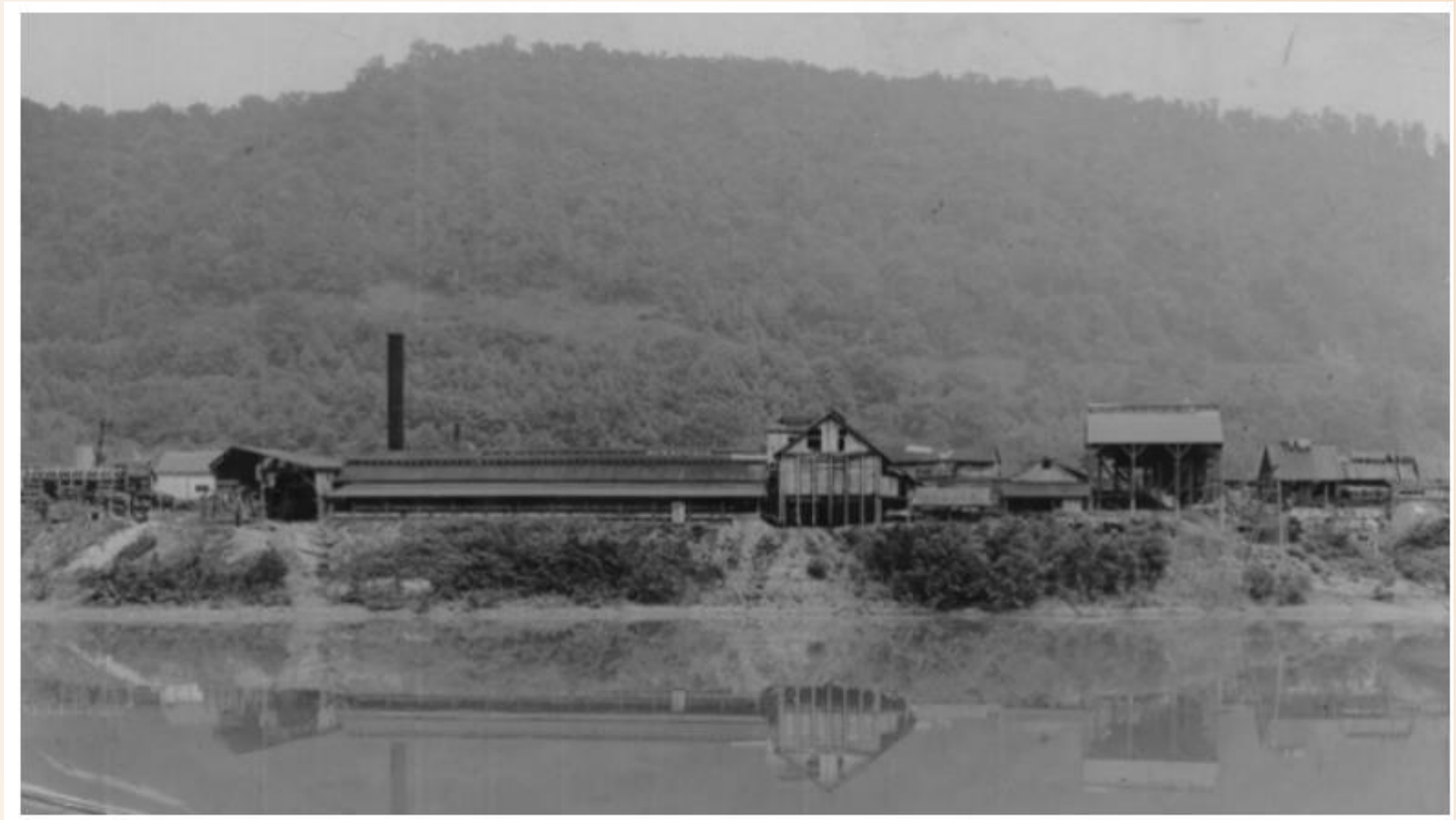

יהוה
IHS
LE GRAND
VOYAGE DV PAYS
des Hurons, situé en
l'Amerique vers la mer douce
et dernières confins de
la nouuelle France
Ou il est traicté de tout
ce qui est du pays & du
gouuernement des Sauuages
Auec un Dictionnaire
de la Langue huronne
Par Fr. Gabriel Sagard
Recollect de S. François
de la province S. Denis
A PARIS Chez Denys
Moreau rue S. Jacques à
La Salamandre 1632

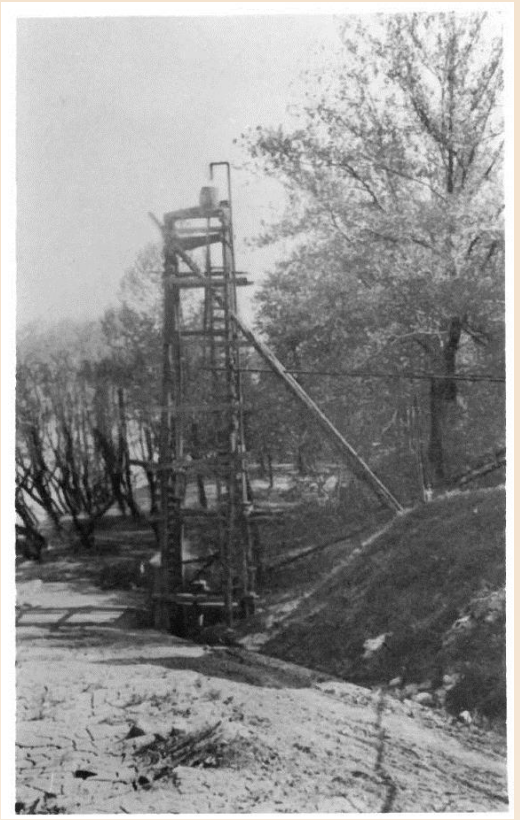

MARIETTA WORKS.
OHIO.
Chas. Whittlesey
Surveyor 1837.
SCALE.
200 ft. to the inch.
Area 50 Acres.
Area 27 Acres.
Sections.
Longitudinal Section of Graded Way
OHIO RIVER

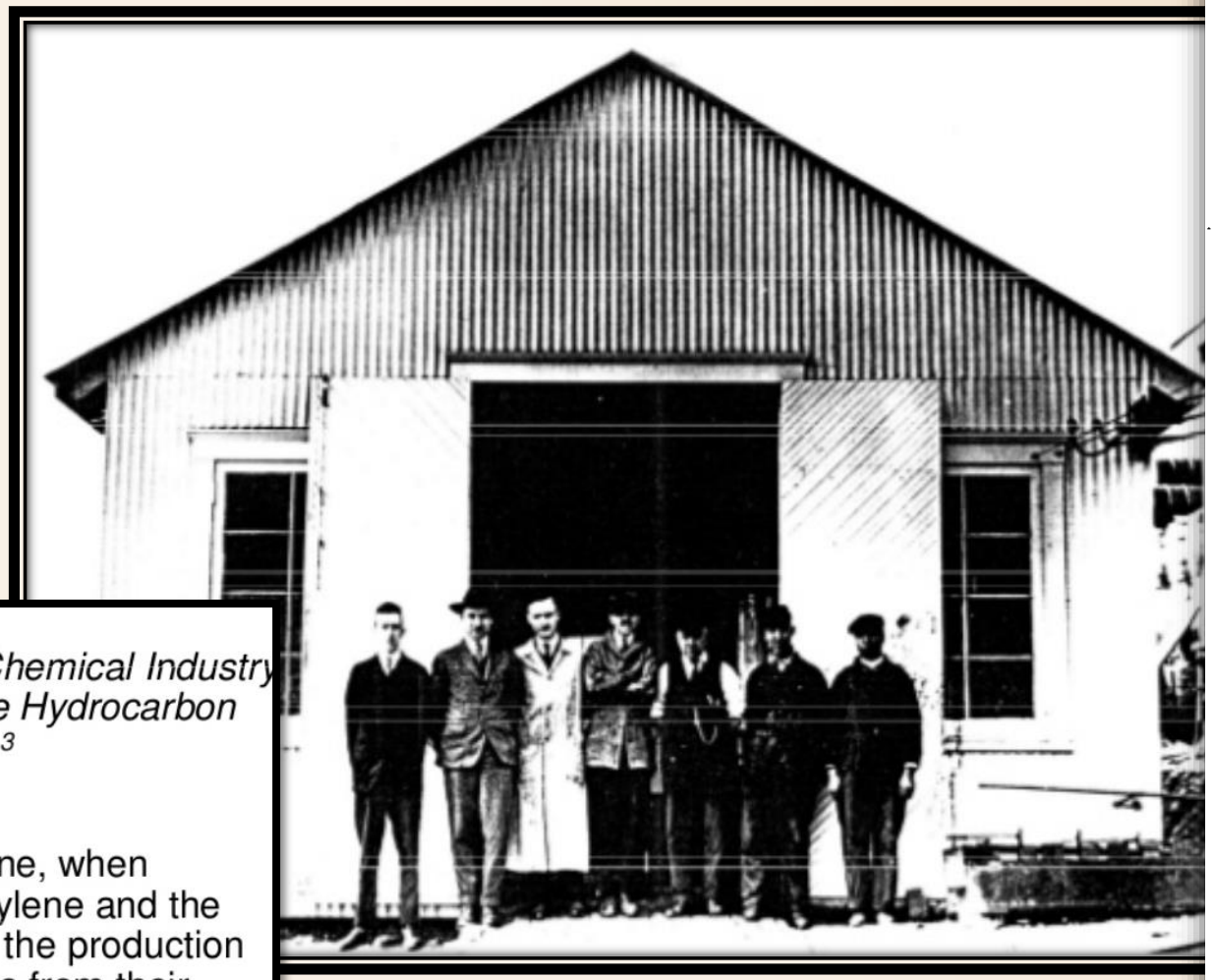


780 poles
Con-
taining
6788
Acres
about 1½ Miles apart



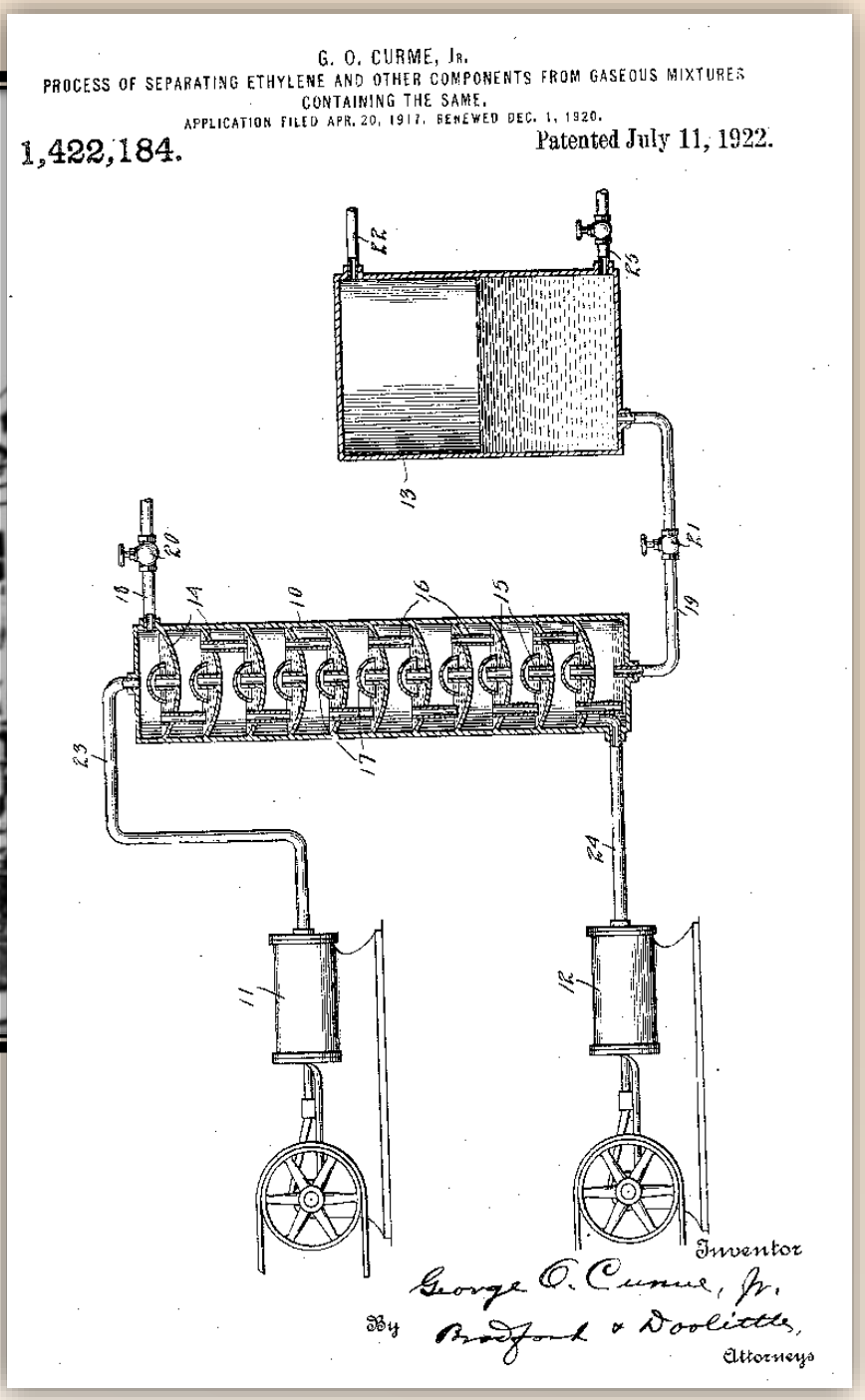






The Possibilities of a Chemical Industry Based on the Simple Hydrocarbon Gases [3]

"…..In particular, ethylene, when complemented by acetylene and the byproducts obtained in the production of these two substances from their various sources, provides the starting material for an organic chemical industry of almost unlimited proportions which might be extended as desired in any or all directions to cover a large part of the field of the existing chemical industry."

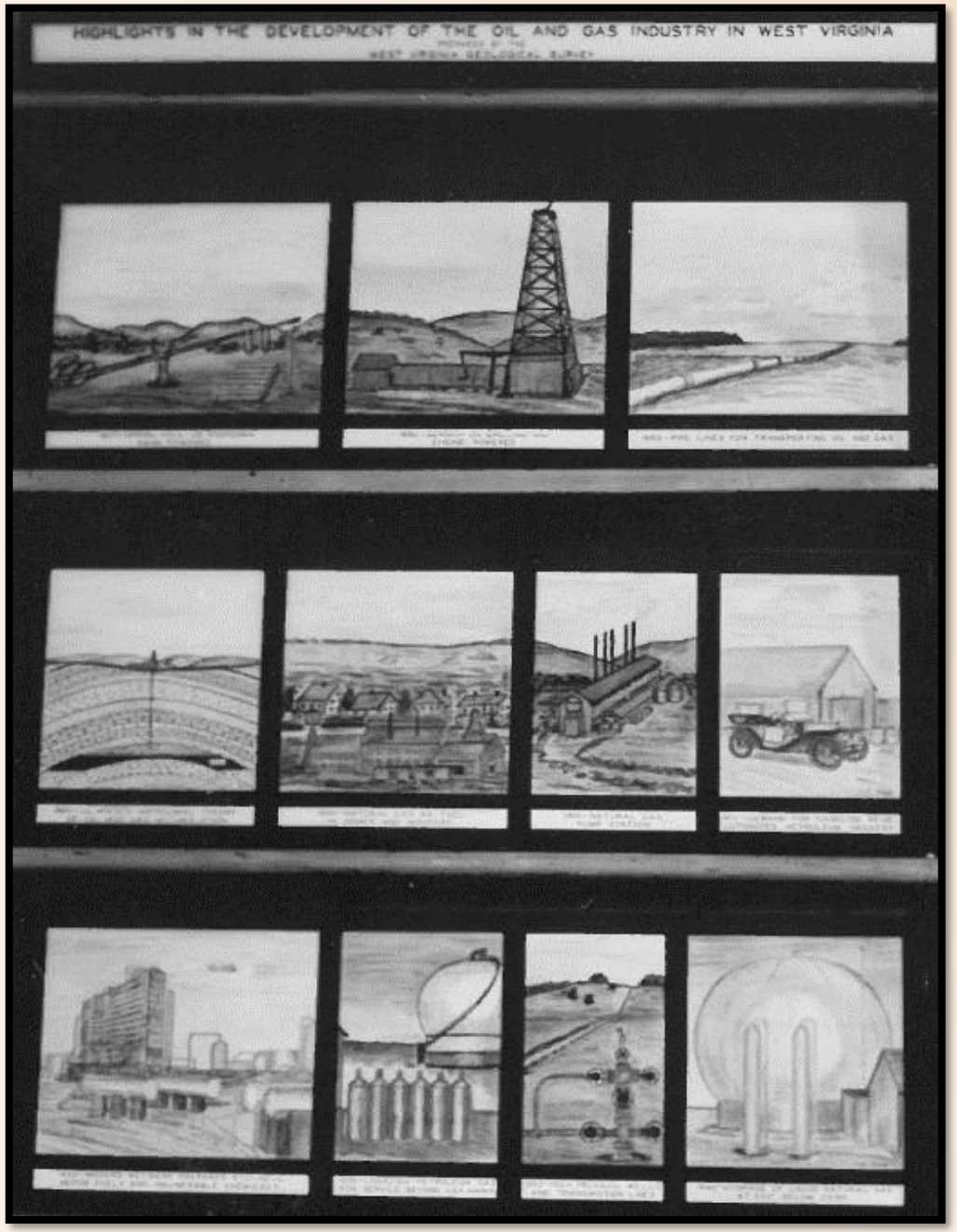


G. O. CURME, Jr.

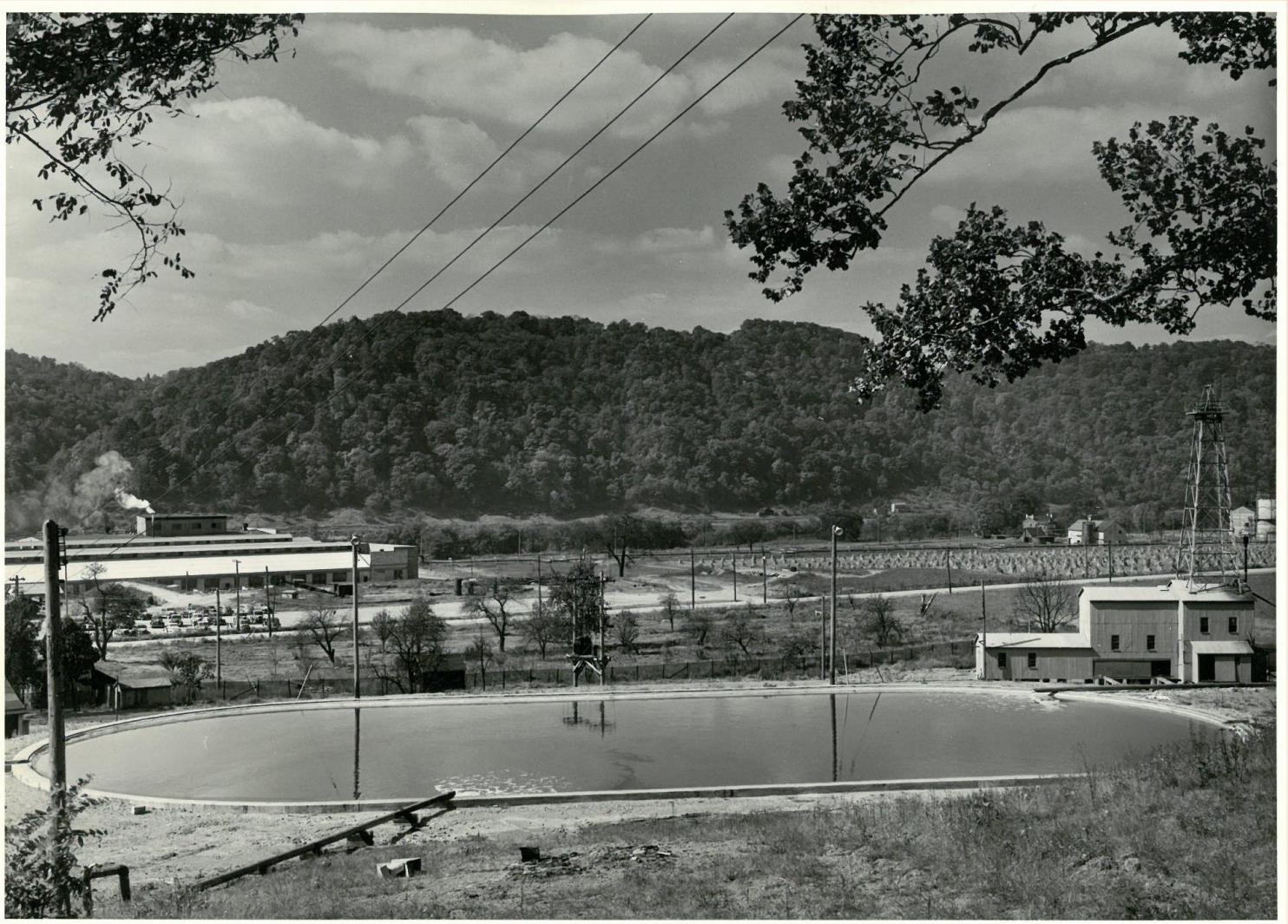
PROCESS OF SEPARATING ETHYLENE AND OTHER COMPONENTS FROM GASEOUS MIXTURES CONTAINING THE SAME.

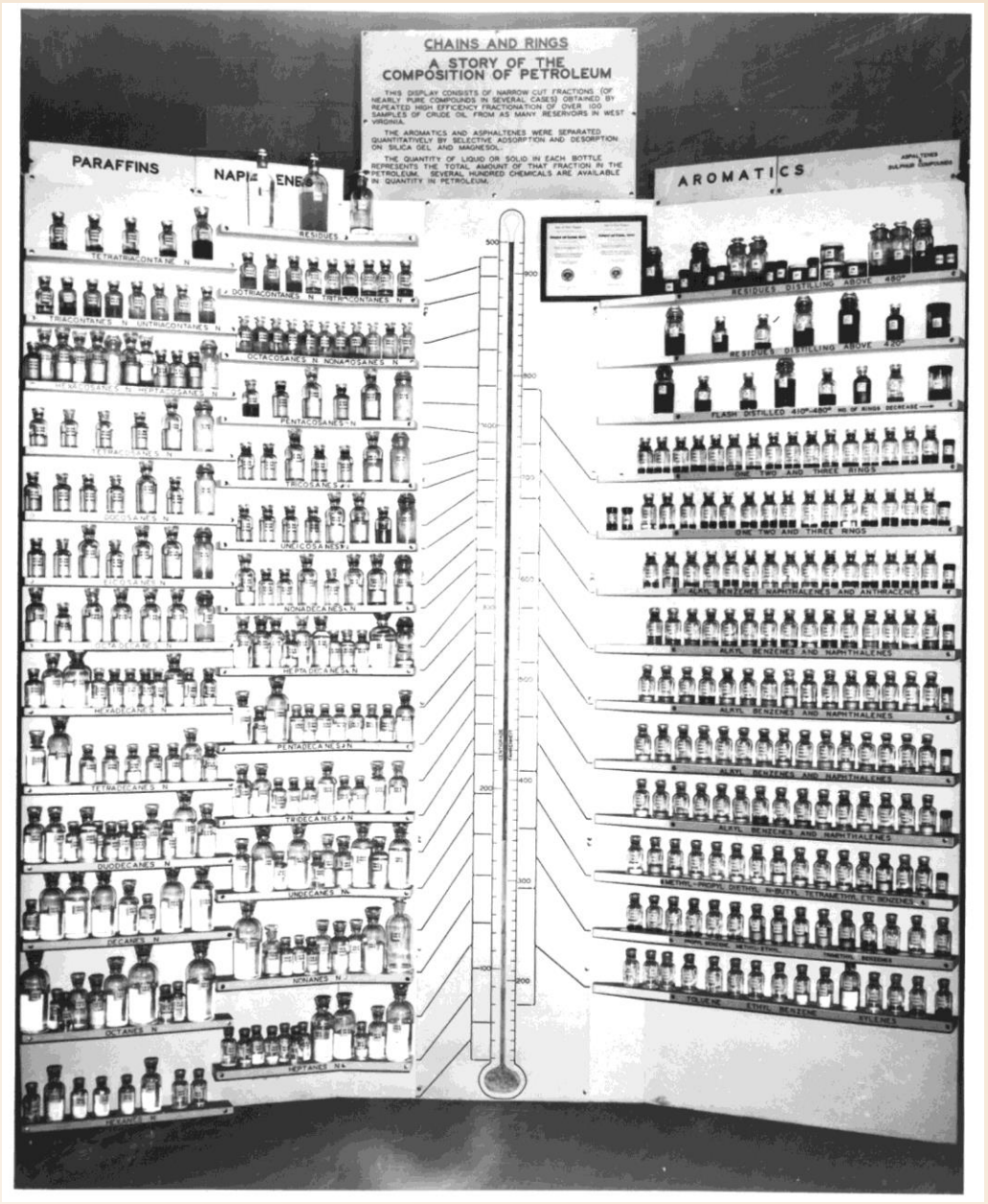
APPLICATION FILED APR. 20, 1917. RENEWED DEC. 1, 1920.

1,422,184. Patented July 11, 1922.


HIGHLIGHTS IN THE DEVELOPMENT OF THE OIL AND GAS INDUSTRY IN WEST VIRGINIA


CHUTE THE
WORKS



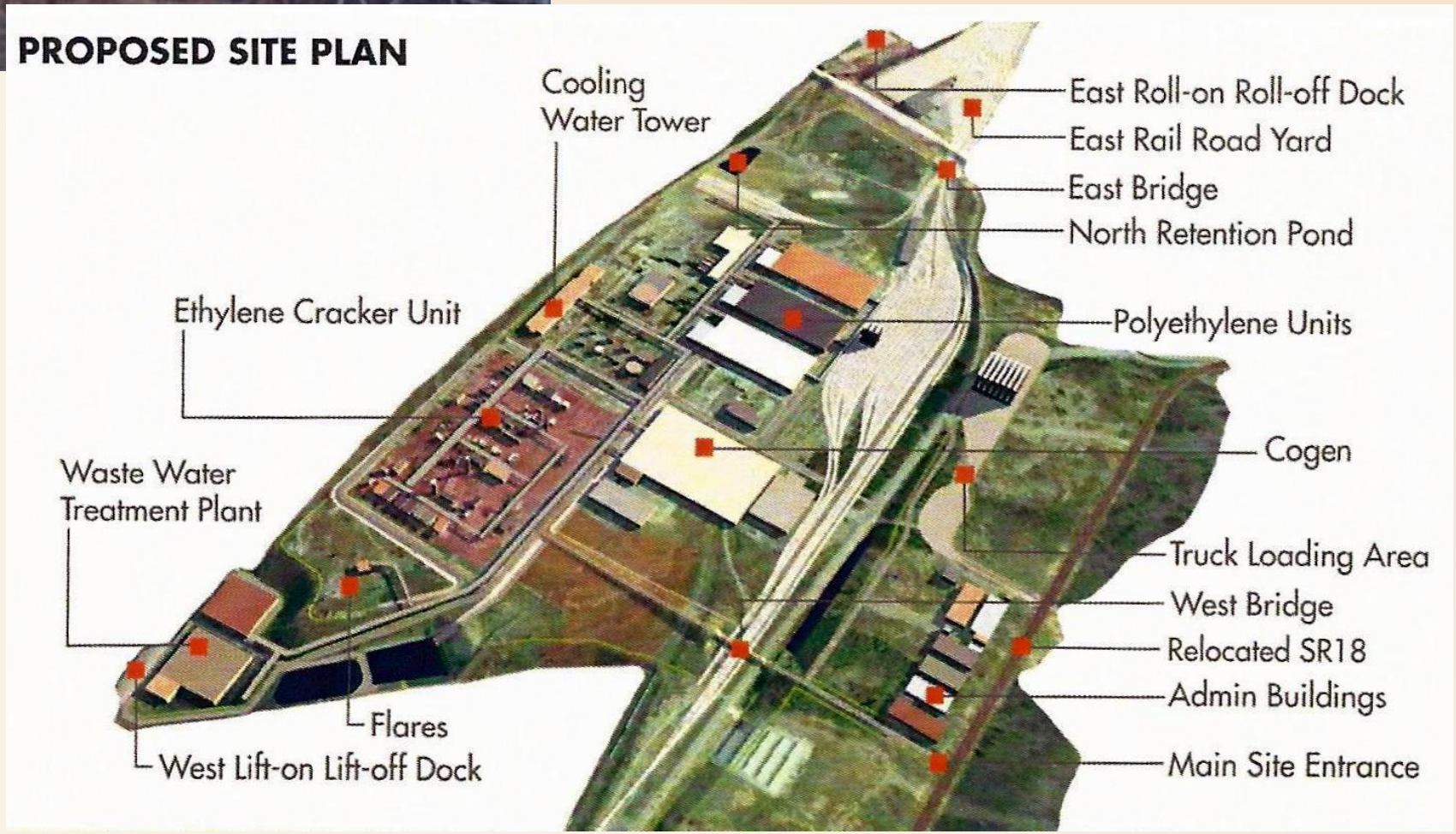

CHAINS AND RINGS
A STORY OF THE COMPOSITION OF PETROLEUM
THIS DISPLAY CONSISTS OF NARROW CUT FRACTIONS (OF NEARLY PURE COMPOUNDS IN SEVERAL CASES) OBTAINED BY REPEATED HIGH EFFICENCY FRACTIONATION OF OVER 100 SAMPLES OF CRUDE OIL FROM AS MANY RESERVOIRS IN WEST VIRGINIA.
THE AROMATICS AND ASPHALTENES WERE SEPARATED QUANTITATIVELY BY SELECTIVE ADSORPTION AND DESORPTION ON SILICA GEL AND MAGNESOL.
THE QUANTITY OF LIQUID OR SOLID IN EACH BOTTLE REPRESENTS THE TOTAL AMOUNT OF THAT FRACTION IN THE PETROLEUM. SEVERAL HUNDRED CHEMICALS ARE AVAILABLE IN QUANTITY IN PETROLEUM.
PARAFFINS
AROMATICS
RESIDUES
RESIDUES DISTILLING ABOVE 480°
RESIDUES DISTILLING ABOVE 420°
FLASH DISTILLED 410°-480° NO. OF RINGS DECREASE
ONE TWO AND THREE RINGS
ONE TWO AND THREE RINGS
ALKYL BENZENES NAPHTHALENES AND ANTHRACENES
ALKYL BENZENES AND NAPHTHALENES
ALKYL BENZENES AND NAPHTHALENES
ALKYL BENZENES AND NAPHTHALENES
ALKYL BENZENES AND NAPHTHALENES
ETHYL-, PROPYL-, BUTHYL-, DIMETHYL-, TRIMETHYL-, TETRAMETHYL ETC BENZENES
TETRACONTANES N
DOTRIACONTANES N
TRIACONTANES N
HENTRIACONTANES N
OCTACOSANES N
NONACOSANES N
HEPTACOSANES N
HEXACOSANES N
PENTACOSANES N
TETRACOSANES N
DOCOSANES N
HENEICOSANES N
NONADECANES N
OCTADECANES N
HEPTADECANES N
HEXADECANES N
PENTADECANES N
TETRADECANES N
TRIDECANES N
DODECANES N
UNDECANES N
DECANES N
NONANES N
OCTANES N
HEPTANES N
HEXANES N
500
400
300
200
100
0
DEGREES FAHRENHEIT


OXYDOL
dreft
Surf
PABLUM
Klean-Strip
CRAG


UNION CARBIDE
ANNOUNCES THE APPOINTMENT OF
FLASH GORDON
AS PLASTICS REPRESENTATIVE FOR THE OUTER WORLDS
THE DISCOVERY COMPANY HAS RETAINED BRILLIANT DR. ZARKOV TO CREATE AND PRODUCE THE WIDEST RANGE OF PLASTICS IN ALL THE WORLDS! PHENOLIC, POLYETHYLENE, URETHANE, VINYL, POLYSTYRENE, POLYSULFONE, PLASTICIZER, SILICONE AND EPOXY. THEN FLASH GORDON PUTS THEM TO THE TEST.

…in particular, ethylene, when complemented by acetylene and the byproducts obtained in the production of these two substances from their various sources, *provides the starting material for an organic chemical industry of almost unlimited proportions* which might be extended as desired in any or all directions to cover a large part of the field of the existing chemical industry

-- George O. Curme, Jr.




Findlay
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Lima
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Zanesville
Dayton
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Clarksburg
Martinsburg
Winchester
Cincinnati
Portsmouth
Huntington
Charleston
WEST VIRGINIA
Harrisonburg
Staunton
Scioto River
Kanawha River
Ohio River

THANK YOU!