New York State
Oil, Gas
and
Mineral Resources
2009

New York State
Department of Environmental Conservation
Division of Mineral Resources
625 Broadway
Albany, New York 12233-6500

www.dec.ny.gov

Division Mission Statement

The Division of Mineral Resources is responsible for ensuring the environmentally sound, economic development of New York's non-renewable energy and mineral resources for the benefit of current and future generations.

This report was produced by the
NYS Department of Environmental Conservation

Division of Mineral Resources
625 Broadway
Albany, NY 12233-6500
(518) 402-8076

Bradley J. Field, Director

Executive Summary

Mining occurs in every region of the State except the New York City area. Oil and gas development has historically occurred in the western half of the State, but the Finger Lakes region has been experiencing heavy activity for several years. Because of differences in legal reporting requirements, the types of statistics presented for the two programs are not identical.

Oil, Gas and Solution Mining

Inspections - Staff traveled 99,704 miles and performed 2,243 inspections.

Permits and Completions

Gas:	Permits	246	Completions	134
Oil:	Permits	279	Completions	191
Other:	Permits	27	Completions	85
Total:	Permits	552	Completions	410

Wells Reported (All Types) 2009 - 14,512

Wells To Date (All Types) - 75,000; majority pre-regulation (most plugging status unknown).

Production and Market Value

Gas	44.85 bcf	Value down 58%
Oil	323,536 bbl	Value down 55%
Total O&G Market Value	$206 million	

State Leasing - 93 total leases were in effect covering 63,676 acres; 236 producing wells on 63 leases paying production royalties.

Revenues from Oil and Gas

State Revenues	$1.4 million
Local Govt. Taxes (est.)	$6.2 million
Landowner Royalties (est.)	$25.9 million

Underground Natural Gas Storage - 26 facilities were 76% full at year-end.

Total Storage Capacity	240 bcf
Working Gas Capacity	123 bcf
Max. Deliverability	2.37 bcf/day

Solution Mining - Five facilities produced 1.89 billion gallons of brine, equal to 2.21 million metric tons of salt.

Financial Security - In 2009 New York held $25.5 million to guarantee well plugging and site reclamation.

Mined Land Reclamation

Inspections - Staff traveled 138,161 miles to perform 2,475 mine inspections.

Permits Issued

Total Permits	538
New Permits	34
Renewals & Modifications	504

Active Mines 2,122

Estimated Economic Impact $4.9 Billion

Annual Regulatory Fees $4.0 Million

US Production Rank by Quantity

Wollastonite	1st	Salt	3rd
Garnet	1st	Talc, Zinc	4th
Peat	2nd		

NY Rank by Value

Crushed Stone	1st	Sand & Gravel	4th
Cement	2nd	Zinc	5th
Salt	3rd	Wollastonite	6th

Common Mine Types

Sand & Gravel	1,743
Limestone	87
Bluestone	81

Owner Type

Industry	1,678
County	49
Town	395

Net Affected Acreage 47,934

Life-of-Mine Acreage 119,969

Reclaimed Acreage, 2009 1,665

Reclaimed Since 1975 30,102

Financial Security - In 2009 New York required $189.7 million to guarantee mine site reclamation.

Division of Mineral Resources Program Highlights

New York State gas production in 2009 was 44.85 billion cubic feet (bcf), down 11% from the previous year. Trenton-Black River production declined, but still accounted for 60% (27.1 bcf) of 2009 gas production. Gas production from the Herkimer increased 441% from the previous year to 2.46 bcf in 2009. Oil production declined 18.5% from the previous year to 323,536 barrels in 2009.

The total number of wells completed dropped 18% from 2008. For the first time in 11 years no new Trenton-Black River Fields commenced production. The significant increase in gas production from the Herkimer in 2009 was the result of 12 additional wells commencing production. In 2009 there were a total of 91 wells statewide with Herkimer production.

Drilling permits issued decreased 27% in number to 552 in 2009. Total drilled depth of the wells for the year was over 760,000 feet (approximately the distance from Albany to Syracuse). Drilling rig availability continued to be a significant concern for New York's oil and gas operators.

In 2009 New York collected $637,254 in royalties from the wells producing from State land. As of the end of 2009, a total of 63,676 acres of state land were under lease for oil and gas production and gas storage for a total annual revenue of $790,486.

The Division of Mineral Resources conducted 52 compulsory integration hearings during 2009, which resulted in 49 finalized orders. One unit required further integration proceedings. The remaining 2 orders were referred to the Office of Hearings and Mediation Services for adjudication on issues including data and site access, assessment of risk penalties, and pipeline costs.

The Division received a total of 50 Marcellus permit applications (3 vertical, 47 horizontal) during 2009. None of the horizontal applications were processed. In 2009 there were 16 Marcellus wells producing in the state, all vertical wells.

In 2009 there were 2,122 active DEC-regulated mines in New York State, a drop of 44 mines from 2008 and the 11th straight year of decline. Increasingly, mine operators are choosing to replace production by expanding current mines, rather than opening new ones. This trend holds true for both sand and gravel mines and hardrock quarries. Only 34 of the 538 mining permits issued in 2009 were for new facilities.

Nevertheless, production of the State's major mined commodities remains relatively level from year to year. The U.S. Geological Survey estimates the annual value of New York's mineral production at roughly $1.3 billion. Mining is spread fairly evenly across the State because of the need to keep trucking distances down and reduce the cost of transporting heavy materials. Sand and gravel mines account for over 80% of DEC-regulated mines and 28 of the new permits issued in 2009, or 82%, were for sand and gravel.

Due to the recent economic downturn, several bluestone operators have sold out or struggle to remain in business. Interest in bluestone mining declined during 2009. Only four new mines were permitted and no Exploration Authorizations were issued.

A total of 47,934 acres were affected by mining in 2009 out of a total approved life-of-mine area of 119,969 acres. The Division continued to have success promoting concurrent reclamation with 1,212 acres reclaimed at 177 operating mines. Final reclamation of 453 acres occurred at 68 closed mines bringing the 2009 total to 1,665 acres. Roughly 30,102 acres of land affected by mining have been reclaimed since 1975.

In 2009 the Division held over $189.7 million in financial security to guarantee mine reclamation. The increase of $22 million from the previous year was due, in part, to a new method for calculating financial security introduced in 2005. The improved method brings financial security requirements more in line with modern-day reclamation costs.

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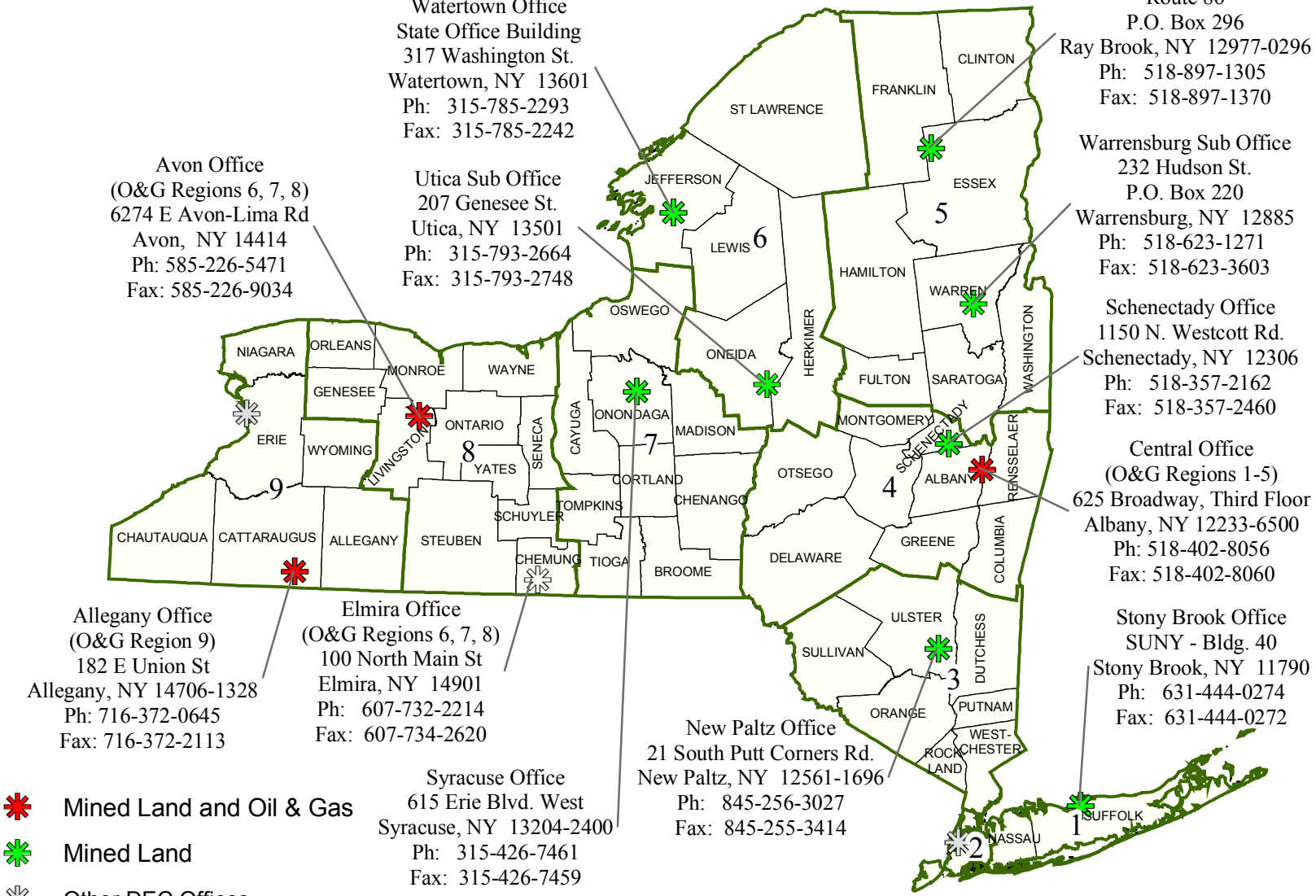


2009 New York Oil, Gas and Solution Mining Industries At a Glance

Production and Market Value

Gas	44.85 bcf	Value down 58%
Oil	323,536 bbl	Value down 55%
Total Market Value		$206 Million

Revenues In Millions

State Leasing & Permit Fees	$1.4 Million
Local Government (est.)	$6.2 Million
Landowner Royalties (est.)	$25.9 Million

Financial Security

Plugging & Reclamation

$25,495,373

State Leasing

93 leases covered 63,676 acres
236 productive wells

All Reported Wells	14,512
Active Wells	
Natural Gas	6,628
Oil	3,401
Gas Storage	953
Solution Salt	108

Underground Gas Storage

26 facilities, 76% full at year-end

Total Storage Capacity	240 bcf
Working Gas Capacity	123 bcf
Max. Deliverability	2.37 bcf/day

Solution Mining

Five facilities produced 1.89 billion gallons of brine (2.21 million metric tons salt)

Natural Gas & Oil Abbreviations

Abbreviations for natural gas volume measurements:

mcf	**thousand cubic feet**
mmcf	**million cubic feet**
bcf	**billion cubic feet**

Crude oil is also measured by volume. One barrel equals 42 gallons.

bbl barrel

What's an MCF Do ?

Roughly 4.2 million households in New York use natural gas for home heat, cooking and heating water. It takes just 69 mcf per year to heat the average New York home.* The State's 2009 production of 44.85 bcf was enough to heat 650,000 homes.

* 2005 NYS Energy Fast Facts, NYSERDA

Market Value and Economic Benefits

Market Value

Estimated total market value for New York's oil and gas decreased 57.8% to $206 million in 2009 from $488 million in 2008. The value of natural gas decreased over 58% from $450 million to $188.8 million. The value of New York's oil also declined in 2009 to a value of $17.3 million, down 54.6% from $38.1 million in 2008. The sharp downturn in the market value for both oil and gas can be attributed to the steep reductions in price for both commodities and the lower reported production volumes for each.

Tax Revenues to Local Governments

Communities in oil and gas producing areas also benefit from the industry's activity. The Division estimated that real property taxes on 2009 production totaled roughly $6.2 million, a 57.5% decrease from the previous year.

Local governments assess their taxes on a unit of production value basis. The Unit of Production is a five-year average which was created by the NY State Division of Equalization and Assessment to help dampen the impact of fluctuating oil and gas prices.

State Lease Oil and Gas Prices

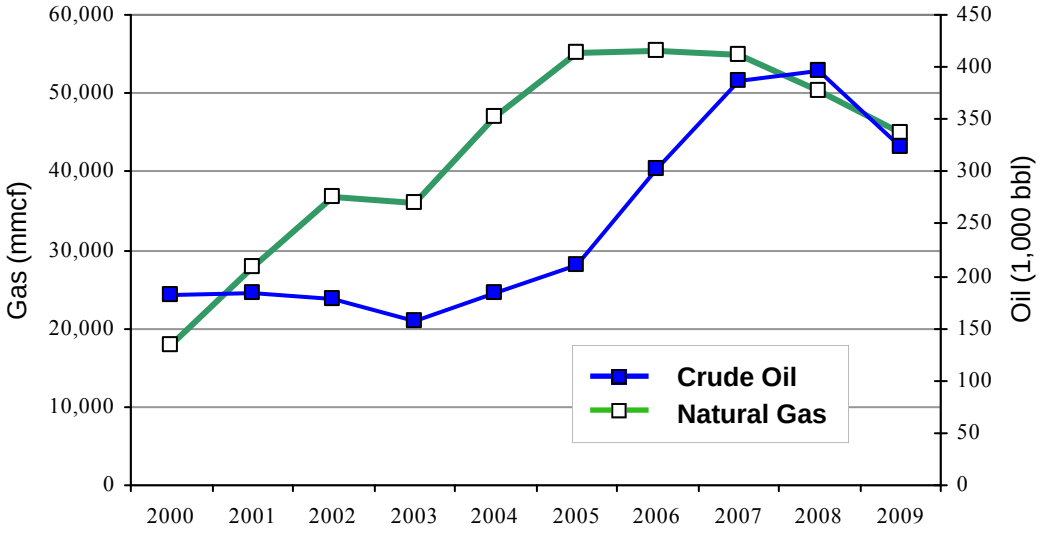
The average wellhead natural gas price of $4.25 per mcf in 2009 was down sharply from $8.94 in 2008. The average price for oil of $57.82 per bbl was also down sharply from $99.29 per bbl in 2008. These average prices were obtained from royalty payments made to New York for leases associated with State lands.

Landowner Royalties and Landowner Wells

The majority of landowners with producing oil and gas leases receive a royalty from the well operator. Based on an average royalty of one-eighth of the production value, the Division estimates that landowners in New York received roughly $26 million in royalties in 2009.

Approximately 500 of New York's gas well operators (mostly landowners) own just one well. Typically, these wells are no longer commercially productive but can provide many years of natural gas service to help reduce or eliminate the landowner's home heating costs.

Chart 1 - New York State Oil and Gas Production, 2000 - 2009



Production of Oil and Gas

Natural Gas Production

New York's reported natural gas production for 2009 was 44.85 bcf, down from 50.32 bcf in 2008. While production decreased in the Trenton-Black River (22%), production from other formations rose 14% as a group, with a notable increase from the Herkimer (441%).

In 2009 Chemung County was the top gas-producing county. Chemung and Steuben counties accounted for 58% of New York's 2009 production. Roughly 27.1 bcf of the state's 44.85 bcf total gas production in 2009 came from just 100 producing Trenton-Black River wells, with one (1) well alone producing 2.5 bcf. Chautauqua County continued to rank third (see Table 1).

Oil Production

In 2009 New York's oil production decreased 19% to 323,536 barrels from 397,060 in 2008.

Top Producers

In 2009 the top gas producer was Fortuna Energy Inc., at 22.61 bcf of gas, and the top oil producer was East Resources, at 90,235 bbl of oil. Tables 2 and 3 on page 12 show the top 10 oil and gas producers. Tables 5 and 6 on page 16 show the top 10 Trenton-Black River wells and fields.

Table 1 - Top 10 Gas Counties, 2009

County	Gas (mcf)	Active Gas Wells	Average mcf/Well
Chemung	13,890,161	46	301,960
Steuben	12,273,217	62	197,955
Chautauqua	6,410,052	3,332	1,924
Erie	2,362,988	1,019	2,319
Cattaraugus	1,347,206	536	2,513
Chenango	1,599,381	28	57,121
Seneca	1,450,148	214	6,776
Cayuga	1,068,846	290	3,686
Madison	951,077	55	17,292
Schuyler	816,884	18	45,382

For Further Details

Map 2 on page 13 gives production information by town. Table 4 on page 14 gives production by geologic formation. For further production details, please visit our website at **www.dec.ny.gov/energy/1601.html**.

Chart 2 - Producing Formation for NY Natural Gas, 2004 - 2009

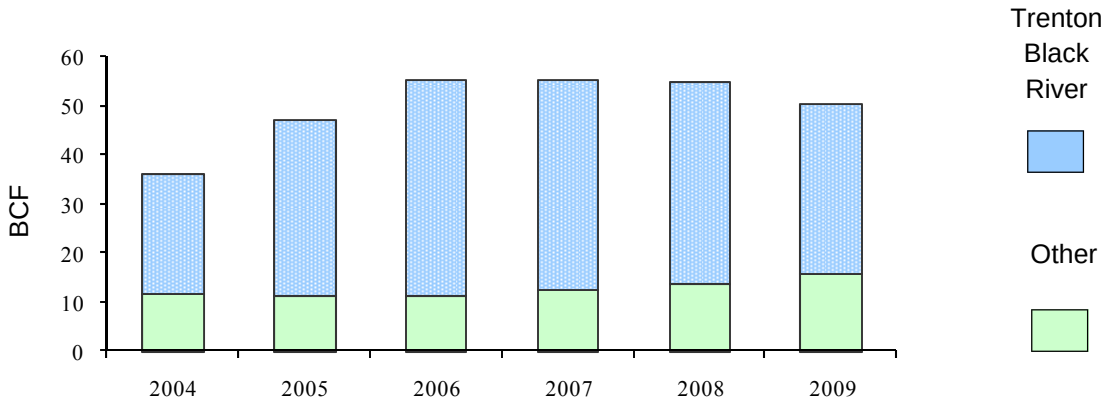


Table 2 - Top 10 Gas Producing Companies, 2009

Company	2009 Gas (mcf)	2008 Rank	2009 Change
1. Fortuna Energy, Inc.	22,610,024	1	-28%
2. Chesapeake Appalachia, LLC	7,297,811	2	+31%
3. Nornew, Inc.	2,550,458	6	+139%
4. U. S. Energy Development Corp.	2,345,702	4	+47%
5. Range Resources-Applachia, LLC	2,265,461	3	-1%
6. EnerVest Operating, LLC	1,041,421	5	-9%
7. Universal Resources Holdings, Inc.	584,513	9	+25%
8. Ardent Resources, Inc.	519,709	>10	+23%
9. Untied States Gypsum Co.	514,315	7	-8%
10. Seneca Resources Corp.	452,946	10	+6%

Table 3 - Top 10 Oil Producing Companies, 2009

Company	2009 Oil (bbl)	2008 Rank	2009 Change
1. East Resources, Inc.	90,235	1	-27%
2. McCracken, Carl A. III	39,554	2	+13%
3. Dallas Energy, LLC	20,021	4	-14%
4. Copper Ridge Oil, Inc.	18,118	5	-14%
5. US Energy Development Corp.	13,056	>10	+396%
6. Pefley Oil & Gas, Inc.	11,262	9	+29%
7. Johnson, Mark & Troy	10,878	7	+1%
8. Nathan Petroleum Corp.	7,689	6	-35%
9. Otis Eastern Services, Inc.	6,371	8	-36%
10. Bouquin, Fred L.	6,170	>10	-11%

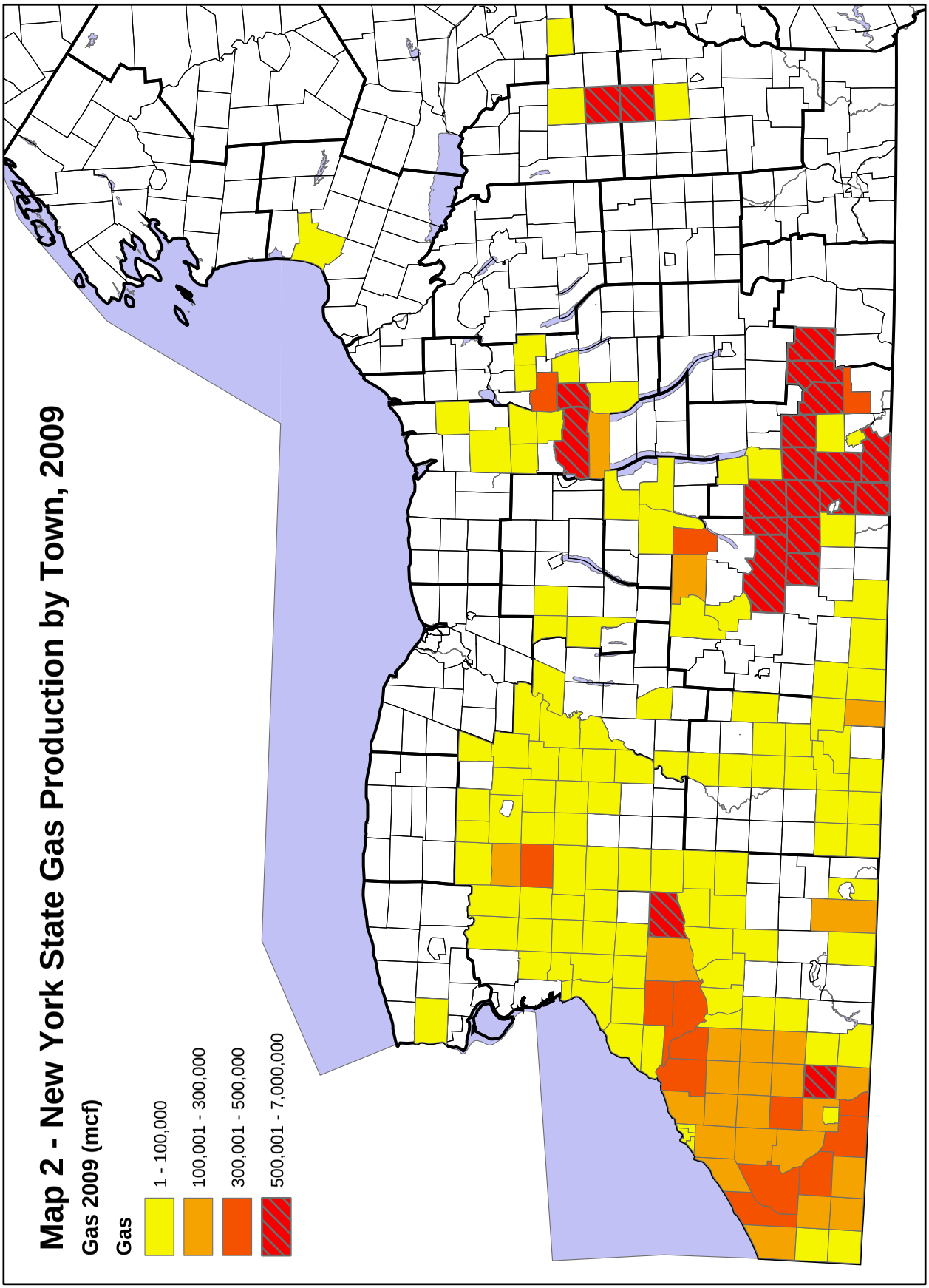

Map 2 - New York State Gas Production by Town, 2009
Gas 2009 (mcf)
Gas
1 - 100,000
100,001 - 300,000
300,001 - 500,000
500,001 - 7,000,000

Table 4 - Production by Geologic Formation, 2009

Formation	Wells[1]	Gas (mcf)	Oil (bbl)
Devonian Shale	28	23,316	0
Undifferentiated Canadaway Group[2]	4,121	288,648	237,335
Perrysburg	1,001	221,724	44,186
Tully	11	46,753	50
Hamilton	4	9436	0
Marcellus	27	56,147	0
Onondaga	78	57,066	2,172
Oriskany	37	95,181	0
Helderberg	1	0	0
Akron	29	14,426	0
Herkimer-Oneida-Oswego	91	2,460,382	0
Medina	6,560	10,532,655	300
Bass Island	80	104,983	12,683
Queenston	581	2,521,395	0
Trenton	8	33,092	0
Black River	128	27,125,529	0
Little Falls	2	50,122	0
Theresa	23	502,561	0
Other	412	706,205	2,660

1 Active, temporarily abandoned and shut-in wells

2 Undifferentiated Canadaway Group includes Glade, Richburg, Bradford, and other well-known oil producing formations

To see a stratigraphic column of New York's geologic formations go to http://www.dec.ny.gov/energy/33893.html

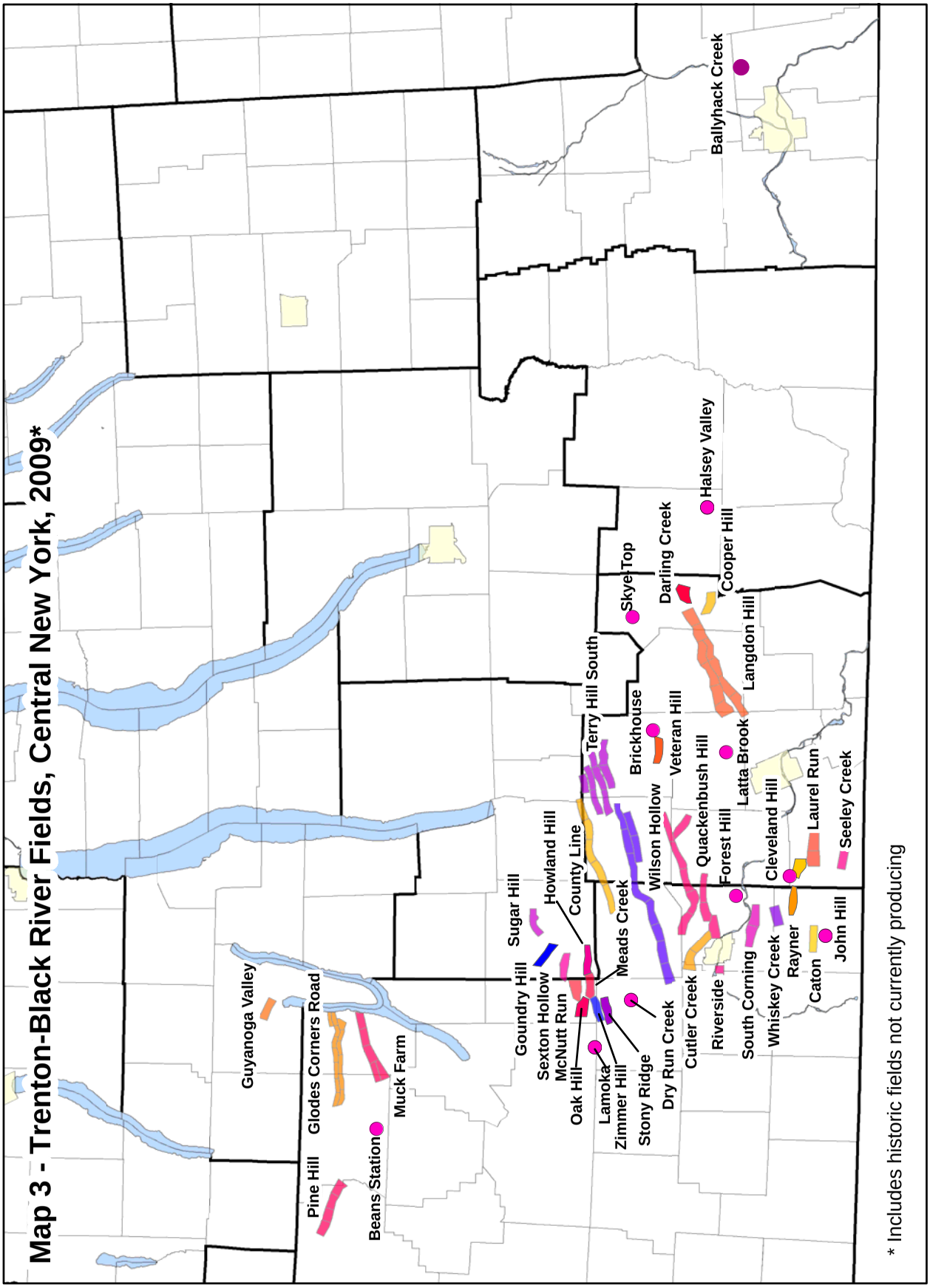

Map 3 - Trenton-Black River Fields, Central New York, 2009*
Ballyhack Creek
Halsey Valley
Darling Creek
Cooper Hill
Skye Top
Langdon Hill
Terry Hill South
Brickhouse
Veteran Hill
Latta Brook
Quackenbush Hill
Laurel Run
Seeley Creek
Cleveland Hill
Forest Hill
Wilson Hollow
Howland Hill
County Line
Sugar Hill
Meads Creek
John Hill
Rayner
Caton
Whiskey Creek
South Corning
Riverside
Cutler Creek
Dry Run Creek
Goundry Hill
Sexton Hollow
McNutt Run
Oak Hill
Lamoka
Zimmer Hill
Stony Ridge
Guyanoga Valley
Glodes Corners Road
Muck Farm
Pine Hill
Beans Station
* Includes historic fields not currently producing

Table 5 - Top 10 Wells, Trenton-Black River Production, 2009

Well Name	API Identification Number	2009 Production (mcf)	County/ Field
Nowlan 1	31015260370000	2,494,309	Chemung/Langden Hill
Gross D1	31101239020000	1,550,769	Steuben/Quackenbush Hill
Dzybon 1	31101238670000	1,284,639	Steuben/Forest Hill
Gillis 1	31101231100000	1,197,080	Steuben/Rayner
Lovell 1323	31015228310000	1,008,617	Chemung/Quackenbush Hill
Reed 1	31101230550000	969,728	Steuben/Quackenbush Hill
Harmyk 1	31015261680000	916,746	Chemung/Langdon Hill
Hartman, BJ 1	31101232270000	902,995	Steuben/Raynor
Cotton-Hanlon 2	31015239870000	763,315	Chemung/Cramer Hollow
Winter G 1A	31107238550100	733,071	Tioga/Halsey Valley

Table 6 - Top 10 Fields, Trenton-Black River Production, 2009

Field Name	2009 Production (mcf)	2008 Production (mcf)	Cumulative Production Year-End 2009	First Year of Production
Quackenbush Hill	6,088,781	7,801,356	101,818,312	2000
Langdon Hill	4,427,589	2,260,014	15,728,669	2001
Wilson Hollow	1,655,982	2,111,885	45,819,517	1999
Rayner	1,649,520	2,728,342	14,095,138	2005
Whiskey Creek	709,732	860,383	6,378,607	2003
Darling Creek	630,544	1,530,278	10,074,162	2006
Terry Hill South	396,890	231,748	9,268,295	2001
Muck Farm	329,704	351,543	9,541,226	1999
Seeley Creek	146,329	398,253	6,010,648	2004
Glodes Corners Road	126,382	144,410	10,153,938	1996

Drilling Permits and Well Completions

Drilling Permits

DEC issued 552 drilling permits in 2009, down 25% from the previous year. This included 246 natural gas, 279 oil, 4 brine, 4 stratigraphic, and 19 underground gas storage well permits.

In 2009 DEC issued permits for wells in 18 counties; the top 3 were Cattaraugus County (155), Allegany County (130) and Erie County (105). Most of the oil drilling permits were issued for Cattaraugus (139) and Allegany (125) counties. Erie (54) and Chautauqua (31) counties had the highest number of gas permits.

Well Spuds and Completions

The number of wells spud (started) in 2009 was 252. The total number of completions decreased 27% to 410. Gas well completions decreased 53% in 2009 while oil well completions increased 2% from 2008.

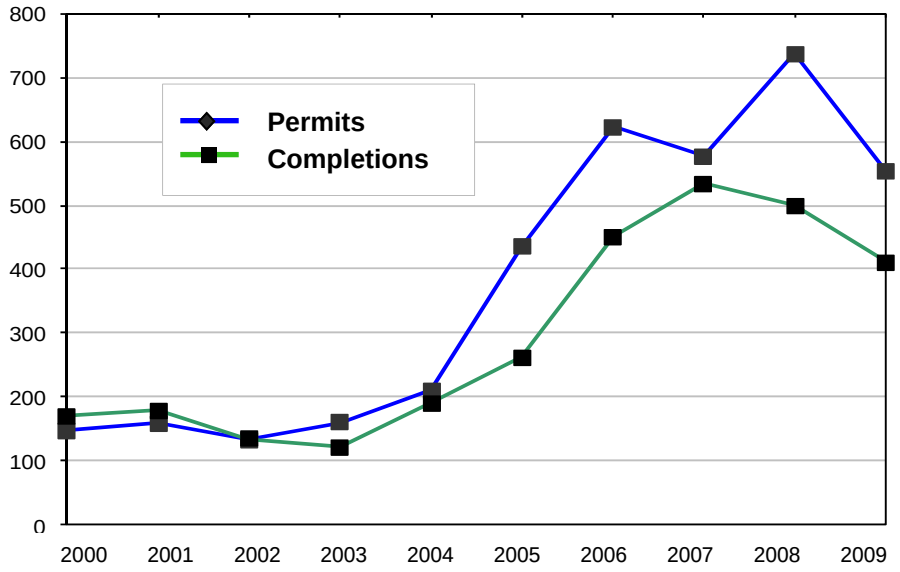
Wildcats and Extensions

Operators drilled 64 gas wildcat wells and 3 gas extension wells in 2009. No oil wildcat wells were drilled.

Formations Permitted

Industry interest in the Black River and Trenton formations slowed, with 8 permits issued in 2009. Interest in the Herkimer remained constant with 27 permits issued in both 2008 and 2009. Other primary gas targets included the Medina and Queenston for a total of 191 permits. The Division issued 279 permits for the State's main oil-producing formations (Perrysburg and Undifferentiated Canadaway Group). Two permits were issued for vertical Marcellus wells in 2009.

Chart 3 - Drilling Permits and Completions, 2000 - 2009



Drilling Permits, 2009

Gas	246
Oil	279
Other	27
Total	552

Well Completions, 2009

Gas	134
Oil	191
Other	85
Total	410

Marcellus and Other Shales

The Marcellus Shale is a black shale that forms the basal unit of the Hamilton Group in New York State. It is geographically extensive, covering an area of approximately 54,000 square miles in the Appalachian Basin states of New York, Ohio, Pennsylvania, and West Virginia as well as small areas of Maryland, Virginia, Kentucky and Tennessee. A 2002 estimate by the U.S. Geological Survey put basin-wide Marcellus natural gas reserves in the range of 30 trillion cubic feet (tcf). However, by 2008 the estimate had climbed closer to 500 tcf based on continued evaluation of Marcellus drilling in Pennsylvania and West Virginia.

New York State's 2009 Marcellus production totaled 56,147 mcf from 16 vertical wells. DEC received 50 permit applications for Marcellus wells during 2009, predominately from Chesapeake Appalachia, LLC and Fortuna Energy, Inc. Forty-seven of the 50 applications were for horizontal wells and therefore remain on hold, along with 11 other horizontal applications received prior to 2009, pending the completion of the DEC's Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (SGEIS).

The SGEIS was undertaken in 2008 following the directive of the Governor to supplement the 1992 Generic Environmental Impact Statement (GEIS) to address horizontal drilling and high-volume hydraulic fracturing in the Marcellus Shale and other low-permeability gas reservoirs. Historically, shale wells in New York have been drilled vertically and then hydraulically fractured with 80,000 gallons or less of water. However, based on recent successes in shale plays in other states, the most efficient method for developing low-permeability shale reservoirs is now horizontal drilling combined with high-volume hydraulic fracturing. Horizontal drilling is not new to New York State; it was used to develop the Trenton-Black River play in the south-central Finger Lakes Region. However, high-volume hydraulic fracturing – – using millions of gallons of water per well — was never contemplated during preparation of the GEIS and is therefore being addressed in the SGEIS.

The document's development began with six public scoping meetings held in the Southern Tier from November to early December 2008, where the public could recommend topics to be covered in the SGEIS. DEC also accepted comments submitted directly to the agency until mid-December of 2008. Following the review of over 3,700 written comments and transcripts from the scoping meetings, DEC released the Final Scope for the draft SGEIS in early February 2009.

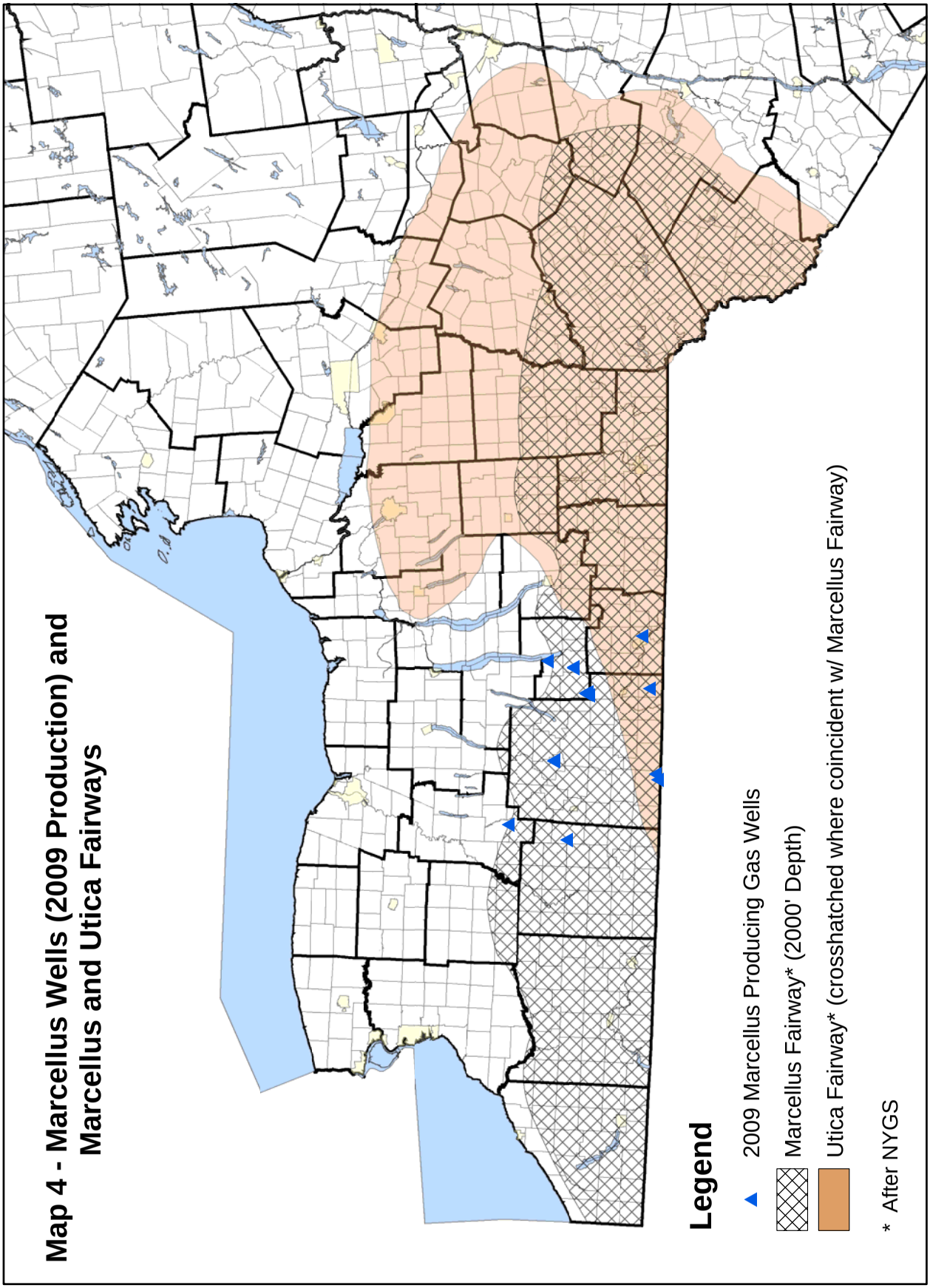
During the months that followed, DEC compiled information on horizontal drilling and high-volume hydraulic fracturing in order to develop the draft SGEIS which was released on September 30, 2009. Assistance with preparation of the draft SGEIS was provided by the New York State Department of Health and four consultants contracted by the New York State Energy Research and Development Authority.

At over 800 pages, the draft SGEIS provides detailed descriptions of the proposed operations, identifies potential environmental impacts, and outlines the safety measures, protection standards, best management practices and mitigation strategies well operators would have to follow in order to obtain a well permit. The draft SGEIS is available on the Department's website at http://www.dec.ny.gov/energy/58440.html.

At the time of release, the public was provided a 60-day period within which to provide comments on the document. However numerous requests from legislators, government agencies, environmental advocacy and other non-governmental organizations, as well as newspapers and individuals, resulted in a decision to extend the public comment period until December 31, 2009. During this period, over 13,300 written comments were submitted via traditional mail, email, and a newly developed web-based submission system. Additionally, 200 verbal comments were received during four public meetings held across the Southern Tier and in New York City. These meetings, held in late October and early November, were collectively attended by more than 2,500 people.

DEC staff will review and consolidate all comments submitted on the draft SGEIS and will provide responses in the form of a responsiveness summary. This document will be issued as part of the final SGEIS following any necessary and appropriate revisions to the draft SGEIS. Only after the SGEIS process is complete will DEC begin issuing applications for permits to drill horizontal wells where high-volume hydraulic fracturing is proposed unless applicants prepare a project-specific supplemental EIS.

The Marcellus is only one of several important low-permeability shale gas reservoirs in New York State; the Utica Shale and Trenton Group shales, particularly in Otsego and Madison Counties respectively, also continue to attract interest. Map 4 shows the approximate area of interest in the Marcellus (roughly where the formation is 2,000 or more feet deep) and the Marcellus and Utica fairways (i.e. areas considered likely to produce economic quantities of gas).


Map 4 - Marcellus Wells (2009 Production) and
Marcellus and Utica Fairways
Legend
2009 Marcellus Producing Gas Wells
Marcellus Fairway* (2000' Depth)
Utica Fairway* (crosshatched where coincident w/ Marcellus Fairway)
* After NYGS

Compliance and Enforcement

Inspections

In 2009 Oil and Gas staff traveled 99,704 miles to perform 2,243 well site inspections. Staff inspect well sites:

- during permit application review to check environmental and public safety issues;
- during drilling to check on well site construction and drilling permit compliance;
- during the operating phase to check for leaks, spills, or other potential problems;
- to ensure that well plugging and site reclamation meet requirements; and
- upon receipt of a well transfer request.

DEC staff perform follow-up inspections to ensure any violations are properly remediated.

Compliance Enforcement

Violations are handled with a mixture of enforcement tools, remediation requirements and penalties. In 2009 the Oil and Gas Program assessed $40,000 in fines and penalties.

Permit Fees

Total oil and gas permit fees collected by the Division equaled $620,010 in 2009, of which $58,000 was deposited in the Oil and Gas Account; this fund is dedicated to plugging orphan and abandoned wells.

DEC Oil and Gas staff perform over 2,000 well inspections per year. Here the inspector is checking to make sure the well is in compliance before DEC approves transfer of the well to a new company.

State Land Leasing

At the end of 2009 the Division managed 93 leases covering roughly 63,676 acres of State land, an increase from the previous year's 63,591 acres. Two non-competitive leases were finalized.

At year-end 2009 the State was earning royalties from 106 oil and gas wells physically located on State lands and another 130 producing wells on adjacent or integrated lands. These wells are associated with 63 leases paying royalties.

The 236 wells produced 8.3 bcf of natural gas and 3,109 bbls of oil. The average prices paid were $4.25 per mcf for gas and $57.82 per barrel of oil.

In 2009 the State received total leasing revenues of $790,486, down 64% from $2.2 million in 2008. The drop was primarily due to the lack of new wells on or adjacent to State lands, and declining production from existing wells.

- **Delay Rentals** - Operators submitted a total of $96,136 in delay rentals. This figure was down 1.2% from the $97,269 collected in 2008.

- **Royalties** - The State received $637,254 in royalty revenue from oil and gas production on 63 leases in nine counties (32,527 acres), down 65% from $1,866,519 in 2008.

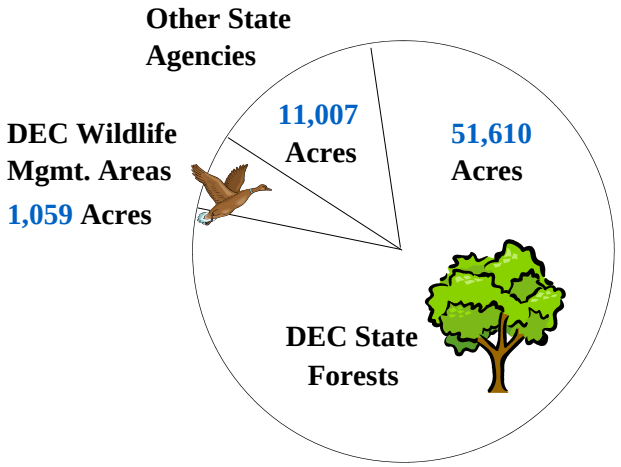
- **Storage Leases** - Fourteen storage leases added $50,960, down 76% from 2008. The majority of New York's storage lease acreage is in Cattaraugus County.

- **Bonus Bids** - A total of $6,136 of bonus bid revenue was received from two non-competitive leases held by a single operator in Chemung County in 2009.

Table 7 - Total Leasing Revenues, 2004 - 2009

2004	$765,782
2005	$3,439,670
2006	$3,296,932
2007	$11,767,813
2008	$2,175,715
2009	$790,486

DEC Managed Oil and Gas Leases



For more information, see the 2009 Oil & Gas Leasing Report at **http://www.dec.ny.gov/energy/1579.html**

Plugging Permits and Bonds

2009 Plugged Wells and Bonds

At year-end DEC held $25.5 million in financial security to guarantee well plugging and well site reclamation. This represented an increase of 3.4% from $24.7 million in 2008.

At the end of production a well must be plugged with cement at proper intervals, the equipment must be removed, and all disturbed land, including the access road, must be reclaimed. In 2009 operators plugged 240 wells in accordance with requirements in DEC-issued plugging permits.

Much of the 2009 plugging activity was in the old oilfields of western New York. Almost 80% of the plugging jobs were oil wells, 10% gas wells, and the remaining 10% a mix of other regulated well types.

Plugging occurred in 14 counties with almost 60% of the plugging jobs in Allegany County and 20% in Cattaraugus County. As noted above, the vast majority of plugging jobs involved old oil wells, particularly in the Richburg and Bradford Fields.

Financial Security, 2009

$25.5 Million

Table 8
Plugged Wells, 2009

Oil	191
Gas	25
Other	24
Total	240

Abandoned and Orphaned Wells

Old Historic Well Problems

Abandoned wells can leak oil, gas and/or brine; underground leaks may go undiscovered for years. These fluids can contaminate ground and surface water, kill vegetation, and cause public safety and health problems.

Historically, abandoned wells have been discovered in the woods, along roadsides, and in residential yards, playgrounds, and parking lots. They've even been discovered inside buildings, and underwater in wetlands, streams and ponds.

2009 Status Report

Abandoned, unreported and inactive wells continued to be a problem. In 2009 a total of 450 operators reported 3,043 wells with zero production. This is in addition to over 4,100 orphaned and inactive wells in the Department's records. Enforcement actions have reduced the number of unreported wells yet some operators refused to file their annual reports. The operators that remained out of compliance have been referred to the Office of General Counsel for additional enforcement actions.

DEC has at least partial records on 40,000 wells, but estimates that over 75,000 oil and gas wells have been drilled in the State since the 1820s. Most of the wells date from before New York established a regulatory program. Many of these old wells were never properly plugged or were plugged using older techniques that were less reliable and long-lasting than modern methods.

Every year while conducting scheduled inspections or investigating complaints, DEC staff discover more abandoned wells. Extensive courthouse research is often required to identify a well's previous owners. Many of these cases take several years to resolve as DEC pursues legal action against the responsible parties.

Oil & Gas Account

New York has an Oil and Gas Account which was created to plug problem abandoned wells. It is funded by a $100 per well permit fee; at the end of 2009 the balance was $208,806. DEC has over 500 wells on its priority plugging list. Since the funds are insufficient to plug all the priority wells, DEC continues to pursue other mechanisms to plug abandoned wells.

DEC-Coordinated Plugging Efforts

In 2009 Division staff completed work on an Oil and Gas Account contract for a major plugging project involving abandoned oil wells. The $190,000 contract to plug 45 wells on the Thornton-Bradley and Warfield leases in the Town of Alma, Allegany County was completed in late 2009.

Division staff continued working with the U.S. Environmental Protection Agency (USEPA) and the U.S. Coast Guard (USCG) to plug wells with federal funds from the Oil Pollution Act of 1990. This money can be used for wells that leak oil or threaten to leak oil to the navigable waters of the United States.

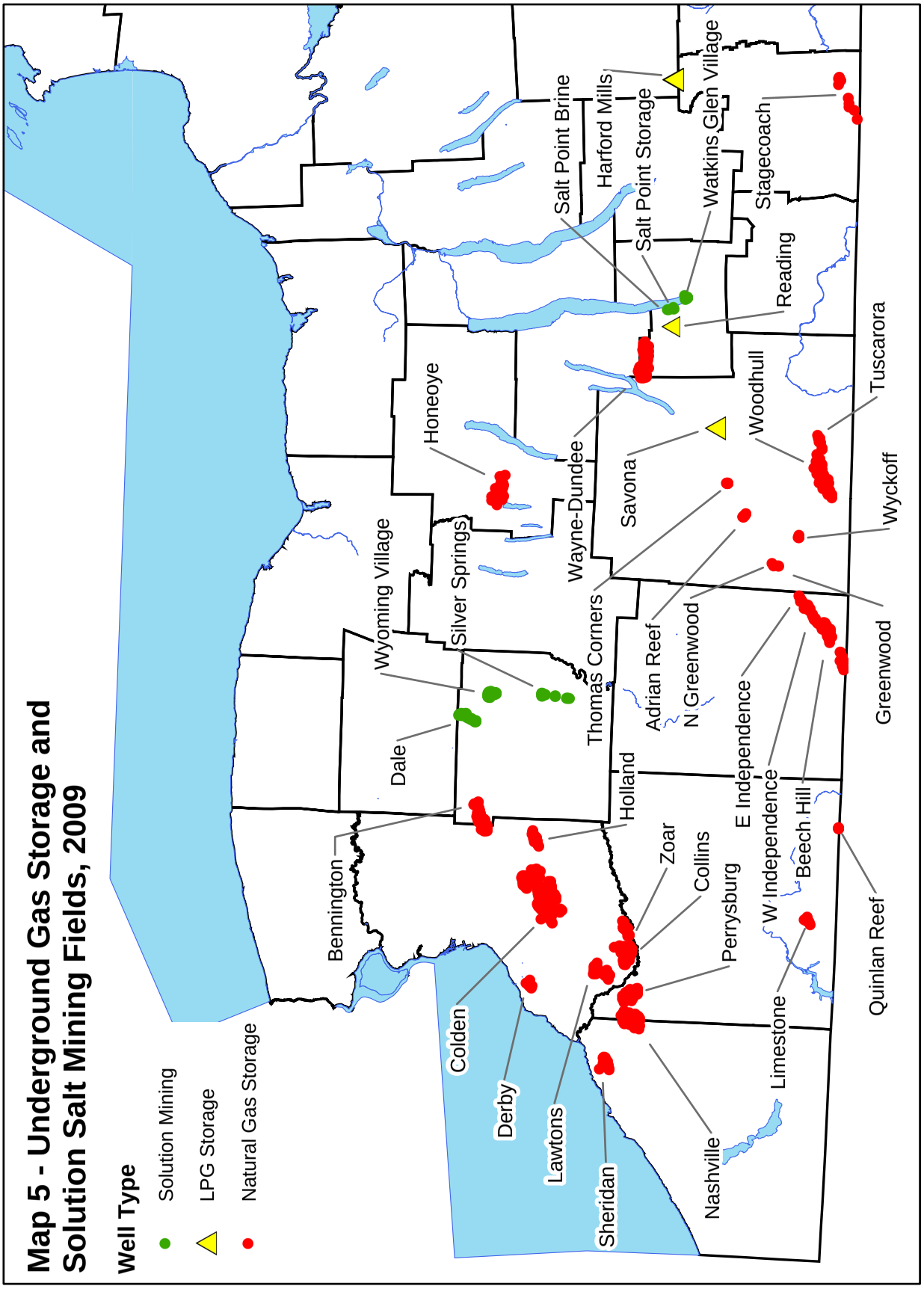
As a direct result of DEC staff efforts, USEPA has undertaken several plugging projects in New York State. In 2009 USEPA continued to focus on the Moore Lease in the Town of Bolivar, Allegany County and plugged the last of 145 Moore Producing wells on the Curtis farm lease. In conjunction with the well pluggings, the wellsites were reclaimed. The abandoned and leaking wells on this lease had been the subject of DEC enforcement actions for decades.

Additionally, in 2009 USEPA plugged four more wells on the Allegro Lease in the Town of West Union, Steuben County, and plugged one abandoned well on the former Wood Oil Company lease in the Town of Olean, Cattaraugus County. The USEPA plans to continue plugging work on this lease into 2010.

Why Do We Keep Finding "New" Abandoned Wells ?

Most abandoned wells were drilled many decades ago so:

- they were not registered with the State and there are often no maps available;
- surface equipment is often gone that would make them easier to spot; and
- they may be hidden by thick underbrush, standing water, or other subsequent uses of the land.


Map 5 - Underground Gas Storage and Solution Salt Mining Fields, 2009
Well Type
Solution Mining
LPG Storage
Natural Gas Storage
Salt Point Brine
Harford Mills
Salt Point Storage
Watkins Glen Village
Stagecoach
Reading
Honeoye
Woodhull
Tuscarora
Wyckoff
Wayne-Dundee
Savona
Wyoming Village
Silver Springs
Thomas Corners
Adrian Reef
N Greenwood
Greenwood
Dale
Holland
E Independence
W Independence
Beech Hill
Bennington
Zoar
Collins
Perrysburg
Colden
Derby
Lawtons
Sheridan
Nashville
Limestone
Quinlan Reef

Underground Gas Storage

In 2009 there were 26 natural gas and 3 liquefied petroleum gas underground storage facilities operating in 10 counties in the western and central parts of New York State.

Natural Gas Storage

At year-end 2009 the combined total capacity of all the underground natural gas storage fields in New York State was 240.3 bcf and the maximum deliverability per day was 2.37 bcf. Working gas capacity was 122.7 bcf. Operators reported that these storage fields were 76% full at the end of the year, with 181.5 bcf in storage.

Nine different companies operate the 26 underground natural gas storage fields in New York State, with over half owned by National Fuel Gas Supply. Twenty-five of the facilities use depleted natural gas reservoirs in the Onondaga, Oriskany and Medina formations and the remaining one uses a solution-mined cavern in the Syracuse Formation. These formations range in depth from 1,500 to 5,000 feet below the earth's surface.

In 2009 Division staff reviewed an application and issued a modification permit for the Thomas Corners storage field in Steuben County. The facility was originally permitted by the Department in 1996, but was never placed in service. Ownership of the facility was transferred to Arlington Storage Company, LLC (ARS) in 2007. The Thomas Corners storage field is projected to be in service in 2010 after additional well drilling is completed.

Liquefied Petroleum Gas Storage

New York's three liquefied petroleum gas (LPG) underground storage facilities are located in Cortland, Steuben and Schuyler counties. At year-end Department records showed Inergy Midstream, LLC (Inergy) as the owner of the facility in Steuben County and TE Products Pipeline Company, LLC (TEPPCO) as the owner of the facilities in Cortland and Schuyler counties.

TEPPCO purchased the facility formerly owned by New York LP Gas Storage, Inc. (NYLPG) in Cortland County, and Division staff approved the transfer of the facility's underground storage permit in February 2007. At year-end 2009 total LPG capacity of the three facilities was 156.65 million gallons, while product in storage was 58.36 million gallons.

LPG is stored in underground caverns excavated in the shales of the Genesee Group at the TEPPCO facility in Schuyler County, and solution-mined out of the Salina Group salt formations at the other two facilities. The Salina Group salt formations are the same rock units mined by New York's five solution mining facilities.

In 2005 the Department and Bath Petroleum Storage, Inc. (BPSI) executed an Order on Consent regarding the LPG facility in Steuben County. As the current owner, Inergy assumed responsibility for BPSI's legal obligations, including the requirement to fund an Environmental Benefit Project to plug orphaned wells. By the end of 2009 Inergy had paid $275,000 into a dedicated account and fulfilled all other Order requirements.

Permit Applications

In 2009 Division staff were also engaged in reviewing four other permit applications submitted during previous years and an additional application received during the year for a total of six, including the Thomas Corners application. The additional applications included three from National Fuel Gas Supply Corp. (NFGSC), one from Inergy (originally submitted by BPSI) and one from Finger Lakes LPG Storage (Inergy).

In addition to conducting its own review of the underground natural gas storage projects, the Department routinely participates as a cooperating agency in the Federal Energy Regulatory Commission's (FERC) permitting process. Division staff provide input to FERC for Environmental Assessments. FERC's jurisdiction is limited to interstate natural gas facilities.

Solution Salt, Geothermal and Stratigraphic Wells

While oil and gas wells are the best known part of the Division's regulatory program, several other types of wells drilled in a similar fashion are subject to permit requirements. Solution mining wells have been drilled into New York's underground salt beds since the 1800s; the wells inject fresh water and produce brine. Permits for solution mining wells include special drilling, operating and plugging requirements tailored to that industry.

The Division also regulates geothermal and stratigraphic wells over 500 feet deep. Geothermal wells play an important role in energy conservation. Stratigraphic wells provide essential information on underground rock formations and subsurface conditions.

Solution Salt

New York's five solution salt mining facilities, operated by U.S. Salt, Cargill, Morton, Texas Brine, and Occidental Chemical, produced 1.89 billion gallons of brine in 2009, a decrease of 2% from 2008. Three of the solution mining facilities are located in Wyoming County and the other two are in Schuyler County.

In 2009 solution mining operators submitted 6 drilling permit applications, compared to 12 applications in 2008. Six solution mining wells were plugged in 2009.

The value of New York's solution salt mining production is estimated at over $100 million. For years New York has ranked third nationally in total volume of salt production (combined brine and rock salt).

Geothermal

At year-end 2009 the State had 91 geothermal wells that required drilling permits from the Division of Mineral Resources because they were deeper than 500 feet. While a few deep geothermal wells can be found scattered around the Capital District, central New York and the Adirondacks, the majority are in the New York City area.

In 2009 the Division did not receive any well drilling applications for geothermal wells. Additionally, no geothermal well permits were issued.

Stratigraphic

The Division received 3 drilling permit applications for stratigraphic wells in 2009 and issued 4 permits before the end of the calendar year.

Uses for Geothermal Wells

Geothermal/geo-exchange wells regulated by DEC (deeper than 500 feet) have been drilled to heat and cool a wide range of buildings:

- Residential and Commercial Projects
- Education Center
- Fashion Design Studio
- Historic Buildings
- Library
- Lion House at the Bronx Zoo
- Museum/ Research Facility
- Religious Seminary

Carbon Capture and Storage

The Division of Mineral Resources did not receive any applications for carbon capture and storage or geologic sequestration projects in 2009. In fact no such projects currently exist in New York State. However, there is much industry, government and public interest in this concept as one possible means to reduce global warming from carbon dioxide (CO_2) generation and release.

Regional Partnership

The diversity of CO_2 sources and storage options throughout the country demands region-specific strategies. The U.S. Department of Energy has created a network of seven Regional Carbon Sequestration Partnerships to help develop the infrastructure and knowledge base needed to jump-start commercialization of CS technologies.

New York State is a member of the Midwest Regional Carbon Sequestration Partnership (MRCSP) which is composed of state agencies, universities, private companies and non-governmental organizations. The region includes New York, Ohio, Indiana, Kentucky, West Virginia, Maryland, Pennsylvania and Michigan. MRCSP is assessing carbon sequestration technologies suited to the region, identifying and evaluating appropriate storage locations, and raising awareness of CCS issues. The group is also investigating the recovery efficiencies of various CO_2 extraction and sequestration methods in an effort to reduce fuel use and lower project costs.

Work done in 2009 by the Division of Mineral Resources supported the efforts of other New York State agency members, including the New York State Energy Research and Development Authority and the New York State Museum. Mineral Resources staff also met in 2009 with a potential applicant to discuss plans for the drilling of at least one stratigraphic test well in Rockland County. The proposed test well or wells will be drilled to gather data in support of CCS research sponsored by the U.S. Department of Energy.

Important Terms

CO_2 is carbon dioxide.

Carbon Capture and Storage (CCS) means capturing CO_2 from large point sources, such as fossil fuel power plants, and storing it, primarily in geologic formations, instead of releasing it into the atmosphere.

Carbon Sequestration (CS) is the term for a broader class of techniques to capture and permanently sequester, or store, CO_2 through biological, chemical, or physical processes. It includes CCS defined above.

New York's Potential

Once the CO_2 has been captured at its source and transported by pipeline, it would then be injected and stored safely in deep underground geologic formations located more than a half mile below the earth's surface. In New York State saline (salt-water filled) formations show the greatest promise of providing suitable underground storage sites with the ability to adequately contain the CO_2. Not all reservoirs would be suitable, however. A formation's ability to accept the CO_2 at a sufficient injection rate is a critical factor.

The wells needed to inject CO_2 into such reservoirs would be very similar to wells the Division of Mineral Resources already regulates at underground natural gas storage facilities. Environmental protection and public safety are the Division's focus in permitting the drilling, construction and operation of underground natural gas storage wells and facilities. The same in-depth review and oversight would be required for any proposed carbon sequestration project.

Technology - Making Our Information Easy to Use

Detailed Data at Your Fingertips

Visitors to our website can easily access data on both mines and wells through our searchable databases. The mining database, which went live in 2008, can be found at http://www.dec.ny.gov/cfmx/extapps/MinedLand/ . You can search on over 20 different parameters and find information on over 3,700 mines and 1,800 mining-related companies. For the commodities parameter, choose from 30 different products to search (bluestone, sand and gravel, granite, etc.) and then further refine the search by county or town, mine name, operator name, or several other choices.

The searchable oil and gas database can be found at http://www.dec.ny.gov/cfmx/extapps/GasOil/ . Here you can search over 39,000 wells and 1,000 oil and gas producing companies. The wells data covers company, well type, permitting and drilling history, well completion, objective and producing formations, field designations, spacing status and more. Search by geologic formation, find out how much oil or gas a well has produced, and even check the transfer history of the well.

You can also see all these wells and mines on a map using Minerals Mapper at http://www.dec.ny.gov/imsmaps/minerals/viewer.htm . This interactive site allows visitors to produce maps of regulated mines and wells, along with other major geographic features such as town boundaries, roads, railways, stream and lakes, etc.

The two searchable databases and the mapping system are updated nightly, so they always provide current information.

The Division of Mineral Resources has been a strong user of technology for years. In the early 1980s the Division began computerized tracking of the wells and mines we regulate. The system initially included information just on new permits, but has expanded over the years to include more than 39,000 wells dating back to the 1800s and close to 5,700 mines in operation since the Mined Land Reclamation Law's effective date of 1975. Early data management systems for both programs were developed in-house.

Since 1998 the Division has worked with the Ground Water Protection Council (GWPC), which is a nationwide organization that includes many oil and gas producing states. The GWPC works to promote groundwater protection and also provides technical assistance to member states. One project, developed with funds from the U.S. Department of Energy, is a common database platform called a Risk Based Data Management System (RBDMS). In 2001 the Division developed a similar RBDMS-type database for the Mined Land Reclamation Program. This way both of our regulatory databases are similar in their operation and features. These databases greatly assist our oversight of the respective industries. Increased efficiency provides Division staff with faster access to and more effective use of information for permit reviews and inspections.

Other Resources on our Website

Both the Mined Land site at http://www.dec.ny.gov/lands/5020.html and Oil and Gas at http://www.dec.ny.gov/energy/205.html have extensive information for regulated parties, local governments, and the public. Both industries can find guidance and resources related to the regulatory process. The public and local governments can also use the website to learn about the Division's environmental protection requirements. Kids and teachers can find fun educational information.

The Convenience of Electronic Reporting

Since 1990 the Division has accepted electronic submission of operators' annual well reports of gas and oil production. This is a time-saving convenience both for operators and Division staff. The Division is now working toward accepting electronically submitted permit applications.

2009 New York Mined Land Reclamation Program At a Glance

Active Mines
2,122

Economic Impact
$4.9 Billion

Affected & Reclaimed Land

Net Affected Acreage	47,934
Life-of-Mine Acreage	119,969
Reclaimed, 2009	1,665
Reclaimed Since 1975	30,102

Owner Type

Industry	1,678
Government	444
- Local Govt.	433
- State Govt.	11

U.S. Quantity Rank

Wollastonite	1st
Garnet	1st
Peat	2nd
Salt	3rd
Talc, Zinc	4th

Common Mine Types

Sand & Gravel	1,743
Limestone	87
Bluestone	81
Shale	47
Sandstone	26

Financial Security
For Reclamation
$189,719,691

Annual Regulatory Fees
$4,026,545

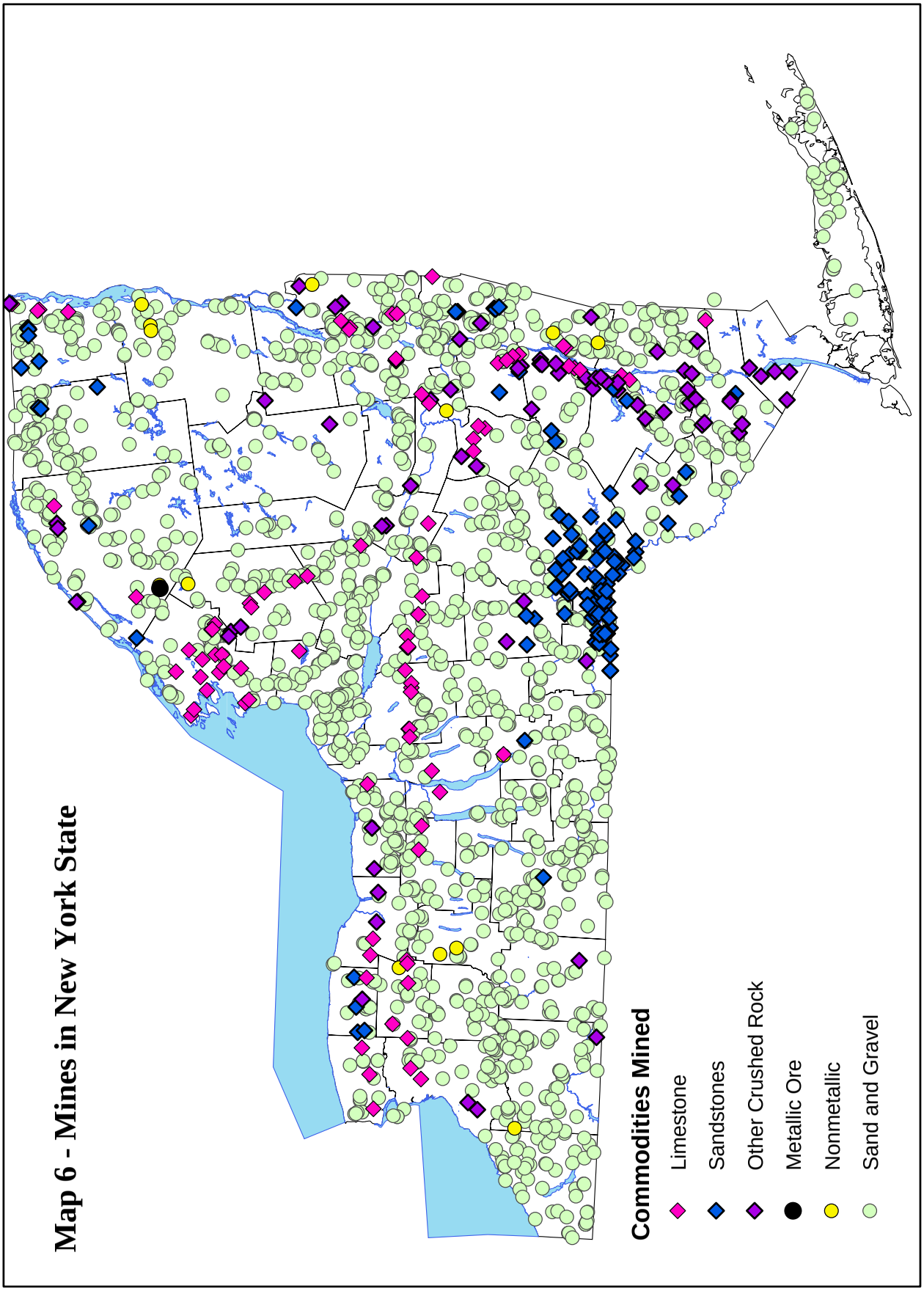
Regulated Vs. Unregulated Mines

DEC's statistics in this Annual Report cover only mines regulated under the Mined Land Reclamation Law. New York also has many unregulated mines (active & abandoned) that are not under the law's jurisdiction. Most of these are small mines and/or mines that predate the 1975 law.

A permit is required under the Mined Land Reclamation Law if the following is removed:

- More than 1,000 tons or 750 cubic yards of minerals in any 12 successive months
- More than 100 cubic yards of minerals in or adjacent to any waterbody not classified as "protected" by ECL Article 15.

Lands affected by mining before 1975 and not re-affected by later mining are exempt.


Map 6 - Mines in New York State
Commodities Mined
Limestone
Sandstones
Other Crushed Rock
Metallic Ore
Nonmetallic
Sand and Gravel

Mined Land Reclamation Program Overview

Types of Mines in New York

In 2009 New York had 2,122 active mines. The vast majority of these mines produced sand and gravel or other surficial deposits such as glacial till, clay or topsoil. There were 291 hardrock mines producing material ranging from bluestone, limestone, shale and salt, to less common products such as wollastonite and talc. Most of New York's hardrock mines are surface quarries, but there are a few permitted underground mines.

Permits Issued in 2009

Sand and gravel mines were the most common type of mine permitted in 2009 (see Table 9). The Division issued 34 permits for new mines and 504 renewals or modifications, for a total of 538 permits (see Table 10).

Mining permits are issued for terms of five years or less and may be renewed. A renewal permit allows continued operation of the mine within approved limits. A modification permit authorizes changes, such as addition of processing equipment or expansion of the mine's surface area or depth beyond the original approved limits. Table 12 starting on page 33 gives a more detailed breakdown of permits by county.

Geographic Distribution of Mines

Map 5 on page 30 shows that mines can be found statewide; in 2009 there were active mines in 57 of New York's 62 counties. However, the map does not convey the relatively small percentage of the State's land surface devoted to mining.

The wide variation in county size means comparisons of the acreage under permit in each county can be misleading. For example, St. Lawrence, the State's largest county with an area of 1,718,848 acres, has an area 15 times larger than Rockland County. While St. Lawrence County had a relatively high total of 2,133 net affected acres under mining permit in 2009, that represented just 0.12% of the county's land. Table 11 ranks counties by the percent of their land surface under permit. It shows that mining activity is concentrated near heavily populated areas since they require larger quantities of mineral resources for roads and buildings.

In 2009 just 6 counties had more than 0.30% of their land surface under a mining permit (Albany, Genesee, Onondaga, Ontario, Rensselaer, Rockland) with a range of 0.34 to 0.41%. For most of the counties with active mines, less than 0.25% of their land was affected.

Table 9 - New Mines, 2009

Sand & Gravel	28
Bluestone	4
Limestone, Sandstone	1 each
Bluestone Exploration Authorization	0

Table 10 - Permits, 2005 - 2009

	2005	**2006**	**2007**	**2008**	**2009**
New Permits	66	47	46	37	34
Renewals & Modifications	345	327	326	585	504*
Total Permits	411	374	372	622	538

*185 permit modifications issued in 2009.

← Due to the economic downturn, there were no new Exploration Authorizations issued in 2009.

Owner Type

In 2009 industry operated 1,678 mines or slightly over three-fourths of the mines in New York State.

In 2009 there were 47 county-owned mines and 386 belonging to towns, villages and other small local government entities. New York State agencies also operate 11 mines. Most of the government mines belong to highway departments which use the material for road maintenance.

In addition to owning roughly one-fifth of the mines in New York State, government agencies at all levels purchase significant quantities of sand, gravel and other aggregates from commercial mines.

Annual Regulatory Fees

In 2009 the Division collected $4,026,545 in annual regulatory fees. Acreage-based fees are collected for individual, industry and state-owned mines. County, town, village and other local government mines are exempt. The fees support the mined land regulatory program. Database enhancements now allow staff to more closely monitor payment histories, review compliance, and conduct fee enforcement.

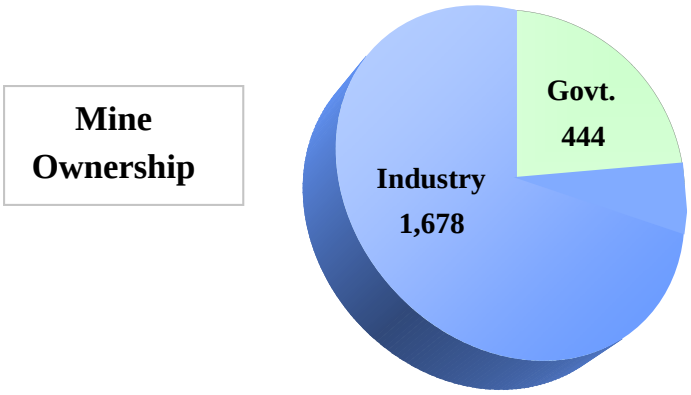


Table 11 - Counties with Highest Percentage of Land Under Mining Permit, 2009

County	Population Ctr. Nearby	Active Mines	Net Affected Acreage	Land Percent
Genesee	Buffalo	23	1,317	0.41%
Rensselaer	Capital/Tri-City	59	1,680	0.39%
Onondaga	Syracuse	40	1,990	0.39%
Ontario	Rochester	41	1,560	0.37%
Albany	Capital/Tri-City	18	1,206	0.35%
Rockland	New York City	4	433	0.34%
Dutchess	New York City	56	1,573	0.29%
Saratoga	Capital/Tri-City	62	1,584	0.29%

Table 12 - Number of Permits and Acreage by County, 2009

County	2009 New Permits[1]		Total Permits[1]	
	Number	Acres[2]	Number	Acres[2]
Albany	0	0	18	1,204
Allegany	1	1	37	355
Broome	2	10	44	712
Cattaraugus	0	0	69	1,492
Cayuga	2	4	21	350
Chautauqua	0	0	54	411
Chemung	2	39	26	426
Chenango	0	0	38	706
Clinton	3	22	66	1,184
Columbia	0	0	36	944
Cortland	1	9	18	344
Delaware	2	12	71	797
Dutchess	0	0	56	1,573
Erie	0	0	53	1,353

County	2009 New Permits[1]		Total Permits[1]	
	Number	Acres[2]	Number	Acres[2]
Essex	1	1	40	726
Franklin	0	0	73	658
Fulton	1	4	25	387
Genesee	1	2	23	1,317
Greene	0	0	23	978
Hamilton	1	5	20	137
Herkimer	1	3	50	1,278
Jefferson	3	26	76	1,853
Lewis	1	8	46	705
Livingston	0	0	23	949[3]
Madison	0	0	25	531
Monroe	1	24	12	606
Montgomery	0	0	8	564
Nassau	0	0	1	4

1 Regulated mines, does not include inactive mines or bluestone exploration authorizations

2 Net affected acreage

3 Livingston County total does not include underground acreage for salt mines (603 acres).

Table 12 - Number of Permits and Acreage by County, 2009 (continued)

County	2009 New Permits[1]		Total Permits[1]	
	Number	Acres[2]	Number	Acres[2]
Niagara	0	0	16	699
Oneida	0	0	64	1,133
Onondaga	0	0	41	1,991
Ontario	1	2	39	1,438
Orange	2	9	42	677
Orleans	0	0	20	548
Oswego	0	0	100	1,601
Otsego	0	0	34	504
Putnam	0	0	2	58
Rensselaer	2	13	59	1680
Rockland	0	0	4	433
Saratoga	0	0	62	1,584
Schenectady	1	4	10	222
Schoharie	0	0	17	525
Schuyler	0	0	12	274

County	2009 New Permits[1]		Total Permits[1]	
	Number	Acres[2]	Number	Acres[2]
Seneca	0	0	5	322[3]
St. Lawrence	1	5	101	2,128
Steuben	1	6	84	1,874
Suffolk	0	0	35	1,122
Sullivan	0	0	31	1,025
Tioga	0	0	30	777
Tompkins	0	0	15	513[3]
Ulster	0	0	48	777
Warren	1	2	37	597
Washington	1	3	57	837
Wayne	0	0	42	945
Westchester	0	0	1	4
Wyoming	1	11	26	202
Yates	0	0	13	161

1 Regulated mines, does not include inactive mines or bluestone exploration authorizations

2 Net affected acreage

3 Tompkins and Seneca County totals do not include underground acreage for salt mines (9,000 acres)

Trends in Mine Size and Number

Mine renewal and modification permits issued in 2009 ranged in life of mine acreage from 1 to 1,222 acres. However, new mines tend to be smaller; 75 percent of new mines permitted in 2009 were 10 acres or less in life of mine acreage. The largest new mine was the 78-acre Barrett Paving Materials Inc. Millick Limestone Quarry in Lewis County.

Table 13 gives 2004-2009 size range information, based on net affected acreage, for all active mines. The number of large mines has been increasing over time, while the number of small mines has been decreasing. This is because many operators are expanding or combining existing mines rather than seeking permits for new ones. This trend may begin to change in the future, due to the fact that in 2009, the required regulatory fees were increased for sites with greater than 20 acres affected by mining.

The minor projects in the first row of the table are always less than 5 acres in size. They are subject to a simpler review process, but must comply with very strict criteria to be considered minor: minimum setbacks from homes and surface waters; a maximum 20-foot mine depth; no mining below water table; no hardrock (consolidated material) mining; and no on-site processing equipment, such as washing or crushing machines.

Mine Acreage Types and Statistics

Net Affected Acreage - Net affected acreage is the total affected acreage covered under successive mined land permits for the site minus the acreage reclaimed over the years. In 2009 the total affected land authorized for mineral extraction under current mined land reclamation permits was 47,934 acres.

Life-of-Mine Acreage - This is the total area that has been subject to DEC's environmental review. It covers acreage mined under past permits, the current permit, and acreage that the operator intends to mine under future permits. It also includes all reclaimed acreage at the site. In 2009 the statewide total for life-of-mine area was 119,969 acres.

Reclaimed Acres - In 2009 the Division approved final reclamation of 453 acres at 68 closed mines and concurrent reclamation of 1,212 acres at 177 operating mines. Table 14 on page 38 summarizes 2009 reclamation by county. Since 1975 a total of 30,102 acres of mined land have been reclaimed, including 1,665 acres reclaimed in 2009.

Table 13 - Range of Existing Mine Sizes, 2004 - 2009*

	2004	2005	2006	2007	2008	2009
Minor Projects	78	81	80	88	69	61
0 to 5 Acres	712	683	652	651	636	631
>5 to 10 Acres	532	531	531	509	493	476
>10 to 20 Acres	442	439	439	431	437	442
>20 to 30 Acres	179	179	169	166	171	156
>30 Acres	329	336	344	358	360	356
Total Mines	2,272	2,249	2,215	2,203	2,166	2,122

* Net Affected Acres

Reclamation and Financial Security

Reclaimed Land Uses

Final uses of mined land can vary considerably depending on location, size and depth of the site; surrounding land uses; and local zoning. Farmland and pasture are two of the most common reclamation objectives in New York State, but mined land is also reclaimed to residential, forestry, wildlife, recreational, commercial and industrial uses. Once the Division permits a proposed reclamation objective in a mined land reclamation plan, the mine operator needs a permit modification to change it.

Reclamation takes two forms based on timing of the work - concurrent or final. Concurrent reclamation is reclamation of an affected or mined-out area while resources are still being extracted from other parts of the mine site.

The Division strongly promotes concurrent reclamation, particularly for mines over 10 acres in size. Concurrent reclamation has a number of advantages. Chief among these are the reduced potential for negative environmental impacts (dust, erosion, sedimentation) and the improved perception of the mine by the surrounding community. See Table 14 on page 38 for a breakdown of reclamation type by county.

Financial Security

Municipal and other government operations are exempt from financial security requirements. However, mine operators from the private sector are required to post financial security to guarantee reclamation of their mines. At the end of 2009 the Division held roughly $189.7 million in financial security, an increase of $22 million from 2008.

In the rare case where a mine operator fails to reclaim a mine, the Division calls the financial security and reclaims the land. However, staff noted that bonding levels were not keeping pace with rising reclamation costs. In 2005 the Division studied the issue and adopted a more detailed system of assessing reclamation costs. Since 2006 the Division has used a new methodology to calculate the required bonds for all new permits, permit renewals, modifications and transfers. Calculations are based on the R.S. Means Site Work & Cost Data. Since the inception of this initiative, the total financial security held on file with the Department has increased by over 75%. Reclamation estimates completed in 2009 averaged $4,819 per acre. As more permits come up for renewal, the statewide average is expected to rise to $5,000-$6,000 per acre over the next few years.

2009 Reclamation Highlights

Frozen Ropes Baseball Company

The company Frozen Ropes Baseball Company purchased a permitted mine site in the Town of Chester, Orange County for the express purpose of reclaiming the land and building a sports training center.

Frozen Ropes site during a December 2009 inspection.

The same site during active mining operations in 2003.

R.T. Vanderbilt Comapny

The R.T. Vanderbilt Company decided to close its talc/tremolite mines in St. Lawrence County in 2008. The closure requires reclamation of the Vanderbilt open pit mines located in the Towns of Fowler and Edwards. Region 6 Mined Land Staff continued to conduct inspections throughout 2009 and found progress satisfactory. The company estimated that it will take a total of 6,000 hours of work to complete the necessary reclamation activities. The August 2009 inspection of the No. 2 Talc Mine in the Town of Fowler showed that 50% of the reclamation was completed in the open pit area and surrounding area.

For many years New York State ranked fourth in the nation in talc production. Talc/tremolite is used primarily in making paint and ceramics. The first talc mine in the United States opened in 1878 on a farm near Talcville, which is in the same area as the mines that are now being reclaimed.

Thalle Industries

Thalle Industries continues to conduct concurrent reclamation at the company's granite mine in the Town of Fishkill, Dutchess County. With the help of the company's arborist, Thalle is undertaking a state of the art reclamation project on the 600-foot level near the top of the mine. Reclamation of the bench began in 2007 when the company put considerable effort into excavating a trench and filling it with three to four feet of topsoil.

In November 2009 DEC Region 3 Mined Land and Forestry staff met on-site to review the reclamation. The initial tree planting efforts and possible adjustments to the mix of tree species were discussed. The original reclamation plan called for red oak, black birch, pitch pine, and black locust to be planted. Black locust is now considered an invasive species. The Region 3 Forester is working with Thalle's arborist to devise a species mix which eliminates black locust. In addition, the forester recommended a naturally occurring fungus which would promote better reforestation of the benches.

R.T. Vanderbilt Talc Mine No. 2 in the Town of Fowler, St. Lawrence County. Photo of area which has been successfully revegetated .

In a little over a year the black locusts (right side of photo) grew from seedlings to over six feet in height. This tree has long been favored for use in reclamation due to it ability to fix nitrogen in soil. However, further use of black locust will be eliminated due to its status as an invasive species.

Table 14 - Reclamation Acreage Summary by County[1], 2009

County	Concurrent	Final	Total
Albany	26	0	26
Allegany	56.1	15	71.1
Broome	9.3	1	10.3
Cattaraugus	31.4	8	39.4
Cayuga	7.3	17.2	24.5
Chautauqua	29.5	1	30.5
Chemung	0	0	0
Chenango	25	0	25
Clinton	37.2	51.2	88.4
Columbia	37.8	6	43.8
Cortland	6	0	6
Delaware	18.7	14.2	32.9
Dutchess	71.4	6.5	77.9
Erie	191.3	0	191.3
Essex	2.5	8	10.5
Franklin	22	30	52
Fulton	3.5	0	3.5
Genesee	12.5	0	12.5
Greene	6.7	0	6.7
Hamilton	2	5	7
Herkimer	4.4	0	4.4
Jefferson	18.3	24.3	42.6
Lewis	0	0	0
Livingston	115.3	0	115.3
Madison	8	6	14
Monroe	0	0	0
Montgomery	0	0	0
Nassau	0	0	0
Niagara	0	0	0

County	Concurrent	Final	Total
Oneida	7.5	3.5	11
Onondaga	34.2	22	56.2
Ontario	30.7	2.5	33.2
Orange	75.6	28	103.6
Orleans	16.7	4	20.7
Oswego	30.1	48.4	78.5
Otsego	24.4	5.6	30
Putnam	0	10	10
Rensselaer	15.8	11.5	27.3
Rockland	0	0	0
Saratoga	10.4	0	10.4
Schenectady	15.3	0	15.3
Schoharie	0	0	0
Schuyler	0	0	0
Seneca	10.8	0	10.8
St. Lawrence	12.7	13.2	25.9
Steuben	63.1	0	63.1
Suffolk	0	15	15
Sullivan	24.3	0	24.3
Tioga	8.8	88	96.8
Tompkins	7	0	7
Ulster	47.7	0	47.7
Warren	5.5	0	5.5
Washington	1.3	0	1.3
Wayne	28	0	28
Westchester	0	0	0
Wyoming	0	8	8
Yates	0	0	0
Statewide	**1,212.1**	**453.1**	**1,665.2**

[1] Five counties that do not have DEC–regulated mines are not included in this table.

Compliance and Enforcement

Inspections

In 2009 Mined Land staff performed 2,475 mine inspections and traveled 138,161 miles. Staff inspect mine sites:

- during permit application review;
- during operation for general compliance;
- to ensure that violations are remediated;
- to ensure that reclamation meets requirements; and
- to investigate complaints.

Violations and Fines

Violations are handled with a mixture of enforcement tools, remediation requirements and penalties. In 2009 the Mined Land Program collected $200,000 in fines and penalties for 42 cases. An additional $129,960 was collected as part of Environmental Benefit Projects.

Significant Legal Cases

In November Region 1 Mined Land staff investigated a site in Suffolk County used as a commercial motocross facility. Upon inspection, staff discovered that 10,000 cubic yards of material had been excavated. Region 1 staff also investigated a proposed fish farm project in Port Jefferson, Suffolk County. DEC and the Town of Brookhaven closely examined the project due to serious concern that the project may be an attempt to circumvent the need for a mining permit. One of the principals had been cited for illegal mining several times in the past. The use of semi-legitimate projects to conduct mining in disguise has been reported in other regions as well. However, there is a strong incentive to do so on Long Island where the DEC determines that an application is incomplete and stops processing mining permit applications when notified by a town that mining is prohibited at a particular location. This happens often on Long Island and has resulted in a marked decrease in the number of new permits issued in Region 1 in recent years.

In 2009 Region 3 staff completed a settlement with an operator over violations at mines in Dutchess and Rockland counties. The issues centered around broken slurry lines which released sediment-laden water into the Hudson River and several violations associated with relocation of the settling ponds and primary crusher. In addition, numerous SPDES violations resulted in turbidity in the Hackensack River and disruption of the Village of Nyack water supply. The settlement included a payable fine of $150,000, with an additional $100,000 suspended penalty, and an Environmental Benefit Project which will provide $100,000 to the Sloop Clearwater for the Clearwater Center for Environmental Leadership.

In September, the New York State Supreme Court, Chenango County, issued a default judgment in favor of the State imposing a $400,000 fine against a bluestone operator for mining without a permit at a site located in the Town of Afton, Chenango County. In addition to the penalty, the operator was ordered to obtain a mining permit or reclaim the site in its entirety, post adequate reclamation financial security, and pay the remainder of the $8,000 penalty contained from a previously executed Consent Order. The $400,000 fine is the largest civil penalty ever awarded to the Department for mining bluestone without a permit.

Region 5 Mined Land Staff inspected the Lehigh Cement-Glens Fall quarry in the Town of Moreau, Saratoga County for follow-up on the environmental remediation project initiated after the overburden collapse of September 2006. Approximately 33,000 cubic yards of material covering 2.2 acres slumped into the Hudson River. Under an administrative settlement the permittee paid a $150,000 fine and agreed to remediate the overburden area. Subsequently the permit was modified and the overburden is now stored in a different location and is also used to provide a visual and sound barrier around the perimeter of the site. The June 2009 inspection found that the overburden collapse area had satisfactorily revegetated. The overburden material in the Hudson river was previously removed.

2009 Mined Land Reclamation Program Highlights

Economic Assessment of NY Mining Industry

At the Fall 2008 New York Construction Materials Association meeting, Dr. Rochelle Ruffert of the Center for Governmental Research and Dr. William Kelly of the New York State Geological Survey presented the preliminary results of a study on the economic impacts of mining in New York State.

In June 2009, the final report with complete survey results, and which extrapolated the data to include all permitted mines in the State, including indirect and multiplier effects, indicated that the total economic impact of mining in New York was approximately $4.9 billion. The latest U.S. Geological Survey estimate of the value of minerals produced in New York is $1.3 billion.

Annual Underground Salt Mine Inspections

Department staff and a Geomechanics Specialist from John T. Boyd Company conducted the annual underground mine inspections of the American Rock Salt (ARS) Hampton Corners salt mine and the Cargill (Cargill) Cayuga salt mine. Permit conditions require these detailed annual inspections to ensure DEC is aware of any potential problems.

During the site visits staff inspected the entries, crosscuts, faces, data collection points, and process galleries. At ARS all openings were stable and there was no sign of water flowing into the mine. At the Cargill site no signs of global (widespread) instability or other indications of stress or instability were noted.

For years New York has ranked third in the nation in salt production, based on the combined total of mined and solution-mined salt.

Adirondack Rock Fest

Central Office and Region 6 staff returned to participate in the second annual Rock Fest: A Celebration of Adirondack Geology. The event was held at the Adirondack Park Agency's Newcomb Visitor Interpretive Center (VIC) on August 15. Rock Fest is sponsored by VIC, the Adirondack Museum, and the SUNY College of Environmental Science and Forestry Adirondack Ecological Center.

The event consisted of a series of presentations both at the VIC and at nearby rock outcrops, followed by a field trip to the old ilmenite mine at Tahawus, and the nearby historic iron production area and blast furnace sites. Division staff made a presentation on the everyday uses of minerals and gave an overview of the Mined Land Reclamation Program. Division members also staffed a display and answered many questions.

New York State Geologist Bill Kelly discusses folding and differential weathering in a marble outcrop near Rich Lake at Rock Fest

Interest in Granite Mining Grows

The number of permitted granite mines in the state has more than doubled in recent years, rising from 11 in 2003 to 25 in 2009. Much of the growth is due to new mines, but was also due to a significant trend of existing sand and gravel operators in the Adirondacks and Dutchess County modifying their permits to mine deeper and excavate bedrock.

In 2009, three applications to mine granite were received in Region 5. At an existing sand and gravel mine located in Fulton County, the permittee proposed modifying the permit and mining the underlying granitic gneiss. A new application to mine granite in the Town of Fort Ann, Washington County was received in August. Also in Washington County, an operator proposed combining two smaller granite quarries (total life of mine area of 29 acres), and increasing the life of mine for the combined operation to approximately 500 acres.

Green Power Projects at Mine Sites

Region 3 staff met with a consortium of area businessmen to discuss the feasibility and permitting requirements for constructing a 300 kW photovoltaic ground array at a permitted shale mine located in the Town of Crawford, Orange County. The array would occupy 2 acres of land and would be used to power the crushing and conveying systems and would replace a diesel generator and two electrically metered locations. If any excess power exists after fulfilling the quarry's needs, it could be sold to the regional power grid. In addition to providing long-term savings to the mine operator, this type of project has the potential to reduce greenhouse gases associated with crushed stone production.

A similar project is proposed for a 44-acre site in the Town of Smithtown, Suffolk County. The parcel includes 14 acres which have been affected by mining and another 30 adjacent acres which are not. The first section of panels to be installed will be on the land which has not been mined. When completed, the power from the project will be sold to Keyspan.

Town Sees Value In Mining & Reclamation

Region 3 Mined Land staff held a pre-application meeting at the proposed Osterhoudt mine located off of NYS Route 209 in the Village of Ellenville, Ulster County. Mined Land Reclamation and Division of Environmental Permits staff attended the meeting, as well as the applicant, his consultant, and a Village Planning Board member. The village has rezoned the property to allow mining.

The local government recognizes that previous mining and industrial activity have left the site in an undevelopable condition due to steep slopes. There is a limited amount of residential housing in the village, so the site's ultimate reclamation to a residential use is viewed positively. Even though the mine would be located within the village boundaries, it will be very well-screened and impacts to the surrounding community during operation are expected to be minimal. The proposed mine site would be approximately 35 to 45 acres in size and the proposed cuts would be roughly 30 to 60 feet.

Agreement to Reclaim Mine in Conservation Easement Area

Central Office and Region 5 Mined Land staff conferred with representatives from two lumber companies regarding the Lost Pond Site Mine in the Town of Belmont, Franklin County. Domtar Industries had a permit for the site that expired in 2004, but the company did not reclaim the land because it expected the new owner, Lyme Timber, would renew the permit and continue mining. However, Lyme Timber, The Nature Conservancy, and the State of New York subsequently entered into an agreement for a conservation easement on 104,000 acres of forest land in Franklin and Essex Counties. Under the terms of the easement, commercial mineral extraction is prohibited anywhere on the property. As a result of the conference call, all parties agreed to reclaim the small sand and gravel pit before the end of 2009 and resolve outstanding regulatory fees quickly.

Region 9 Staff's Innovative Recommendations for Reclaiming Mine

Region 9 Mined Land and Forestry staff gave species and density recommendations to Lafarge for reclaiming five acres at the Freedom Pit in Cattaraugus County. The area includes wooded wetlands and a former mine settling basin that has been filled in. DEC staff recommended a mixture of roughly 900 trees and 500 shrubs, comprising fifteen species. After obtaining the planting stock from the Saratoga Nursery, Lafarge will coordinate reclamation efforts with local scout, school and church groups to give children a hands-on environmental education activity.

In addition, Lafarge will excavate several small areas around the perimeter of the old settling basin to create experimental vernal pools. Like wetlands, naturally occurring vernal pools have long been threatened by development because they are easy to fill in. Vernal pools are typically ice-covered in winter and wet in spring, but may dry up in the summer. These seasonal pools of water are devoid of fish, and thus, provide a safe environment for frogs, toads, salamanders and other species faced with dwindling habitat. If Lafarge's experiment is successful, it could provide an easy method of significantly enhancing settling basin reclamation at other mines.

Permit Review Reveals Graveyard and Unique Natural Area

Region 7 staff discovered a small, late 19th century, burial plot while reviewing a permit modification for the University Sand and Gravel-Brooktondale Mine located in the Town of Caroline, Tompkins County.

Staff also determined that a Unique Natural Area, commonly known as "Middaugh Woods." exists immediately adjacent to the proposed expansion. These woods include an old growth forest and a section of the "Warrior's Trail." This is the trail taken in 1789 by Ithaca's first permanent white settlers. After an on-site meeting between the applicant and DEC Permits and Mined Land staff, an agreement was reached to change the life-of-mine limits to exclude the cemetery and to forego the expansion in the direction of Middaugh Woods.

Concurrent Reclamation in Region 3

Upon the transfer of a mining permit to their name, E. Tetz & Sons agreed to concurrently reclaim a portion of the Echo Lake Mine and adjacent affected areas at the site located in the Town of Goshen, Orange County. The Department encourages concurrent reclamation where practicable at all mine sites.

Graded portion of the E. Tetz & Sons-Echo Lake Mine (Town of Goshen, Orange County) during concurrent reclamation operations.

Portion of the Echo Lake Mine after vegetation has been established.