

**APPLICATION CHECKLIST**

*Mahoning Co., SW 1/4 #14, Springfield Twp  
Permit # \_\_\_\_\_, Knox - Mt. Summit*

	Date	Initials
Enter on Agenda	12/9/11	[Signature]
Completeness Review	12/2/11	[Signature]
Date - Time Stamp	12/9/11	[Signature]
Area of Review	12/23/11	[Signature]
Site Evaluation		[Signature]
Permitting Section	12/9/11	[Signature]
Memo to Inspector	12/23/11	[Signature]
Public Notice	12/27/11	[Signature]
Letter	12/27/11	
Date Run	1/4/12	
15 Days	1/19/12	
Review Public Notice	1/19/12	[Signature]
Affidavit of Notification	12/26/11	[Signature]
Objections Received	Yes _____ No <u>X</u>	[Signature]
Public Hearing Date		[Signature]
Chief's Order, if Required		[Signature]
Schematic	12/23/11	[Signature]
Plot on Map	12/23/11	[Signature]
Review by Geologist		[Signature]
Permit Conditions (Same date as permit)		[Signature]
Enter on Computer (Same or later date than Chief's Order)		[Signature]
Enter on Master List	12/23/11	[Signature]
EPA Form	12/23/11	[Signature]
Mail Permit		[Signature]
Update Agenda		[Signature]
File		[Signature]

**RECORD OF CONVERSATION**

*\* Received urban drilling material on 12/22/11*

\_\_\_\_\_ [Signature]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

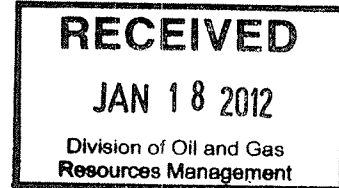


**D&L ENERGY, INC.  
LAND DEPARTMENT**

2761 Salt Springs Road, Youngstown, Ohio 44509  
330-792-9524 888-343-4427 Fax 330-270-1202  
www.dandlenergy.com

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January 11, 2012



Tom Tomastik, Geologist  
Division of Mineral Resources Management  
2045 Morse Road, Building H-3  
Columbus, OH 43229-6693

Dear Tom:

Enclosed please find the original Proof of Publication from The Vindicator for the MOHAWK PRINTUP WELL NO. 7. Since the young lady at the vindicator did not fill in the blanks on the Proof of Publication I included my email correspondence so you would know the ad ran on Wednesday, January 4<sup>th</sup>. Should you need anything further do not hesitate to contact us.

Very truly yours,

D&L ENERGY, INC.

A handwritten signature in cursive script that reads 'Kimberly Little'.

Kimberly Little  
Land Administration

/kl

Enclosures

THE STATE OF OHIO }  
Mahoning County

Proof of Publication

LEGAL NOTICE

PUBLIC NOTICE

D & L Energy, Inc. 2761 Salt Springs Rd, Youngstown, Ohio, 44509, (330) 792-9524 is applying to permit a well for the injection of brine water produced in association with oil and natural gas. The location of the proposed injection well is Mohawk Printup #7 well, New well, Section 36, Springfield Township, Mahoning County, Ohio. The proposed well will inject into the Knox - Mt. Simon Sandstone at a depth of 9,650 feet to 11,150 feet. The average injection is estimated to be 1500 barrels per day. The maximum injection pressure is estimated to be 2220 psi. Further information can be obtained by contacting D & L Energy, Inc. or the Division of Oil and Gas Resources Management. The address of the Division is: Ohio Department of Natural Resources, Division of Oil and Gas Resources Management, 2045 Morse Road, Building H-3, Columbus, Ohio, 43229-6693, (614) 265-6633. For full consideration, all comments and objections must be received by the Division, in writing, within fifteen calendar days of the date of this published legal notice.

Personally appeared before the undersigned authority,.....  
of THE VINDICATOR PRINTING COMPANY, publishers of THE VINDICATOR,  
a newspaper printed and of general circulation in Mahoning, Trumbull and  
Columbiana Counties in Ohio and Lawrence and Mercer Counties in Pennsylvania,  
and being duly sworn, on h..... oath deposes and says that the notice hereto  
attached was published ..... times and that insertions were as follows:

..... ; ..... ; .....

Advertisement..... \$ .....  
Affidavit..... \$ 2.00 .....  
TOTAL..... \$ .....

Sworn to and subscribed before me this ..... day of ..... A.D. ....

**RECEIVED**  
JAN 18 2012  
Division of Oil and Gas  
Resources Management

*Kelley I. Kurtz*  
KELLEY I. KURTZ  
NOTARY PUBLIC, STATE OF OHIO  
MAHONING COUNTY  
My Comm. Expires June 4, 2012

NOTARY PUBLIC

**Kim Little**

**From:** Kim Little [klittle@dandlenergy.com]  
**Sent:** Friday, December 30, 2011 3:50 PM  
**To:** 'Legals'  
**Cc:** 'Nick Paparodis'  
**Subject:** RE: Public Notification Mohawk Printup #7

**Mary Ann, Wednesday the 4th is good. Have a safe and happy New Year, Kim**

Kimberly Little

Land Department

D & L Energy, Inc.

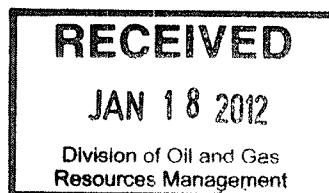
2761 Salt Springs Road

Youngstown, OH 44509

Phone: 330-270-1211

-----Original Message-----

**From:** Legals [mailto:Legals@vindy.com]  
**Sent:** Friday, December 30, 2011 3:43 PM  
**To:** Kim Little  
**Subject:** Re: Public Notification Mohawk Printup #7



Kim, this ad will run on Wed. January 4th. We are off on Monday, January 2. We had early deadlines this week. I will let you know the price. Have a Happy New Year. Mary Ann Navarro  
On Dec 30, 2011, at 2:59 PM, Kim Little wrote:

**Happy Holidays Mary Ann,**

**I need to have another public notice run for one day at your earliest convenience. Reminder I will also need the original proof of publication ASAP to mail to the State of Ohio. I assume this notification will also cost \$72.00?**

**Please let me know what day the ad will run.**

**As always, thanks for all your help, Kim**

1/11/2012

Kimberly Little

Land Department

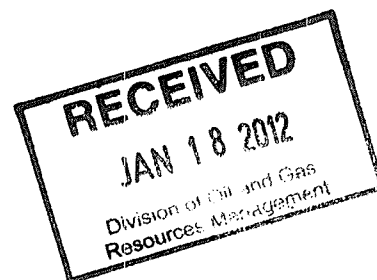
D & L Energy, Inc.

2761 Salt Springs Road

Youngstown, OH 44509

Phone: 330-270-1211

<Vindy Publications Mohawk Printup #7.docx>



1/11/2012



Ohio Department of Natural Resources  
Division of Mineral Resources Management  
2045 Morse Rd. Bldg. H-3 – Columbus OH 43229-6693



## *Urbanized Area Permit Conditions*

<b>Application Number</b>	<b>Permit Number</b>	<b>Inspection Date</b>	<b>Modification Date (if applicable)</b>
		12/29/2011	
<b>Company</b>	D&L Energy Inc.	<b>Lease Name/Well #</b>	Mohawk Printup (SWIW 14) 7
<b>County</b>	Mahoning	<b>Township</b>	Springfield
<b>Section/Lot</b>	36	<b>Urban Area</b>	Yes
<b>Inspected By</b>	Chris Grimm		
<b>Accompanied By</b>	Dave Jenkins		

**Directions to Location**    Location on the west side of Rt. 617, less than 0.1 miles from the OH / PA state line.

<b>ITEM</b>	<b>LEASE ROAD, WELL SITE CONSTRUCTION</b>	<b>Comments:</b>
1	<b>Tree/Brush Removal/Disposition</b>	No trees or brush to be affected or removed.
2	<b>Topsoil Removal/Stockpiles/Placement</b>	Topsoil will be stockpiled to the west of the drilling rig.
3	<b>Erosion/Sediment Control (Silt Fence, Berms)</b>	Recommend that silt fence be placed along the west, south, and east sides of the drill pad.
4	<b>Drainage Controls (Diversion Ditches, Culverts, Waterways, Crossings)</b>	A rock channel will be constructed along the south edge of the drill pad.
5	<b>Signage</b>	ID sign will be placed at the access road entrance on Rt. 617.
6	<b>Apron/Culverts/Road Material</b>	Gravel will be used for apron and road material.
7	<b>Pull Off Area</b>	None
8	<b>Parking</b>	Parking will be on location.
9	<b>GPS – Access Road</b>	N 40.90215 W 80.51995
10	<b>GPS – Well Stake</b>	N 40.90099 W 80.52036
11	<b>GPS – Tank Battery</b>	

<b>ITEM</b>	<b>DRILLING CONSIDERATIONS</b>	<b>Comments:</b>
12	<b>Noise Mitigation (Mufflers, Extra Frac Tanks, Tarps)</b>	Hospital mufflers will be required on the drilling rig.
13	<b>Rig Type</b>	Air / fluid rotary
14	<b>Is a Blow-out Preventor required?</b>	X <b>Yes</b> <b>No</b>
	<b>If No, explain:</b>	

15	<b>Equipment Placement/ Orientation (Rig/ Frac Tanks/ etc.)</b>	The drilling rig will be oriented north to south. Frac tanks will be located in the NE corner of the drill pad.
16	<b>Drilling Pits (Placement/Orientation)</b>	Pits will be placed to the east of the rig, oriented north to south.
17	<b>Fencing (Pits/Entire Location)</b>	The drilling pits will be fenced.
18	<b>Flood Plain</b>	No known flood plains.
19	<b>Mine Voids</b>	No known mine voids.
20	<b>Verify Water Wells Within 300'</b>	1 water well within 300'. Recommend that 5 additional water wells be tested, although they are out of the 300' radius.
21	<b>Verify Structures Within 500'</b>	4 structures within 500'.
22	<b>Verify Streams and Drainage</b>	No known streams or drainage.

ITEM RESTORATION

**Comments:**

23	<b>Pit Closure – (Standard/ Solidification/ Off-Site Disposal – state time frame)</b>	Pits to be solidified and closed within 14 days of well completion.
24	<b>Site Specific Time Frame For Restoration</b>	Preliminary restoration to be completed within 3 months of spud date.
25	<b>Erosion/Sediment Control</b>	Seed and straw will be used for erosion/sediment control.
26	<b>Drainage Control</b>	No drainage control needed.

ITEM PRODUCTION

**Comments:**

27	<b>Is the Access Road Gate required?</b>	<b>Yes</b> <input checked="" type="checkbox"/> <b>No</b>
	<b>If No, explain:</b>	Facility will be fenced with chain link.
28	<b>Landscaping/Screening (Wellhead, Tank Battery) (Waiver Attached if applicable)</b>	100' x 100' concrete containment area with 5' high concrete walls.
29	<b>Fencing (Wellhead, Tank Battery) (Waiver Attached if applicable)</b>	Facility will be fenced with chain link.

WAIVERS

**Comments:**

<b>Is the Company required to submit a waiver?</b>	<b>Yes</b> <input checked="" type="checkbox"/> <b>No</b>
<b>If yes, submit the following waiver requests:</b>	
<b>Is the Company required to submit revised drawings?</b>	<b>Yes</b> <input checked="" type="checkbox"/> <b>No</b>

**THE FOLLOWING ITEMS HAVE BEEN CHANGED FROM THE ORIGINAL APPLICATION:**

**Tomastik, Tom**

**From:** Baker, Mike [Mike.Baker@epa.state.oh.us]  
**Sent:** Friday, March 09, 2012 2:02 PM  
**To:** Tugend, Thomas  
**Cc:** Tomastik, Tom; Eggert, Michael; Lowe, Chuck  
**Subject:** Class II Permiot Reviews

**Attachments:** ODNR Permit Review Summary 2.docx

Ohio EPA Division of Drinking and Ground Waters has completed its review of nine (9) Class II underground injection well permits.

Our review of the Class II permits focused on well construction relative to the protection of underground sources of drinking water (USDW) and the location of the surface facilities relative to public water system source water protection areas and other sensitive hydrogeologic settings.

None of the reviewed Class II permits are within 2,000 feet of a public water system well or within a source water protection area. However, we do have a couple overarching comments concerning the surface casing of the well construction. More specifically, our review assessed the placement of surface casing and cement relative to the lowest most USDW. Ohio EPA would recommend that a class A cement with appropriate additives be specified as well as the use of centralizers to assure an adequate bond.

Attachment A is a summary of our comments concerning each permit application. Please contact Chuck Lowe of my staff at 614-644-2752 if you have questions on the specific comments.

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This message was secured by Zix (R).

3/9/2012



## Attachment A: ODNR Permit Review Summary

9 permits reviewed, including:

- 6 new drills; and,
- 3 conversions of existing wells.

None of the Class II SWDWs reviewed are within 2,000 feet of a PWS well or within a protection area.

### New Wells

1. Muskingum Co., Jackson Twp. OOGC #1 Black Run Disposal Well
  - Surface casing depth and amount of cement appear adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
  - The injection zone is the Knox through the Mt. Simon; however, completion schematic shows only the Mt. Simon as perforated. The injection zone perforations should be corrected to reflect the revised injection zone.
  - Well surface construction appears sufficient.
2. Mahoning Co., Springfield Twp. D&L #7 Mohawk Printup
  - Surface casing depth and amount of cement appear adequate. The permit to drill specifies 350 sacks of superlite cement – Ohio EPA recommends that Class A be used instead. The number of centralizers and their location should be specified. The lack of this information limits our review.
  - The well is located outside of the Youngstown area of concern.
  - Well surface construction appears sufficient.
3. Mahoning Co., Youngstown Twp. D&L #8 Mohawk Meenchan
  - Well construction comments are the same as for the #7 Mohawk Printup well.
  - The #8 Mohawk Meechan well is within the AOR that has experienced seismic activity. This should be evaluated in siting, construction and injection requirements.
4. Muskingum Co., Union Twp. 1960 Well Services #1 C. Goff
  - Surface casing and amount of cement appears adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
  - The plat map shows two small wetland areas that are adjacent to the well and offloading pad. The permittee should be made aware of associated regulatory requirements.
  - Well surface construction appears sufficient.
5. Trumbull Co., Weathersfield Twp. American Water Mgt. #1 AWM
  - Both surface and injection casing depths and cement appear adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
  - Open hole disposal into the "Newburg". There are sixteen existing "Clinton" wells within the AOR that are likely un-cemented above the "Clinton" cement top and the base of the surface casing. These well bores could act as a conduit for fluid migration (i.e. either brine or brine displacing formation waters).

6. Trumbull Co., Weathersfield Twp. American Water Mgt. #2 AWM
  - Surface casing depth appears adequate and cemented to surface. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
  - The injection casing cement top is shown to surface on the diagram, but states the cement top is at 4000 feet. This should be clarified because the plat map show 112 feet between the two disposal wells (same concerns as outlined in #5).

#### **Converted Wells**

1. Athens Co., Rome Twp., D.T. Atha #1 M. Frost
  - Surface casing depth appears adequate; however, no inspectors report to verify cement to surface (315 sacks used on completion report). The surface cement should be verified.
  - Operator proposes to squeeze off the existing perms in the Berea and Ohio Shale, but doesn't show the proposed injection zone perms.
  - Injection casing and tubing construction depths don't agree with the well schematic diagram. This should be resolved.
2. Knox Co., Morgan Twp., Knox Energy #2 Harstine Trust
  - Surface casing and cement job appear adequate.
3. Morgan Co., Marion Twp., Broad Street Energy #102 Cook
  - Surface casing and cement volume (90 sacks) appear adequate.
  - Well surface construction appears adequate.

# Proof Sheet

**APPL NUMBER**   
**OWNER NUMBER**   
**OWNER NAME**   
**EXISTING WELL**   
**API PERMIT NO**   
**APPL TYPE**   
**TYPE OF WELL**   
**VARIANCE REQUEST**   
**WELL NAME**   
**WELL NUMBER**   
**PREV/PROPOSED TD**   
**DRILL UNIT ACRES**   
**TYPE OF TOOL**   
**WELL CLASS**   
**FIRE PHONE**   
**MEDICAL PHONE**   
**COUNTY CODE**   
**COUNTY NAME**   
**COAL (Y=-1/N=0)**   
**CIVIL TOWNSHIP**   
**SURF QUAD**   
**Nad 27 SURF ORIG X**   
**Nad 27 SURF ORIG Y**   
**GROUND ELEVATION**   
**SURF SEC**   
**SURF LOT**   
**SURF QTR TWP**   
**SURF ALLOT**   
**SURF TRACT**   
**SURF FRACTION**

**URBANIZED AREA ?**   
**NAME**

**DISPOSAL PLAN 1**   
**DISPOSAL PLAN 2**   
**DISPOSAL PLAN 3**   
**DISPOSAL PLAN 4**   
**DISPOSAL PLAN 5**

**MP Check #**

**PROPOSED FORMATIONS**

KNOX - PRECAMBRIAN

**TARG CIVIL TWP**   
**TARG QUAD**   
**Nad 27 TARG ORIG X**   
**Nad 27 TARG ORIG Y**   
**TARG ELEV**   
**TARG SECTION**   
**TARG LOT**   
**TARG QTR TWP**   
**TARG ALLOT**   
**TARG TRACT**   
**TARG FRACTION**

# DAILY ROUTE SLIP

Springfield

APPLICATION NO. aAMY0000605

TYPE: Salt Water Injection Well

CONAME D & L ENERGY INC

API

WELL NAME /NO. MOHAWK PRINTUP

7

COUNTY 99 MAHONING

INITIALS

DATE

DATE APPLICATION REC'D

AM

12/9/2011

PERMIT FEE AND CHECK NO.

\$1,000.00

21552

RUSH AMOUNT RUSH CHECK NO.

\$0.00

0

APPLICATION ENTERED

AM

12/9/2011

APPLICATIONS AND PLATS SENT FOR MINE APPROVAL

AM

12/9/2011

COAL APPROVAL RECEIVED

OIL/GAS AFFIDAVIT REC'D

URBANIZED AREA NOTIFICATION SENT

AM

12/9/2011

URBANIZED AREA NOTIFICATION SENT TO INSPECTOR/REC'D BACK

URBAN MAP REVIEW

AM

12/23/2011

SAMPLES: YES \_\_\_ /SPECIAL AREAS

GEOLOGIST APPROVAL

AM

DATA ENTRY /ISSUED

AM

PERMIT: TAKEN \_\_\_ MAILED \_\_\_

AM

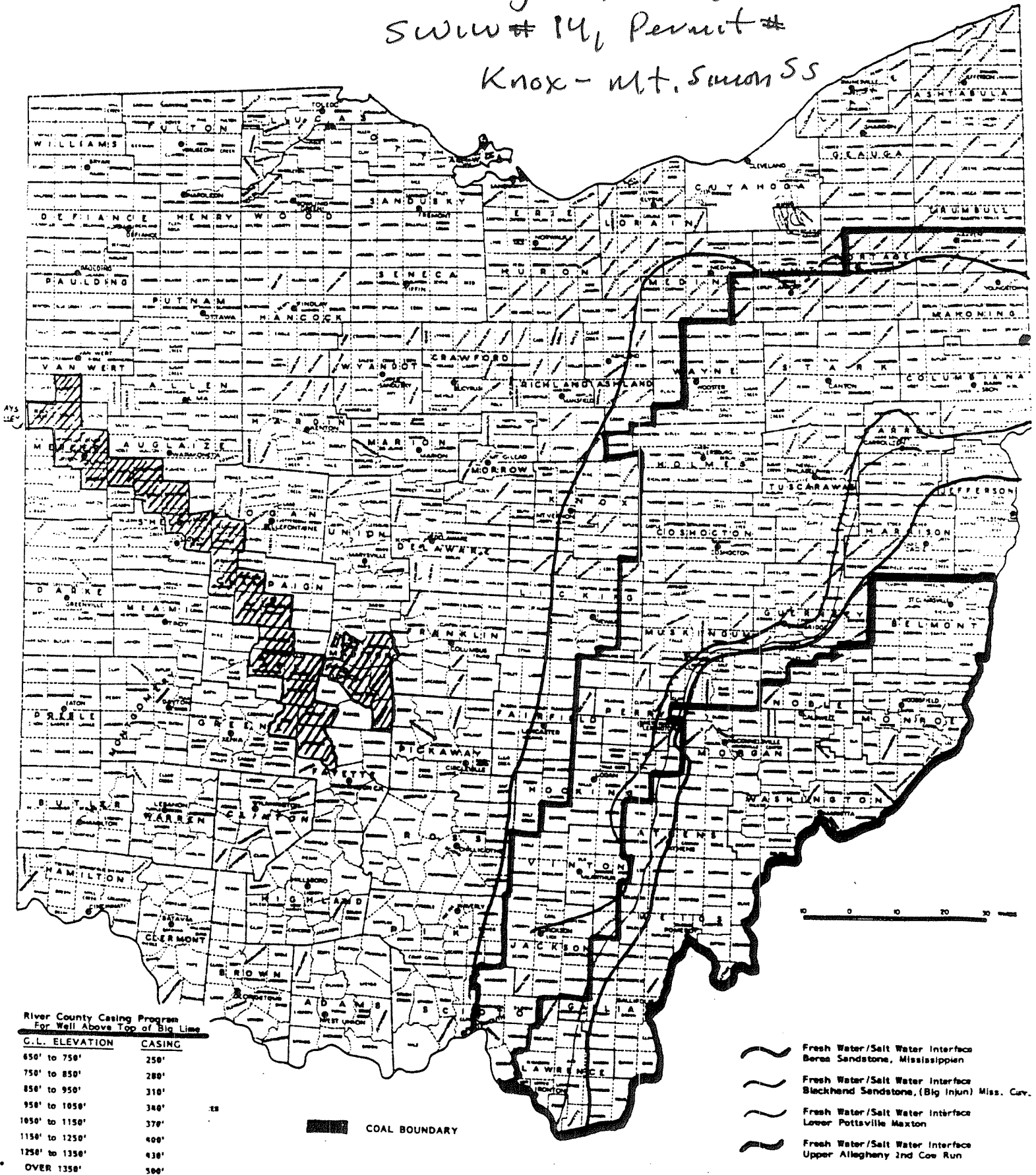
FAX TO: \_\_\_\_\_

FINAL MAP CHECK

COMMENTS:

Called Nick P on 12/9/2011 about the urban requirements.





Mahoning Co., Springfield Twp.  
 SWW # 14, Permit #  
 Knox - Mt. Simon SS



River County Casing Program  
 For Well Above Top of Big Lime

C.L. ELEVATION	CASING
650' to 750'	250'
750' to 850'	280'
850' to 950'	310'
950' to 1050'	340'
1050' to 1150'	370'
1150' to 1250'	400'
1250' to 1350'	430'
OVER 1350'	500'

COAL BOUNDARY

 Fresh Water/Salt Water Interface  
 Berea Sandstone, Mississippian  
 Fresh Water/Salt Water Interface  
 Blackhand Sandstone, (Big Injun) Miss. Cuv.  
 Fresh Water/Salt Water Interface  
 Lower Pottsville Maxton  
 Fresh Water/Salt Water Interface  
 Upper Allegheny 2nd Cow Run

**INTER-OFFICE MEMO**

**TO: Carl Roberts, Mineral Resources Inspector**  
**FROM: Tom Tomastik, Geologist**  
**SUBJECT: Application and Site Evaluation for a SWIW permit**  
**DATE: December 23, 2011**

The Division of Oil and Gas Resources Management has received an application for the proposed saltwater injection well as described below:

**OPERATOR:** D & L Energy, Inc.  
**WELL NAME & NUMBER:** Mohawk Printup # 7  
**PERMIT NUMBER:** New well, SWIW #14  
**LOCATION:** 203' SL & 367' EL of Section 36, Springfield Twp., Mahoning County  
**PROPOSED INJECTION ZONE:** Knox – Mt. Simon Sandstone  
**DATE RECEIVED:** December 9, 2011

Please inspect proposed site and evaluate for any potential water wells or surface bodies of water within close proximity that would require any additional permit conditions for the construction of the SWIW surface facilities. Please e-mail me a copy of the site inspection report with any recommendations.









# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

## Division of Oil and Gas Resources Management

*Richard J. Simmers, Chief*

2045 Morse Road, Bldg. H-2

Columbus, OH 43229-6693

Phone: (614) 265-6633 Fax: (614) 265-7998

December 27, 2011

Mr. Nick Paparodis  
D & L Energy, Inc.  
2761 Salt Springs Road  
Youngstown, Ohio 44509

**RE: Public Notification for SWIW application for Mahoning County, Springfield Twp., new well, D & L Energy, Inc., Mohawk Printup #7 injection well**

Dear Mr. Paparodis:

As outlined in Rule 1501: 9-3-06 (E) (1) of the Ohio Administrative Code, please consider this letter as notification from the Division for you to proceed with the public notice. Enclosed, please find a copy of the notice you will need to have run in the newspaper of general circulation in the area of the proposed injection well. **The public notice must be run for only one day. After running this notice in the newspaper, please send me the original proof-of-publication from the newspaper as soon as possible.**

If you have any questions regarding this matter, please feel free to contact me at (614) 265-1032.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Tomastik".

Tom Tomastik, Geologist

UIC Section

Division of Oil and Gas Resources Management

2045 Morse Road, H-3

Columbus, Ohio 43229-6693

Cc: File

## PUBLIC NOTICE

D & L Energy, Inc. 2761 Salt Springs Road, Youngstown, Ohio 44509, (330) 792-9524 is applying to permit a well for the injection of brine water produced in association with oil and natural gas. The location of the proposed injection well is the Mohawk Printup #7 well, New well, Section 36, Springfield Township, Mahoning County, Ohio. The proposed well will inject into Knox – Mt. Simon Sandstone at a depth of 9650 to 11,150 feet. The average injection is estimated to be 1500 barrels per day. The maximum injection pressure is estimated to be 2220 psi. Further information can be obtained by contacting D & L Energy, Inc. or the Division of Oil and Gas Resources Management. The address of the Division is: Ohio Department of Natural Resources, Division of Oil and Gas Resources Management, 2045 Morse Road, Building H-3, Columbus, Ohio 43229-6693, (614) 265-6633. For full consideration, all comments and objections must be received by the Division, in writing, within fifteen calendar days of the date of this published legal notice.

# Geologic Review for Class II Wells

Application No. aAMY0000605

SWIW: (Salt Water Injection Well)

Proposed Well Depth: 11,150 feet

Proposed Injection Zone: Knox – Mt. Simon

Mahoning County, Springfield Twp

Study area investigated ~ 15 mile radius centered on the proposed well location for all maps except gravity and magnetic maps, which used a 30 mile radius

## Gravity Bouguer Anomaly

- There is a strong Northeast-Southwest lower gravity trend that stands out about 7 miles to the northwest of the proposed well location.

## Gravity Free Air

- The free air map shows some Northeast-Southwest lower gravity tendencies that lie directly over the proposed location of the well. There is also a very subtle Northwest-Southeast lower gravity area that ends about 8 miles to the North Northwest of the proposed location.

## Magnetic First Derivative

- The magnetic first derivative map shows the proposed location sits on a local high magnetic zone. There are however multiple subtle, low magnetic crossing trends have orientations of Northwest-Southeast and Northeast-Southwest. These can be seen across the mapped area from within about 4 miles from the proposed location to nearly 30 miles away.

## Magnetic Second Derivative

- The magnetic second derivative map shows the proposed well location on a local magnetic high. There are no other trends that stand out on this map.

## Magnetic Reduce Dipole

- The magnetic reduce dipole map shows again that the proposed well location sits on a local magnetic high. There are some trends that occur on this map. There are two parallel Northwest-Southeast high magnetic trends off to the southwest of the proposed location. The closer of the two trends is about four miles away and the further of these two is about 12 miles away. In addition to these there is also a Northeast-Southwest higher magnetic trend about 13 miles to the Northwest of the proposed location.

## Precambrian Structure from PG-23

- The Precambrian structure does not show any known faults or suspected faults within the mapping area. There is however an abrupt change in strike in Columbiana county from north to northeast that trends parallel to the Highlandtown fault which is about 10 miles to the southwest. This change in strike is about 9 miles southwest of the proposed well location.

## Knox Structure

- Nothing of note

## Trenton Structure

- Nothing of note

## EGSP Onondaga Structure

- The EGSP Onondaga surface shows structures parallel to the Northwest-Southeast Highlandtown Fault. One of these changes in strike is within 2 miles southwest of the proposed location, and another is about 9 miles southwest of the well location.

## MRCSP Onondaga Structure

- The MRCSP surface does not show as much change in strike but does show very subtle Northwest-Southeast structure trends.

## EGSP Berea Structure

- The Berea surface shows a North Northwest trending structure about four miles to the Northeast of the proposed location.

#### Mississippian/Pennsylvanian Unconformity Surface

- Nothing of note

#### Middle Kittanning Coal Structure

- Nothing of note

#### Upper Freeport Coal Structure

- Nothing of note

#### Pittsburgh Coal Structure

- Not present

#### Bedrock Geology

- The proposed well is located on the Allegheny-Pottsville Undifferentiated. There is a trend about 10 miles to the Southwest that follows the same trend where the Precambrian map showed an abrupt change in strike.

#### Bedrock Topography

- The bedrock topography map shows there is a trend about 10 miles to the Southwest that follows the same trend where the Precambrian map showed an abrupt change in strike.

#### EGSP Aerial Photo Lineament

- Numerous lineaments generally less than 1 mile in length have been interpreted from aerial photos by Gray and others (1982) over and in the immediate vicinity of the permit application with 2 dominant directions oriented northwest-southeast and northeast-southwest.

#### EGSP LANDSAT Lineament

- A North Northwest-South Southeast oriented lineament ends about 2 miles to the south of the proposed location.

#### Mason Lineament

- The Mason lineament map shows two major lineaments in the area. The first is a Northwest-Southeast lineament that is about 12 miles to the northeast and Mason refers to it as the Blairsville-Broadtop Lineament. He also shows another lineament which is parallel to the Blairsville-Broadtop lineament and is about 12 miles to the southwest. Also this lineament is parallel to and about 2 miles southwest to the abrupt structural change in the Precambrian surface. This also means this Lineament runs parallel to and is about 8 miles to the northeast of the Highlandtown Fault.

#### Oil and Gas fields

- The production in the immediate area is from the Berea and there are 3 fields ranging from 1.5 miles to the southeast, and about 3.5 miles to the southwest, and 3.5 miles to the north northwest.

#### Earthquakes

- The closest epicenters to this location are about 16 miles to the North Northeast located in Youngstown. There are 11 epicenters in that area that have all occurred within the last 2 years. The magnitude of these earthquakes ranges from 2 – 4. In 2000 there was an earthquake in Portage county about 27 miles to the West Northwest of a magnitude 3.

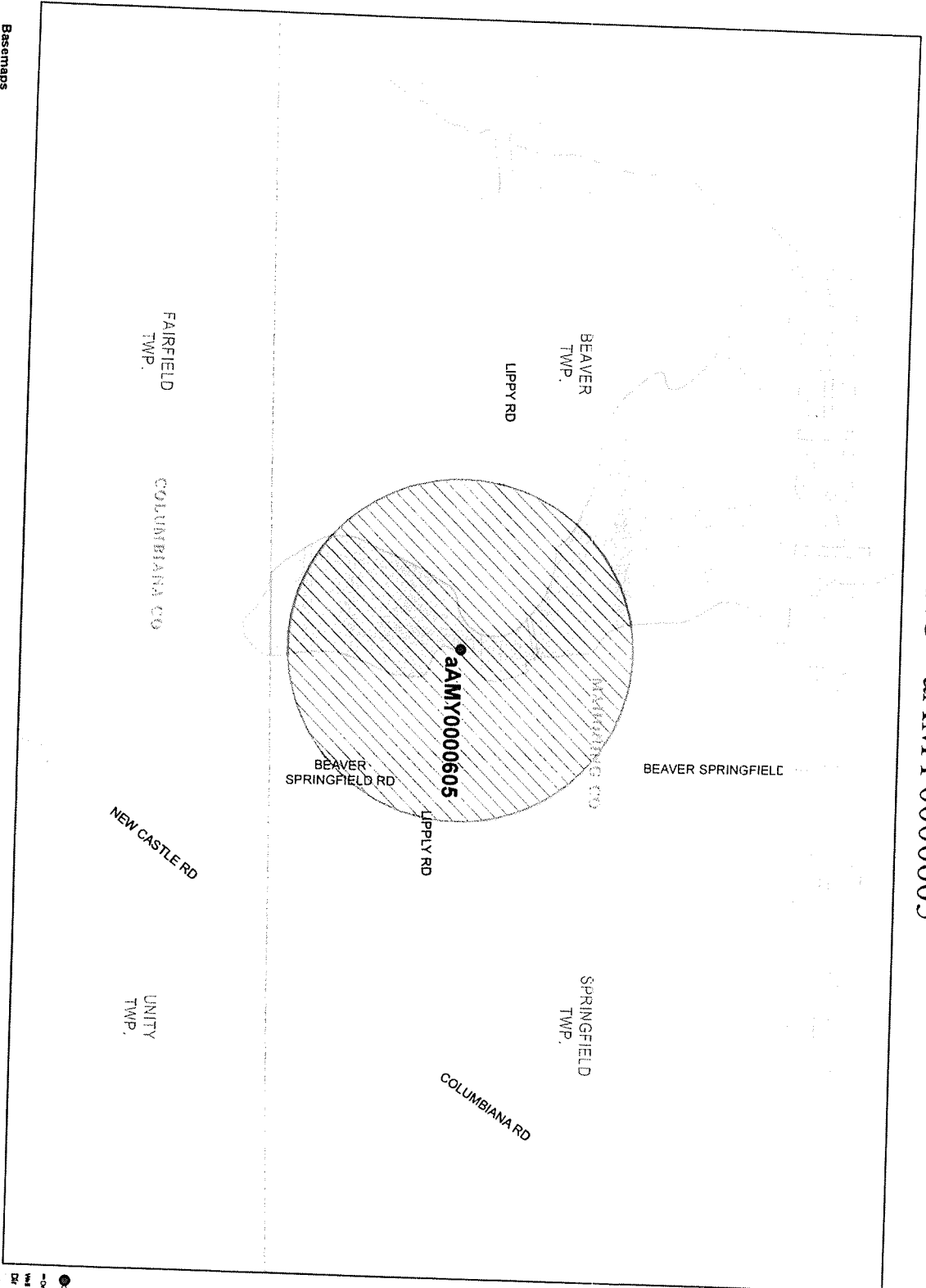
#### Injection Wells

- There are 39 injection wells in the mapping area. Of those 23 are active salt water injection wells, 1 is an inactive salt water injection well, 2 are Inactive enhanced oil recovery wells, 10 inactive salt water injection wells, and 3 drilled saltwater injection wells. The closest injection well is a salt water injection well and is about 2 miles to the North Northwest. The next closest well is about 9 miles to the West Northwest.

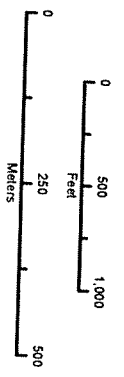
To summarize, there are no known faults in the mapping area. The nearest lineaments from Mason (1999) are over 15 miles away from the permit application. They are parallel to the NE-SW trending Highlandtown fault. There have been no epicenters recorded in the study area. The nearest seismic activity is in the Youngstown area which is about 15 miles to the north.

# Groundwater - Source Water Protection Area Layers

## Well APPNO - aAMY0000605



- Basemaps**
- Railroad
  - Local Road
  - State Road
  - U.S. Highway
  - Interstate
  - Hydrography Line
  - Hydrography Polygon
  - Hydrography Polygon Member
  - City
  - Township
  - County



Data Source: Groundwater - Source Water Protection Areas Layers, Ohio Environmental Protection Agency (OEPA)

Date Created: 12/9/2011



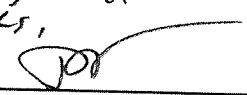

- Well Point NAK
  - Directional Line
  - Well Feature Type
  - DE
  - Open Water Ground
  - Shaded Below Ground
  - Not Over Above Ground
  - Unshaded Well Point
  - Hydro Well Below Aquifer
- SWQA TYPE**
- Open Management Zone (1 year one of five)
  - Source Water Protection Area, 5 Year 10'
  - Protection 1/4 Mile Buffer

**APPLICATION FOR A PERMIT (Form 1)**  
 OHIO DEPARTMENT OF NATURAL RESOURCES  
 DIVISION OF MINERAL RESOURCES MANAGEMENT  
 2045 Morse Road, Building H-3  
 COLUMBUS, OHIO 43229-6693  
 (614) 265-6633

#21552  
 \$1000.00

ARMY 0000605

SEE INSTRUCTIONS ON PAGE 2 (BACK)

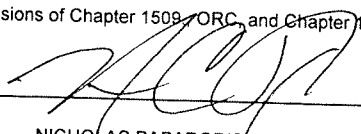
1. I, We (applicant) <u>D&amp;L ENERGY, INC.</u> (address) <u>2761 SALT SPRINGS RD., YOUNGSTOWN, OH 44509</u> hereby apply this date <u>DEC. 5</u> , 20 <u>11</u> for a permit to:		2. Owner #: <u>2651</u> Phone #: <u>330-792-9524</u>
<input type="checkbox"/> Reissue (check appropriate blank) <input checked="" type="checkbox"/> Drill New Well <input type="checkbox"/> Drill Directionally <input type="checkbox"/> Drill Horizontally		<input type="checkbox"/> Revised Location <input type="checkbox"/> Plug Back <input type="checkbox"/> Plug and Abandon <input type="checkbox"/> Orphan Well Program <input type="checkbox"/> Convert <input type="checkbox"/> Deepen <input type="checkbox"/> Reopen <input type="checkbox"/> Temporary Inactive
3. TYPE OF WELL:		
<input type="checkbox"/> Oil & Gas <input type="checkbox"/> Stratigraphic Test <input type="checkbox"/> Solution Mining* <input type="checkbox"/> Input/Injection		<input type="checkbox"/> Annular Disposal <input type="checkbox"/> Gas Storage <input type="checkbox"/> Enhanced Recovery* <input type="checkbox"/> Water Supply <input checked="" type="checkbox"/> Saltwater Injection <input type="checkbox"/> Other (explain): _____ (* if checked, select appropriate box below)
4. MAIL PERMIT TO: <u>D&amp;L ENERGY, INC. 2761 SALT SPRINGS RD. YOUNGSTOWN, OH 44509</u>		20. TYPE OF TOOLS:
5. COUNTY: <u>MAHONING</u>		<input type="checkbox"/> Cable <input type="checkbox"/> Cable / Air Rotary <input type="checkbox"/> Cable / Fluid Rotary <input type="checkbox"/> Cable / Air / Fluid Rotary
6. CIVIL TOWNSHIP: <u>SPRINGFIELD</u>		<input type="checkbox"/> Air Rotary <input checked="" type="checkbox"/> Air / Fluid Rotary <input type="checkbox"/> Fluid Rotary <input type="checkbox"/> Service Rig
7. SECTION: <u>36</u> 8. LOT: _____		21. PROPOSED CASING PROGRAM:  <u>11-3/4" FOR 100 FT, 9-3/4" FOR 1200' CEMENTED TO SURFACE, 7" CEMENTED TO SURFACE get at 9650'</u> <u>Cemented w/ 2655Ks,</u> 
9. FRACTION: _____ 10. QTR TWP: _____		
11. TRACT / ALLOT: _____		22. FIRE AND MEDICAL DEPARTMENT TELEPHONE NUMBERS: (closest to well site) Fire: <u>911</u> Medical: <u>911</u>
12. WELL #: <u>7</u>		
13. LEASE NAME: <u>MOHAWK PRINTUP</u>		23. MEANS OF INGRESS & EGRESS: Township Road: _____ County Road: _____ Municipal Road: _____ State Highway: <u>S.R. 617</u>
14. PROPOSED TOTAL DEPTH: <u>11,150</u>		
15. PROPOSED GEOLOGICAL FORMATION: <u>KNOX-PRECAMBRIAN Mt Sueda PB</u>		24. IS THE WELL LOCATION OR PRODUCTION FACILITIES WITHIN AN URBANIZED AREA AS DEFINED BY 1509.01(Y) ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 
16. DRILLING UNIT IN ACRES (must be same as acres indicated on plat): <u>7</u>		
17. IF PERMITTED PREVIOUSLY:		19. LANDOWNER ROYALTY INTEREST: Is There An Attached List? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name: <u>DENNIS PRINTUP, JR.</u> Address: <u>14926 YOUNGSTOWN PITTSBURG RD., PETERSBURG, OH 44454</u> Name: _____ Address: _____ Name: _____ Address: _____
API #: _____ OWNER: _____ WELL #: _____ LEASE NAME: _____ TOTAL DEPTH: _____ GEOLOGICAL FORMATION: _____		
18. IF SURFACE RIGHTS ARE OWNED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES Division Name: <u>N/A</u> Division Phone: _____		

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I, the undersigned, being first duly sworn, depose and state under penalties of law, that I am authorized to make this application, that this application was prepared by me or under my supervision and direction, and that the facts stated herein are true, correct, and complete, to the best of my knowledge.

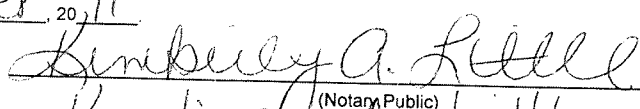
I, the undersigned, further depose and state that I am the person who has the right to drill on the tract or drilling unit and to drill into and produce from a pool and to appropriate the oil or gas that I produce therefrom either for myself or others as described in this application. And furthermore, I the undersigned, being duly sworn, depose and state at this time that I am not liable for any final nonappealable order of a court for damage to streets, roads, highways, bridges, culverts, or drainage ways pursuant to Section 5577.12 of the Ohio Revised Code (ORC). I, the undersigned, further depose and state that all notices required by 1509.06 (A) (9) ORC for this application have been duly provided by me. If applying for a permit to plug and abandon a well, I hereby certify that the written notices, as required in Section 1509.13, ORC, have been given.

That I hereby agree to conform with all provisions of Chapter 1509, ORC, and Chapter 1501., OAC, and all orders and conditions issued by the Chief, Division of Mineral Resources Management.

Signature of Owner/Authorized Agent   
 Name (Type or Print) NICHOLAS PAPANODIS Title V.P. LAND OPERATIONS

If signed by Authorized Agent, a certificate of appointment of agent must be on file.  
 Sworn to and subscribed before me this the 6 day of December, 2011

 **KIMBERLY A. LITTLE**  
 MY COMMISSION EXPIRES  
 JUNE 1, 2014

  
 (Notary Public)  
Kimberly A. Little  
June 1, 2014  
 (Date Commission Expires)

**SUPPLEMENT TO APPLICATION**  
**PERMIT FOR A SALTWATER INJECTION WELL (Form 210)**

Ohio Department of Natural Resources, Division of Mineral Resources Management  
2045 Morse Road, Bldg H3  
Columbus, OH 43229-6693

AREA OF REVIEW. An application for a saltwater injection well (SWIW) will be evaluated on the basis of an "area of review" surrounding the proposed well. The area of review for wells in which injection of greater than two hundred barrels per day is proposed shall be the area circumscribed by a circle with the center point at the location of the injection well and a radius of one-half mile. The area of review for wells in which a maximum injection of two hundred barrels per day or less is proposed shall be the area circumscribed by a circle with the center point at the location of the injection well and a radius of one-quarter mile.

31. **PROPOSED INJECTION ZONE**

Geological Formation: \_\_\_\_\_  
Injection Interval: From: 9650 ~~Knox Precambrian~~ 11150 feet to \_\_\_\_\_  
Geologic description of injection zone: Interbedded, sandstone, limestone, dolomite, arkose sands

32. **WELL CONSTRUCTION AND OPERATION**

- A. Description of the proposed casing and cement program for new wells, or of the casing, cementing or sealing with prepared clay for existing wells to be converted:  
Set 100' of 11-3/4" conductor, drill to 1200' and set 1200' of 9-3/4" casing with 350 sacks of superlite cement, drill 8-3/4" hole from 1200' to 11150' and set 9650' of 7" casing, set casing annulus packer (cap) at 9650', cement 7" casing from 9650' with 265 sacks SFL cement.
- B. Proposed method for testing the casing:  
Mechanical Integrity test, then daily monitoring with a chart recorder.
- C. Description of the proposed method for completion and operation of the injection well:  
Acidize and injection test thru 7" casing. Install 4" lined tubing with Baker packer set.
- D. Description of the proposed unloading, surface storage, and spill containment facilities:  
Concrete unloading pad  
18 - 500 BBL steel holding and settling tanks contained in a 100'x100' concrete containment area with 5ft. high concrete walls.

RECORDED

33. **PROPOSED INJECTION VOLUMES**

- A. Indicate the estimated amount of saltwater to be injected into the proposed injection well per day:  
AVERAGE: 1500 BBL MAXIMUM: 3000 BBL
- B. Indicate the method to be used to measure the actual amount of saltwater injected into the well:  
Daily water tickets and BBL counter.

34. **PROPOSED INJECTION PRESSURES**

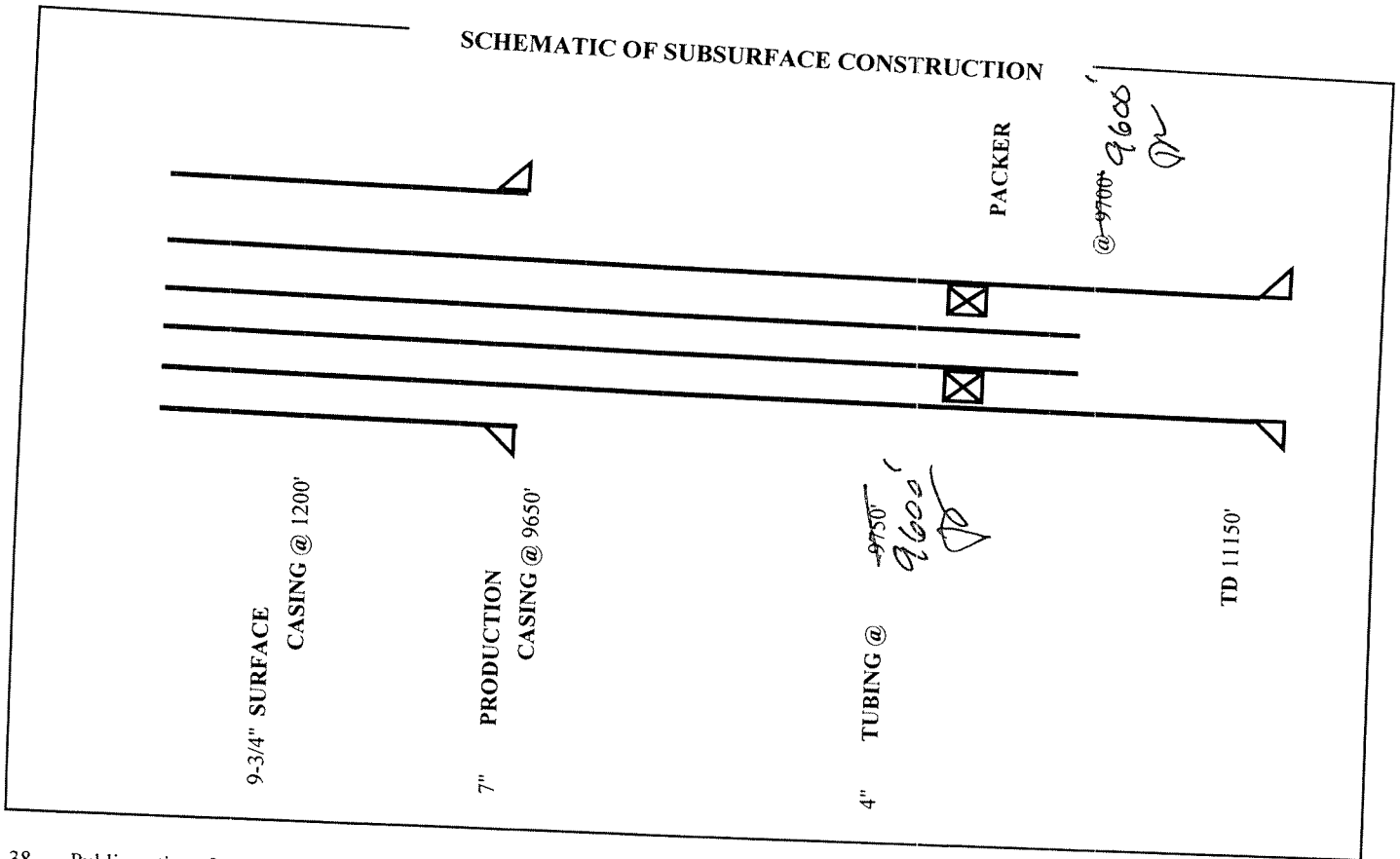
- A. Indicate the estimated pressure to be used for injection of saltwater into the proposed injection well:  
AVERAGE: 1200 MAXIMUM: 1890 - 2220 psig
- B. Indicate the method to be used to measure the actual daily injection pressure:  
Chart recorder

35. **PROPOSED CORRECTIVE ACTION**

Explain any corrective action proposed for wells penetrating the proposed injection formation or zone within the area of review:  
n/a

36. **MAP.** Each application for a permit shall be accompanied by a map or maps showing and containing the following information:
- A. The subject tract of land on which the proposed injection well is to be located.
  - B. The location of the proposed injection well on the subject tract established by an Ohio registered surveyor showing the distances in feet from the proposed well site to the boundary lines on the subject tract;
  - C. The geographic location of all wells, penetrating the formation proposed for injection regardless of status, within the area of review;
  - D. All holders of the land owner's royalty interest of record, or holders of the severed oil and gas mineral estates of record in the subject tract;
  - E. All owners or operators of wells producing from or injecting into the same formation proposed as the injection formation.

37. **SCHEMATIC DRAWING OF SUBSURFACE CONSTRUCTION.** Label the schematic drawing below indicating size and setting depth of surface casing, intermediate (if any) and production casings; amount of cement used, measured or calculated tops of cement; size and setting depth of tubing; type and setting depth of packer; geologic name of injection zone showing top and bottom of injection interval. If the proposed input well design is substantially different from the schematic below, attach on a separate sheet a schematic of your proposal labeled with the above information.



38. Public notice of an application for an enhanced recovery project is required by law. In addition, the applicant must submit, on an attached sheet, a list of the names and address of those persons required to receive personal notice in accordance with Rule 1501:9-5-05(E)(1), of the Ohio Administrative Code.

After submitting the application, and after a determination by the Division that it is complete as required by the rules of the Division, a legal notice must be published by the applicant in a newspaper of general circulation in the area of review. The legal notice must contain the information described in Rule 1501:9-5-05(E)(1) of the Ohio Administrative Code. A copy of the notice must be delivered to all owners or operators of wells within the area of review producing from or injecting into the same formation proposed as the injection formation. Proof of publication, publication date, and an oath as to the delivery to those entitled to receive personal notice under this method must be filed with the Division within thirty days after the Division determines that the application is complete.

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In addition, notice of all applications for enhanced recovery projects will be published in the Division's Weekly Circular.

The undersigned hereby agrees to comply with all provisions for an enhanced recovery project as required by Chapter 1501:9-5 of the Ohio Administrative Code. In addition, the undersigned deposed and says that he shall conform to all provisions of Section 1509.072 of the Ohio Revised Code, and to all orders and rules issued by the Chief, Division of Mineral Resources Management.

Owner/Authorized Agent (Type or Print): Nicholas C. Paporadis  
 Signature of Owner/Authorized Agent: [Signature] Title: V.P. LAND OPERATIONS  
 Permanent Address of Home Office: 2761 Salt Springs Road, Youngstown, OH 44509

If signed by Authorized Agent, a certified copy of appointment of agent must be on file with the Division.

SWORN to and subscribed before me this 6 day of December, 20 11.



KIMBERLY A. LITTLE  
 MY COMMISSION EXPIRES  
 JUNE 1, 2014

Kimberly A. Little  
 Notary Public  
June 1, 2014  
 Date Commission Expires



Latitude: 40° 54' 03.46"

NORTH: 455892

Longitude: 80° 31' 13.20"

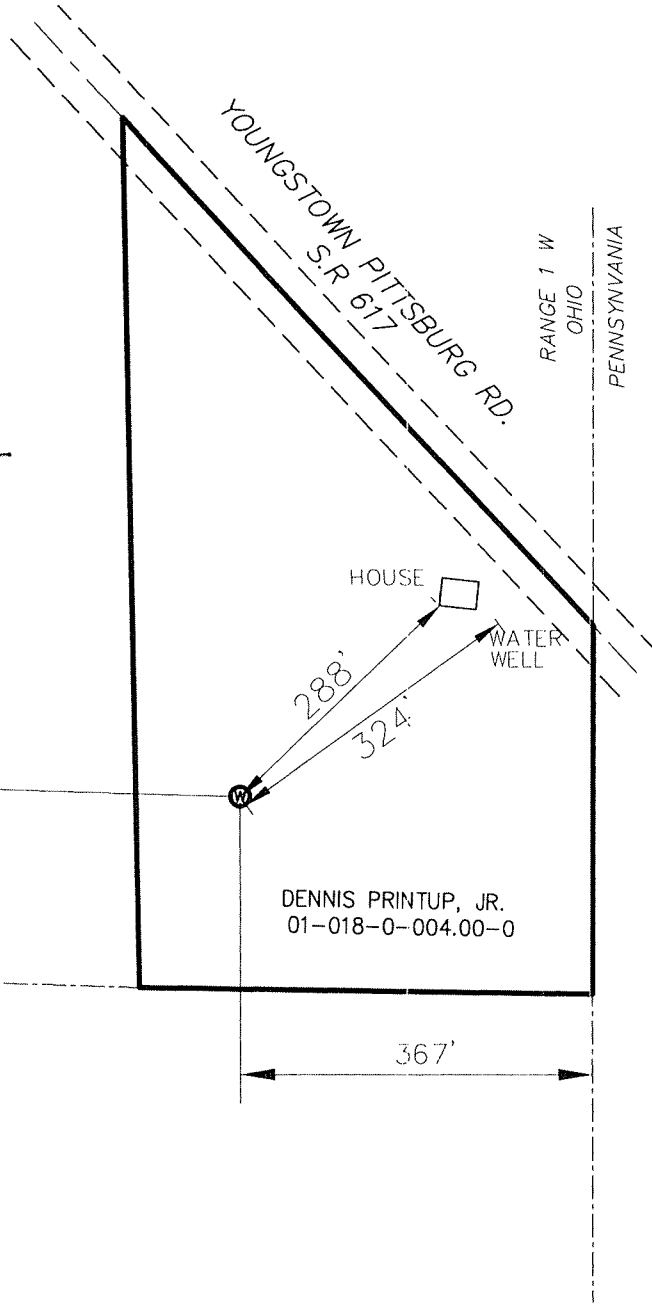
EAST: 2515693

# WELL LOCATION PLAT

LEGEND:

⊙ PROPOSED BRINE WATER INJECTION WELL  
NEW LOCATION

203'SL & 367'EL  
of Section 36



MAHONING COUNTY  
SECTION 36  
TOWNSHIP 9 N  
TOWNSHIP 8 N  
COLUMBIANA COUNTY'

DENNIS PRINTUP, JR.  
01-018-0-004.00-0

RECEIVED

Surveyor or Engineer <b>GARY TANERI</b>	Phone # 330-207-5502	Date DEC. 1, 2011	Scale 1"=200'	Acreage 7.0
Lat. & Long Metadata Method <b>GPS</b> Accuracy 3 ft. Datum <b>NAD83</b>	Elevation Metadata Method <b>USGS</b> Accuracy 10 ft. Datum <b>NGVD29</b>	Survey Date 12/01/11		
Applicant / Well Operator Name <b>D &amp; L ENERGY, INC.</b>	Well(Farm) Name <b>MOHAWK PRINTUP</b>	Well # 7		
Address 2761 SALT SPRINGS ROAD YOUNGSTOWN, OH 44509	County <b>MAHONING</b>	Municipality <b>SPRINGFIELD</b>		
Surface Landowner <b>DENNIS PRINTUP, JR.</b>	USGS 71/2 Quadrangle Map Name <b>NEW MIDDLETOWN</b>	Surface Elevation 1140 ft.	Anticipated Total Depth 9300 ft.	
Surface Lessor <b>D &amp; L ENERGY, INC.</b>	Angle & Course of Deviation (Drilling) <b>VERTICAL</b>			

STATE OF OHIO  
DEPARTMENT OF NATURAL RESOURCES  
MINERAL RESOURCES MANAGEMENT  
COLUMBUS, OH 43224



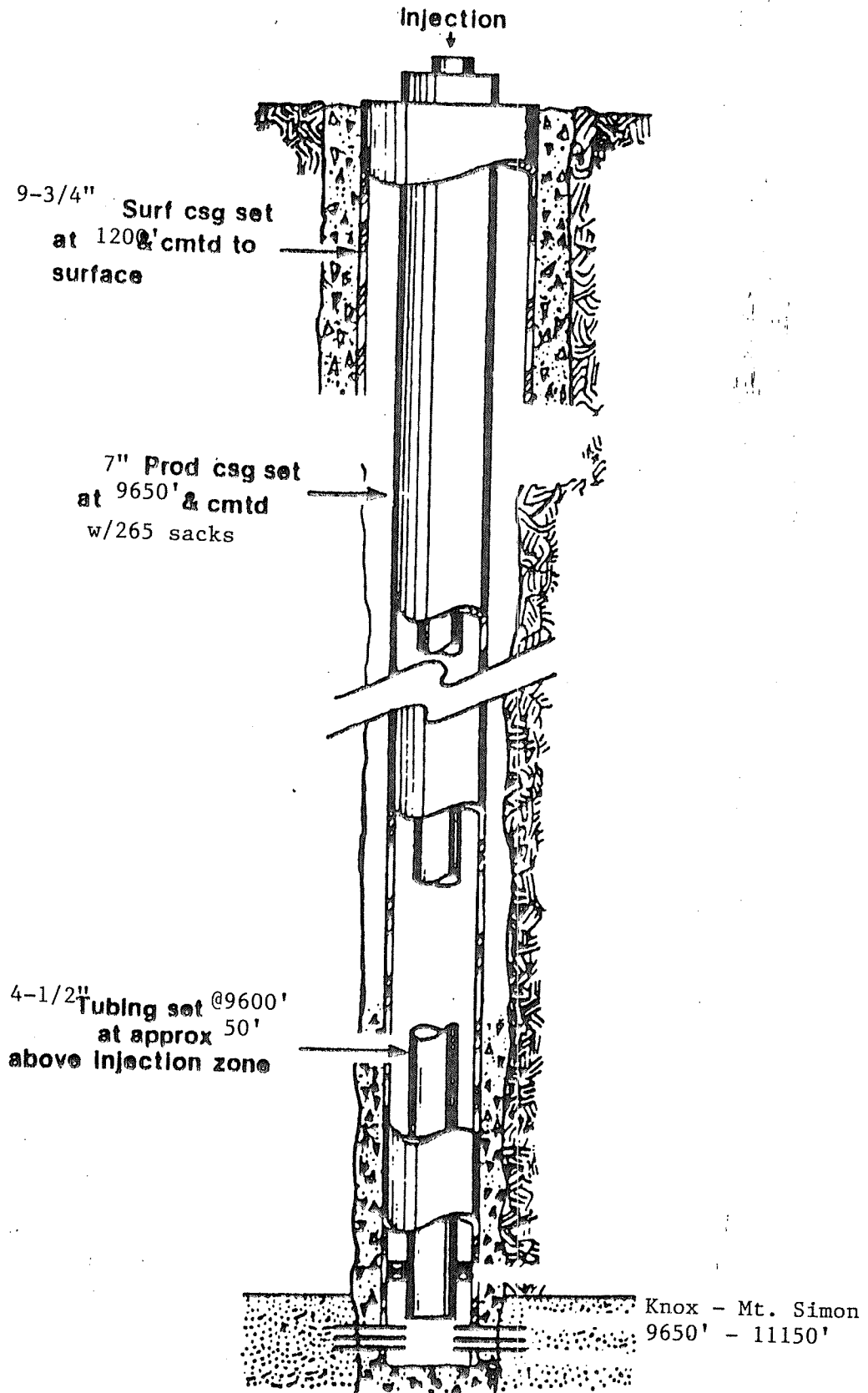
*[Signature]*  
Gary Richard Taneri  
Registered Professional Surveyor No. 7672  
Date 12/7/11



Mahoning County, SWIW #14, Springfield Twp.,  
New well

### Subsurface Construction For Injection Well

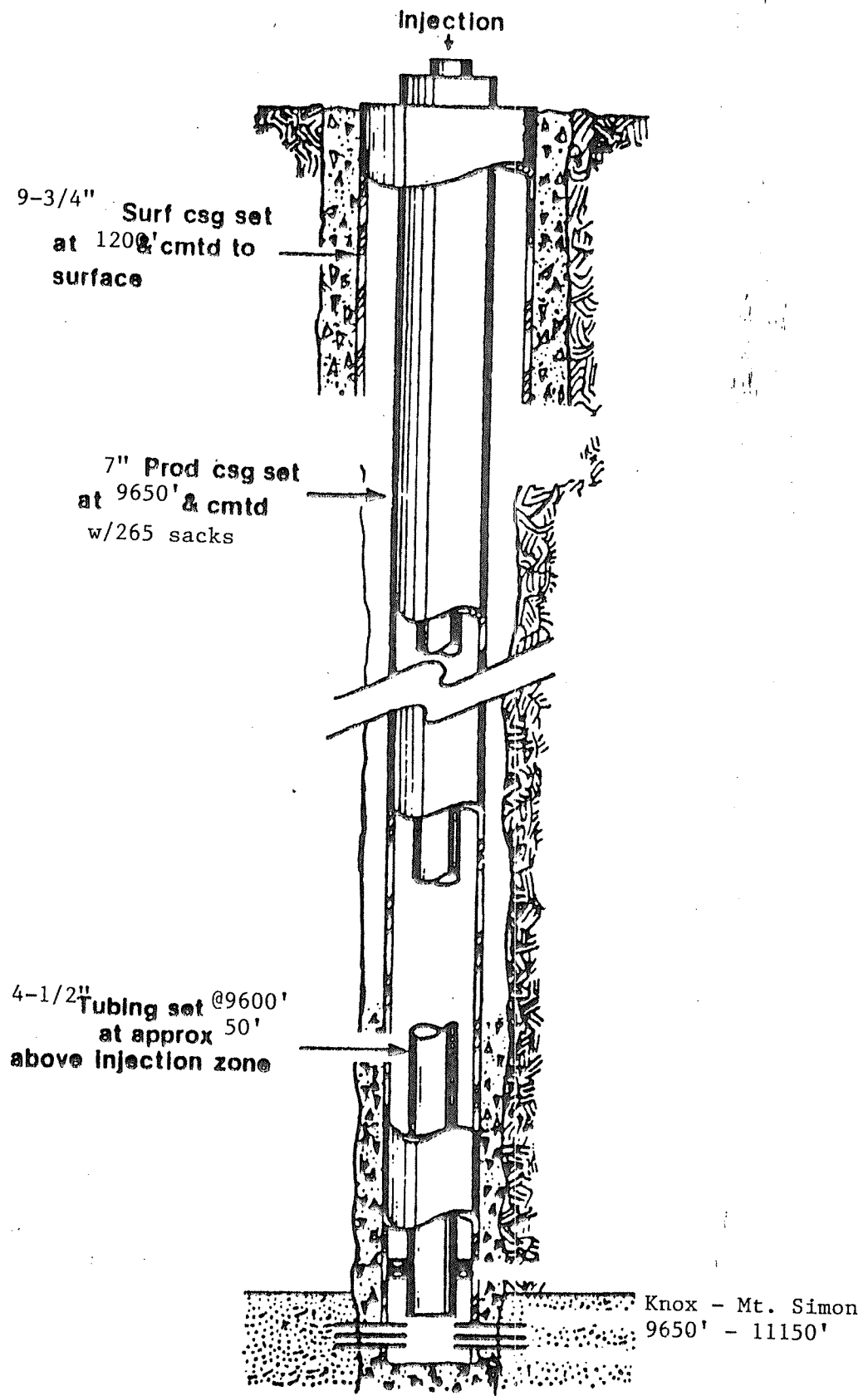
Maximum Injection Pressure: 2220 psi



Total Depth: 11150 feet

Subsurface Construction  
For Injection Well

Maximum Injection Pressure: 2220 psi

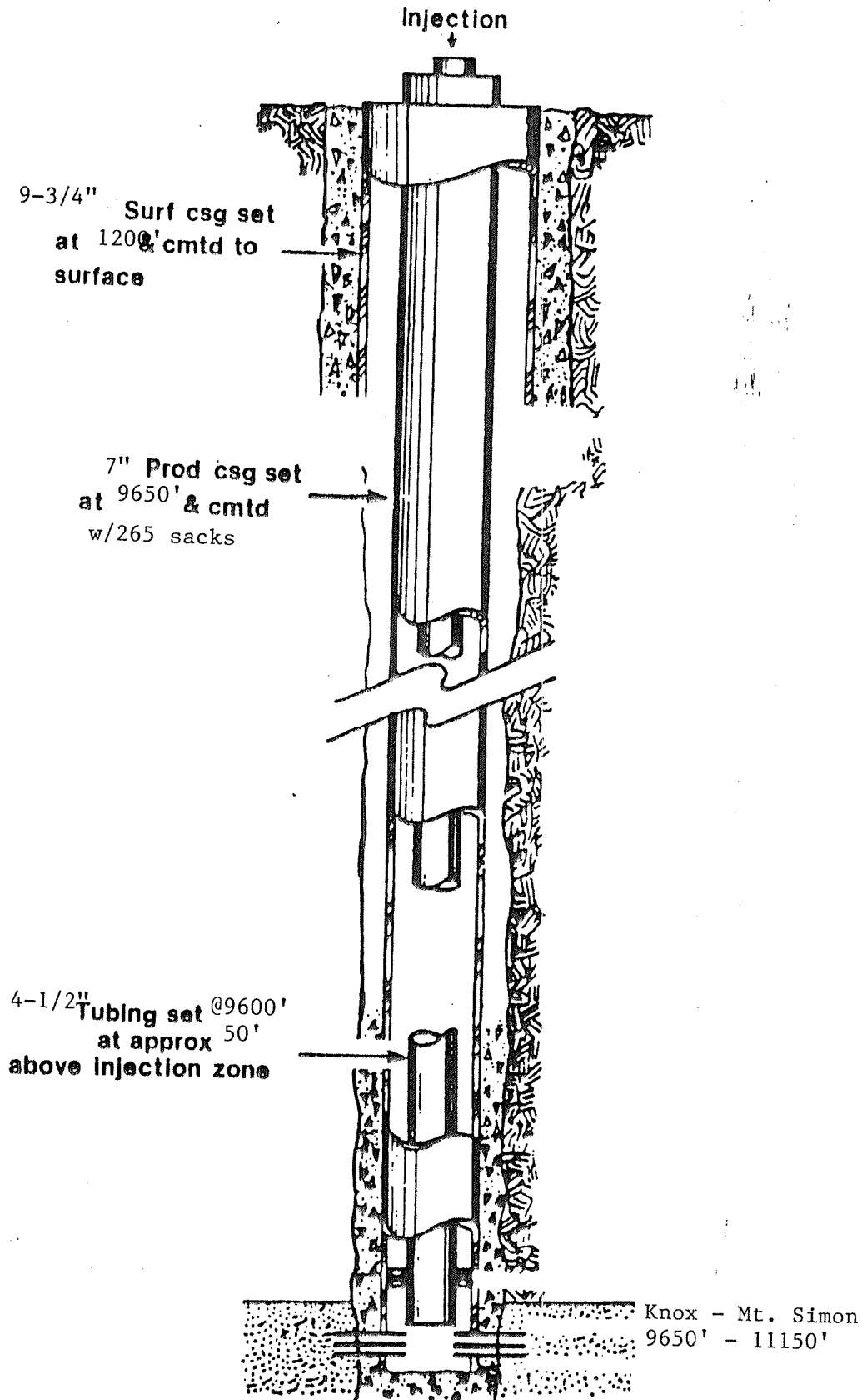


Total Depth: 11150 feet

Mahoning County, SWIW #14, Springfield Twp.,  
New well

### Subsurface Construction For Injection Well

Maximum Injection Pressure: 2220 psi



Total Depth: 11150 feet