

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☒ in opposition

Date: 3/1/11

to permitting hydrofracking

(PLEASE PRINT)

Name: BONNIE LOEWENSTEIN

Address: 486 7TH STREET, BROOKLYN, NY 11215

I represent: MYSELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☐ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name:

BARBARA ARRENDALL

Address:

P.O. BOX 147, MILDAVILLE, PA 18443

I represent:

DAMASCUS C. T. ZENS FOR SUSTAINABILITY

Address:

P.O. BOX 147, MILDAVILLE, PA 18443

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

Name: Alice Joyce (PLEASE PRINT)

Address: 333 4th Street 4D

I represent: Myself

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: March 1, 11

Name: ANNIE WILSON (PLEASE PRINT)

Address: PO BOX #2430, NYC, NY 10009

I represent: SIERRA CLUB ATLANTIC CHAPTER

Address: Energy Committee

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: MARCH 1, 2011

(PLEASE PRINT)

Name: Hilary Baum

Address: 5454 Palisade Ave Bronx NY 10471

I represent: BAUM Forum

Address: 5454 Palisade Ave Bronx NY 10471

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: APRIL FLORES

Address: 5012 125th St

I represent: 1045 IP

Address: 5012 125th St

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☒ in opposition **To FRACKING**

Date: 3-1-11

Name: DAN MATSIS (PLEASE PRINT)

Address: 302 West 90 St, NYC, 10024

I represent: SELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☒ in opposition

Date: 3/1/11

Name: Jason S. Vinc (PLEASE PRINT)

Address: 47-29 43rd St. #3R

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. *Hydrofracking Res. No. J

☐ in favor ☒ in opposition

Date: 3/1/12

(PLEASE PRINT)

Name: Teri Slater

Address: 119 E. 78th St. 10075 N.Y.

I represent: _____

Address: _____

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: _____

Address: _____

I represent: _____

Address: _____

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: MAR 1 2011

Name: Hugh A. GRAN (PLEASE PRINT)

Address: 506 LA GUARDIA PI #3

I represent: MY SELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

Name: LEXS ROSS (PLEASE PRINT)

Address: 470 2nd Ave 20D NY

I represent: myself

Address: 470 2nd Ave NY

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Arel Aai

Address: 67 E. 11th St #306

I represent: Humans

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: ETHELYN + LONIA

Address: 137 E. 95 St. N.Y. 10128

I represent: United for Action + Myself

Address: ?

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: David Publow

Address: 590 Parkside Ave. 2BW, Brooklyn NY 11226

I represent: united for action

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/2011

(PLEASE PRINT)

Name: Dusty Horwitz Environmental Working

Address: 1436 U St, NW, Wash DC Group, 20009

I represent: Environmental Working Group

Address: _____

Please complete this card and return to the Sergeant-at-Arms

P.O. BOX 661, NYC

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3-1-11

(PLEASE PRINT)

Name: Julia Walsh (will be 1 hour late)

Address: P.O. Box 660, New Paltz, NY 12561

I represent: Frack Action

Address: P.O. Box 661, New Paltz, NY 12561

◆ Please complete this card and return to the Sergeant-at-Arms ◆

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3-1-11

Name: Claire Sandberg (will be 1 hour late)

Address: 1087 Prospect Pl, Brooklyn, NY

I represent: Frack Action

Address: P.O. Box 661, New Paltz, NY 12561

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)
Name: Paul Perugin
Address: 320 E. 18 Street BKlyn NY 11226
I represent: myself
Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition

Date: 3/1

(PLEASE PRINT)
Name: Patrick Krug
Address: 9 Murray St.
I represent: NYPIRG
Address: 9 Murray St.

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. Fracking Res. No. _____

☒ in favor of truth ☐ in opposition

Date: 1 FEB 2011

(PLEASE PRINT)

Name: Jonathan Ramirez

Address: 35-47 172nd St Flushing NY 11358

I represent: Jonathan Ramirez

Address: of planet earth

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3 / 1 / 11

(PLEASE PRINT)

Name: Sharon De Souza Caciarro

Address: 8 Friedenstein Rd 12160 +

17 E 31 ST NYC 10016

I represent: Catskill Citizens for Clean Energy

Address: 5

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Brad Weiss

Address: 341 West 24th St Apt 13J

I represent: Pace University

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 2/1/11

Name: Kate Hudson (PLEASE PRINT)

Address: Assinng, NY

I represent: Riverkeeper

Address: Assinng NY

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition *opposed to*

Date: *3/1/11 Drilling*

(PLEASE PRINT)

Name: *Arnold Froese*

Address: *340 W. 28th St., NYC 10001*

I represent: *NYH2O*

Address: *561 Broadway, NYC*

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
Against fracking ☒ in favor ☐ in opposition *for a BAN*

Date: *3-2-2011*

(PLEASE PRINT)

Name: *Raymond Norwood*

Address: *138 St. Marks Ave Brooklyn, NY 11217*

I represent: *myself*

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Ellen Peterson - Lewis

Address: 622 Greenwich St 2D

I represent: Manhattan CB 2

Address: 3 Washington Sq Village

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Johanna Dyer

Address: _____

I represent: Natural Resources Defense Council (NRDC)

Address: 40 W. 20th St New York

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Sandra Salisbury

Address: 132 Peakville Rd. East Branch NY

I represent: Hancock Citizen for Sustainability 13756

Address: same

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Frieda Bredlow

Address: Carlton St

I represent: CB 2 Manhattan

Address: 3 Washington Square Village

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Andrew Lawrence

Address: 510 E 23, 13B NY

I represent: A Self

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Dr Brian G Rahm

Address: 446 N. Aurora Ithaca, NY

I represent: NYS Water Resources Institute

Address: Cornell University

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/2011

(PLEASE PRINT)

Name: CHARLIE OLSON

Address: 1496 Bay St. SE NY 10305

I represent: United for Action

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Heidi Gogins

Address: 1576 Crescent Valley Road Boring

I represent: Catskill Citizens for Safe Energy

Address: Fremont Center, NY

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Arden T. South

Address: 969 Park

I represent: Manhattan City Club NYC

Address: 102 Seventh Ave

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition ~~to be present~~

Date: 3/1/11

(PLEASE PRINT)

Name: Shannon Ayala

Address: 8 Bronxville Pln Dr 1-23

I represent: United for Action

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Karla Fisk

Address: 101 Cooper St, 5N, NYC, 10034

I represent: myself & my family

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: _____

Address: _____

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition of fracking

Date: 3/1/11

(PLEASE PRINT)

Name: Héloise Rathbone

Address: 321 Sterling Place

I represent: myself

Address: same

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/10

(PLEASE PRINT)

Name: Deanna Bitetti

Address: _____

I represent: Common Cause / NY

Address: 74 Trinity Pl. 9th floor, NY NY 10006

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name:

Address:

I represent:

Address:

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name:

Address:

I represent:

Address:

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/2011

(PLEASE PRINT)
Name: Steven Blumentfeld

Address: 81 Farway Rd, Lido Beach NY 11561

I represent: Myself

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition TO DMBC REGULATIONS

Date: _____

(PLEASE PRINT)
Name: ANDREW BREMAN

Address: 300 W 23 ST 8C NYC 10011

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☒ in opposition *to hydrofracking*

Date: 3/1/11

(PLEASE PRINT)

Name: DANIELE GERARD, ~~WATERBURY STATION~~

Address: 355 RIVERSIDE DRIVE, 7W, 10025

I represent: THREE ~~PAR~~ PARKS INDEPENDENT DEMS

Address: PO Box 1316, Cathedral Station, NYC 10025

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor

☐ in opposition

Date: March 1 2011

(PLEASE PRINT)

Name: PATRICIA KILLEN

Address: 1465 BAY STREET

I represent: NEW YORKERS FOR CLEAN WATER

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Marian H. Rose
Address: 9 Old Corner Rd, Bedford, NY 10506
I represent: Croton Watershed Clean Water Coalition
Address: As above

Please complete this card and return to the Sergeant-at-Arms

Appreciate
early times
as we
are traveling
back to Albany

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: John H. Williams
Address: 425 Jordan Road Troy NY
I represent: U. S. Geological Survey
Address: Troy, NY

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 3/1/11

Name: LYNN MAX (PLEASE PRINT)

Address: 315 RIVERSIDE DR 16-B

I represent: THREE PARKS IND. DEMOCRATS

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

in opp. to proposed regulations Date: 3/1/2011

Name: MARY ELLEN CROLEY (PLEASE PRINT)

Address: 150 WEST END AVE 15H

I represent: NY, NY 10023

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition to fracking

Date: _____

(PLEASE PRINT)

Name: Ann Seligman

Address: 235 E. 46th St, NYC 10017

I represent: myself, also member of CB6

Address: _____

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. FRACKING Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Jen Abrams

Address: 370 Park Place, Bk 11238

I represent: myself

Address: _____

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

Name: STEVE MIA (PLEASE PRINT)

Address: 315 R.S.D. NYC NY 10025

I represent: 3 PARKS DEMOCRATS

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

Name: Merte McDouney (PLEASE PRINT)

Address: 2166 Broadway

I represent: Three Parks End Den

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Jeff Galloway

Address: 395 S. End Ave, New York, NY

I represent: Manhattan Community Board # 1

Address: 49-51 Chambers St

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition No. Fract

Date: _____

(PLEASE PRINT)

Name: PAT CARULLO

Address: 299 ST MARYS AVE SE, 10305

I represent: DAMASCUS CH. 2 MIN. ORG

Address: DAMASCUS, PA

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Date: MAR 1, 2011

Name: PETER KILLER (PLEASE PRINT)

Address: 1465 BAY ST, SI NY 10305

I represent: BAY ROGE CONSUMER FEDERATION

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

Name: ROBERT CASSARA (PLEASE PRINT)

Address: 973-BAY RIDGE PKWY
BKLYN, NY 11228

I represent: SELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. HYDRAULIC Res. No. FRACTURING
☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: KEITH W. MCBEE (MCBEE)
Address: 64-80 WETHERSFIELD ST. REGO PARK 11374

I represent: SELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☒ in favor ☒ in opposition

Date: 3-1-11

(PLEASE PRINT)

Name: Shiabo Lin
Address: 75-55 183rd St. Fresh Meadows

I represent: Gray Panthers NY 11366

Address: 244 Madison #396

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition *to Hyman*
Date: _____

(PLEASE PRINT)

Name: BUCK MOORHEAD
Address: 236 W 27
I represent: NYH 20
Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition
Date: 3/01/11

(PLEASE PRINT)

Name: Anne Lazarus
Address: 524 East 20th St, 26
I represent: Anne Lazarus
Address: 524 East 20th St, 26, New York, NY, 10009

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Owen Crowley

Address: 220 Riverside Dr 9P

I represent: NAC 10025

Address: United for Action

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 5/1/0

(PLEASE PRINT)

Name: Lois Wright

Address: 11-24 11th Ave NY, NY 10025

I represent: The New School

Address: 72 5th Ave NY, NY

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 3/1/11

Name: Assistant Commissioner David Warner (PLEASE PRINT)

Address: DEP WARNE

I represent: _____

Address: _____

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

Name: Patricia Chernoff (PLEASE PRINT)

Address: 77 West End Ave #10F

I represent: Quakers of New York

Address: 15 Putnam Road NYC

◆ Please complete this card and return to the Sergeant-at-Arms ◆

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition **TO FRACKING**

Date: _____

Name: FAX MUIR (PLEASE PRINT)

Address: 286 Reservoir Place Bx

I represent: CHCWC

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☐ in opposition

Date: 3/1/11

Name: Ling Tsou (PLEASE PRINT)

Address: 80 Beekman Street (Fk) NYC, 10038

I represent: United for Action - Founder

Address: 80 Beekman Street, NYC, 10038

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/2011

(PLEASE PRINT)

Name: ANN BRAMEIER

Address: 318 W. 14 ST. #13, New York, NY 10014

I represent: Myself

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: ERIC WELTMAN

Address: _____

I represent: FOOD & WATER WATCH

Address: 155 Water St., Brooklyn

Please complete this card and return to the Sergeant-at-Arms

Against Fracking

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☐ in opposition

Date: 2/1/2011

(PLEASE PRINT)

Name: JEAN GARDNER

Address: 924 West End Ave

I represent: PARSONS

Address: 66 Fifth Ave.

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☒ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Elizabeth Taylor

Address: 4761 Broadway, New York, NY

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: JATMIA JONES

Address: 401 E 62 APT 3B, NY NY 10065

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Alice Zinnes

Address: 457 150 St # 5D, Brooklyn, NY

I represent: Demosus Citizens for

Address: sustainability

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: JAMES BARTH

Address: ~~137 WELCOME LK RD.~~ 137 WELCOME LK RD.

I represent: DAMASCUS CITIZENS

Address: DAMASCUS, AA

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: JOE LEVINE

Address: BKLYN NY

I represent: NY 420, DAMASCUS CITIZENS

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/2011

Name: DAVID BRAUN (PLEASE PRINT)

Address: 211 W. 85th St #4W NYC

I represent: FOUNDER, UNITED FOR ACTION

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: March 1, 2011

Name: ANGELA MANNINO (PLEASE PRINT)

Address: 42 COMMERCE ST. NYC

I represent: MYSELF

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 3/1/2011

(PLEASE PRINT)

Name: Leo Miller

Address: 363 1st Street Brooklyn 11215

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

(PLEASE PRINT)

Name: Tracy Calluccio

Address: 300 Pond St. Bristol PA 19087

I represent: Delaware River Keeper Network

Address: 300 Pond St Bristol PA

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☒ in opposition to hydrofracking

Date: March 1, 2011

(PLEASE PRINT)

Name: Joy Garland

Address: 440 East 20 St 7F

I represent: am a member of Community Board 6 Manhattan

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____
☐ in favor ☐ in opposition

Date: 3/1/2011

(PLEASE PRINT)

Name: Dylan Hershkowitz

Address: 34 Tinker St Woodstock NY

I represent: Catskill Mountainkeeper

Address: same

Please complete this card and return to the Sergeant-at-Arms

Handicapped

Needs to be
out as soon as
possible

I intend to appear and speak on Int. No. FEACKING
first person ☒ in favor ☒ in opposition

Here

Date: 3/1/11

(PLEASE PRINT)

Name: ALLAN BORTNICK

Address: BOX 1776 OLD CHELSEA STN
10113

I represent: MYSELF

Address: MUST LEAVE EARLY FOR DR APPT

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. DRBC Res. No. DEC 1985
☐ in favor ☒ in opposition

Date: 3.1.11

(PLEASE PRINT)

Name: Debbie Katzman

Address:

I represent:

Address:

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____

Res. No. _____

☐ in favor ☒ in opposition

Date: 3/1/11

Name: BRUCE ROSEN (PLEASE PRINT)

Address: 600 WEA, NYC 10024

I represent: Self

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____

Res. No. _____

☐ in favor ☒ in opposition

Date: 3/01/11

Name: GUSTI BOGOK (PLEASE PRINT)

Address: 130 W. 16th St #41

I represent: Myself

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☒ in opposition

Date: _____

(PLEASE PRINT)

Name: Anne Bassen

Address: 271 19th St Brooklyn NY

I represent: _____

Address: _____

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. hydrofracturing Res. No. _____

☐ in favor ☒ in opposition

Date: 3/6/11

(PLEASE PRINT)

Name: Marilyn Stern

Address: 303 Park Ave SO. 512, NYC 10010

I represent: myself

Address: —

Please complete this card and return to the Sergeant-at-Arms

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor

☒ in opposition *drilling*

Date: *March 2, 2011*

(PLEASE PRINT)

Name: *LuAnne Kozma*

Address: *23837 W. Lebest*

I represent: *Don't Frack Michigan*

Address: *www.dontfrackmichigan.org*

◆ Please complete this card and return to the Sergeant-at-Arms ◆

For the Record

590 Parkside Avenue, Apt. 2BW
Brooklyn, NY 11226

March 1, 2011

NYC Council Committee on Environmental Protection
250 Broadway
New York, NY

Dear Council Members,

I am writing to strongly criticize the substance and review-process of the Delaware River Basin Commissions' proposed regulations regarding gas drilling in the Delaware River Basin for the following reasons:

- The draft rules do not address the cumulative impacts (across multiple wells) of water withdrawal and well development:
 - There is no method to control the environmental toll that natural gas drilling and water depletion will take on the land, streams, and River.
 - There are no spacing requirements for the tens of thousands of wells expected that would limit how many wells can be drilled and how close they can be to each other, facilitating the conversion to an industrial landscape.
 - How will the loss of clean, freshwater flows from the headwaters of the River and the destruction of the now 89% forested Upper Delaware affect water quality, drinking water, habitats and ecological needs downstream?
- The draft DRBC rules do not place any restrictions on the chemicals that drillers can use to drill and hydraulically fracture gas wells. Considering the hundreds of dangerous chemicals that are used, many of them carcinogenic and hazardous, and the fact that diesel fuel, a toxic substance, is being used in some areas to stimulate gas extraction, the DRBC's "hands off" approach to this central aspect which they could rightfully regulate is irresponsible. Why isn't the DRBC prohibiting toxics or at least waiting for the EPA to finish its study of hydraulic fracturing practices to protect drinking water?
- The draft DRBC rules do not prescribe wastewater standards for all of the specific constituents of gas drilling wastewater that would require the removal of all toxic substances but rather require a treatability analysis that is poorly defined and will lead to discharge of pollutants. How can the DRBC move ahead without controlling this toxic wastewater, described by the U.S. Department of Energy as 10 times more toxic than offshore oil well wastewater?
- The draft DRBC rules rely on weak State regulations in many areas such as stormwater management (gas well development is largely exempted), drilling and casing construction and safety (substandard State requirements in PA), air emission controls (PA exempts gas wells from air standards), and inadequate setbacks and floodplain protection (both NY and PA do not have large enough buffers nor adequately protective no-drill safety areas). This will foul air, kill aquatic species, increase flooding and degrade the exceptional water quality of the River and its tributaries.
- While a 500 foot setback of gas well pads from water bodies, wetlands, surface water supply intakes and water supply reservoirs and no siting of well pads in the DRBC's defined "flood hazard area" is proposed and is stricter than State requirements, stricter requirements are still needed. Setbacks should be based on a minimum 300 foot buffer beyond the floodplain/flood hazard area as defined by riparian soils to assure adequate protection for streams and to prevent flood damages. Water supply intakes and reservoirs need protection based on drainage patterns and the condition of the setback area in order to provide needed buffering; depending on conditions such as slope and vegetation, 500 feet may provide no protection. Water supplies, floodplain protection, and stream setbacks need to be set based on site specific analysis and require mandated management measures.
- The rules would allow for fast track approvals (Approval by Rule) by the Executive Director without public input for much of the gas drilling and some water withdrawals. This loophole will lead to the "death of a thousand cuts". How can DRBC allow this when they're supposed to maintain the River's exceptional quality?
- The public opportunity in the rulemaking is inadequate and more hearings and a longer comment period are needed to provide adequate time to review & digest the proposed rules; the public needs to be involved.

Council members: I urge you to take a strong, public, and persistent stance on this matter, and to utilize all the legal means at your disposal to prevent any gas drilling from occurring in the Delaware River Basin Watershed. Thank you for your consideration.

Sincerely,



David Publow

For the record

New York City Council Committee on Environmental Protection, March 1, 2011

As a resident of New York City, long accustomed to drinking unfiltered tap water, the investigative report "Regulation Lax as Gas Wells' Tainted Water Hits Rivers," by Ian Urbina, NYT, February 26, 2011, was frightening and enraging.

Of the many serious and dangerous issues the investigation addresses, I'm concentrating on just one: **The lack of concern by regulators of federal and state agencies, never mind the drilling industry, for the health and well-being of citizens and the willingness of these entities to keep crucially important information from the public and from public officials.**

The report cites the fact that a, never made public, 2009 study, written by an E.P.A. consultant, concluded: "...some sewage treatment plants were incapable of removing certain drilling waste contaminants and were probably violating the law." Also "...never-reported studies by the E.P.A. and a confidential study by the drilling industry all concluded that radioactivity in drilling waste cannot be fully diluted in rivers and other waterways."

Even knowing all of this, "...the E.P.A. has not intervened. In fact, federal and state legislators are allowing most sewage treatment plants that accept drilling waste not to test for radioactivity."

Added to that is the admission by sewage treatment plant operators that "...they are far less capable of removing radioactive contaminants than most other toxic substances. Indeed, most of these facilities cannot remove enough of the radioactive material to meet drinking-water standards before discharging the wastewater into rivers, sometimes just miles upstream from drinking-water intake plants."

And then, an inescapable conclusion, "In other words, there is no way of guaranteeing that the drilling water taken in by all these plants is safe."

Also, importantly, "...the **hazards** associated with natural-gas production and drilling *are far less understood* than those associated with other fossil fuels and the regulations have not kept pace with the natural-gas industry's expansion."

I would like to add on to that last sentence my own thoughts: **Nor have the regulators had the courage and determination to not cave in to the drilling industry, they have not been responsible to their mandate: to act in support of the health and well-being of American citizens. And until it can be proven that we, the citizens, can fully trust those charged to act responsibly on our behalf: ALL HYDROFRACKING MUST BE BANNED.**

Patricia Friedland
77 East 12th Street
New York, N.Y. 10003

NYC Hearings For The Delaware River Basin Commission

Tuesday, March 1, 2011

Good day and thank you for holding these very needed hearings here in NYC even though the DRBC didn't think to have them here. I hope that you give them hell for that!!

Concerning the purpose of this hearing: Hydrofracking, I'd like us to have certain priorities as our guidelines. Among these are:

- First do no harm, the creed of the medical profession
- Let science be a strong yardstick and not politics
- Use politics to defend the creed of the medical profession and the discipline of science and do not use politics to allow loop holes and other such methods to evade the Clean Water Act and other laws to harm the health and future of our people
- Please think about not wasting our precious resources on any energy method that will only be a detour from our future energy needs. Poisonous, toxic and non-renewable hydrofracking will last only a few years/decades when what we really should be focusing on is other renewable reliable energy sources
- and remember that we can not eat, drink, work or live on poisonous so-called Natural Gas.

Others have stated the problems of: the need for more hearings and over a longer time period, the need for on-going cumulative studies from before the contracts are signed until years after the wells have been fracked, the need to apply the same rules and regulations for hazardous materials and rules that we use for other residential and commercial structures to the entire process of Hydrofracking, and the list goes on and on.

I agree with these people and organizations on all of these points of caution, science and the correct use of politics. Let us not make the same mistakes that both the government and business did during the tragedies of tobacco, asbestos, lead paint, agent orange, gulf war syndrome, and the sicknesses that came from to the 911 workers here in NYC.

Here's your chance to not let us down. If these conditions can not be achieved then I recommend and ask for a total ban on Hydrofracking anywhere in NYS and anywhere else that we can have our voice heard.

Thank you again for your time and effort.

Charlie Olson Member of United For Action
1496-Bay Street
Staten Island, NY 10305
(718) 981-7963 charlieandkathy@aol.com

March 1, 2011

Testimony to: New York City city council

By: LuAnne Kozma
23837 W. Lebst
Novi, MI 48375
248-473-5761
luannekozma@gmail.com

I live in Michigan and am with a new group called **Don't Frack Michigan**. We are seeking a statewide ban on horizontal hydrofracking.

See our website: www.dontfrackmichigan.org

I urge New York City's city council and anti-fracking activists here to use your enormous political clout to protect not only the watershed that produces your city's drinking water from the many dangers of fracking, but to call for a statewide ban of hydrofracking throughout New York.

Testimony of Alice Joyce
 333 4th Street
 Brooklyn, New York 11215
 City Council
 March 1, 2011

The unpredictability of the consequences of gas drilling can best be stated in these words of Donald Rumsfeld when he used them to describe the unpredictability of war:

He said: There are known knowns: things we don't know. But there are also known unknowns, things we know we don't know. But there are also unknown unknowns - the ones we don't know we don't know.

Although the Energy Industry assures us that drilling is perfectly safe, there are numerous instances where this has proven to be untrue. It is relatively common knowledge that the toxicity of the fracking fluid is a known known, as is the radioactivity of the shale itself.

What is less known, a major unknown unknown, is how the earth itself will react to tens of thousands of wells being drilled in close proximity to one another. The Ramapo Fault Line runs through New York State, Pennsylvania, and New Jersey. It was last active 200 million years ago. A 2008 study predicts an earthquake of a 6-7 magnitude, but it is an unknown as to when this will occur

Just a few days ago, on February 28, 2011, Guy Arkansas, which sits on the Madrid Fault line, experienced a 4.7 magnitude earthquake which was followed by two more smaller ones. Before these incidents, Guy had experienced thousands of small seismic events. It is believed that these earthquakes are connected to the fracking done in the area.

http://www.huffingtonpost.com/2011/02/28/earthquake-in-arkansas_n_829046.html

Cleburne Texas, which sits on The Balcones Fault line has experienced over a dozen small earthquakes since fracking began in 2008.

http://www.inthesetimes.com/article/4909/dont_frack_with_our_water/

The most dramatic of what Rumsfeld would have previously classified as an unknown unknown was the eruption of a mud volcano that erupted in East Java Indonesia in 2006 and hasn't stopped since. The amount of mud that flows daily is estimated at an amount that would fill 50 Olympic sized swimming pools a day. In five years, nothing has been able to stop its inexorable flow.

<http://www.sciencedaily.com/releases/2010/02/100211211442.htm>

In conclusion, it is apt, I think, to describe the risks of fracking in the manner in which Rumsfeld described the risks of war.

Although there are some known knowns, there are many more known unknowns, and, more frighteningly, more unknown unknowns like the Java mud volcano.

The earth has addressed our hubris in the only way it can - by showing us how much that there are limits to our wisdom and power, and how much power it has over us.

the earth

Testimony of Alice Joyce
333 4th Street
Brooklyn, New York 11215
City Council
March 1, 2011

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the earth

FOR THE RECORD

Ban shale gas drilling now, until it is proven safe, or New York City's drinking water may be irreparably poisoned. Our water supply is threatened by the process of hydraulic fracturing, with more damage done every day in neighboring states, as well as in other parts of the United States.

Hydraulic fracturing has caused documented damage which will be impossible to repair in Pennsylvania, Texas, Colorado, Alabama, Ohio, West Virginia, Kentucky and Arkansas. Proof exists in filmed evidence and samples from all over the country. This includes brown and black tap water that ignites with a match, streams that bubble with gas rising from newly created underground fissures, and families with dangerous health problems. To confirm this, I quote Walter Hang, president of Toxics Targeting, a business in Ithaca, N.Y., that compiles data on gas drilling: "Hydrofracking impacts associated with health problems as well as widespread air and water contamination have been reported in at least a dozen states."

Furthermore, oversight of drilling operations across the country have been lax. The New York Times reported that "many E.P.A. scientists are alarmed, warning that the drilling waste is a threat to drinking water in Pennsylvania. Their concern is based partly on a 2009 study, never made public, written by an E.P.A. consultant who concluded that some sewage treatment plants were incapable of removing certain drilling waste contaminants, and were probably violating the law. Despite this, at least 12 sewage treatment plants in three states accepted gas industry wastewater and discharged waste that was only partly treated into rivers, lakes and streams (*NY Times* 2.26.11).

The *NY Times* also found never-reported studies by the E.P.A. and a confidential study by the drilling industry that concluded that "radioactivity in drilling waste cannot be fully diluted in rivers and other waterways." "Of more than 179 wells producing wastewater with high levels of radiation, at least 116 reported levels of radium or other radioactive materials 100 times as high as the levels set by federal drinking-water standards. At least 15 wells produced wastewater carrying more than 1,000 times the amount of radioactive elements considered acceptable" (*NY Times* 2.26.11).

It has been very difficult to force the gas companies to disclose the toxic carcinogenic cocktail they mix into the water that is then injected into the wells. The wastewater that ensues still contains high levels of toxic materials; not only are the toxins going into the ground where they could leach into aquifers that provide drinking water, but also the volume of water used "billions of gallons of wastewater produced by Pennsylvania wells over the past three years have been far more than has been previously disclosed. Most of this water — enough to cover Manhattan in three inches — was sent to treatment plants not equipped to remove many of the toxic materials in drilling waste." (*NY Times* 2.26.11).

I trust that these examples show why shale gas drilling should be banned in New York State until it can be proven safe. I request that the Committee on Environmental Protection take measures to ensure this happens.

Andrea Beeman, 300 West 23rd Street, Apt. 8C, New York, NY 10011

March 1, 2011

Councilman James F. Gennaro
Chair, Committee on Environmental Protection

My name is Ling Tsou. I am a member of a grassroots group United for Action. Thank you for holding this hearing so that New York City residents would have a chance to voice their concerns regarding hydraulic fracturing shale gas drilling.

By now most of us have read the February 26, 2011 New York Times article on hydraulic fracturing. This article simply confirmed what we already knew which is hydraulic fracturing shale gas drilling is causing a major health crisis in this country. New York Times found internal documents by the E.P.A., state regulators and the drilling industry which revealed that the wastewater, which is sometimes hauled to sewage plants not designed to treat it and then discharged into rivers that supply drinking water, contains radioactivity at levels higher than previously known, and far higher than the level that federal regulators say is safe for these treatment plants to handle. Many E.P.A. scientists are alarmed, warning that the drilling waste is a threat to drinking water. But the E.P.A. has not intervened, neither have state regulators. This is just one of the many alarming facts cited by this New York Times article.

It is time that we ban all forms of hydraulic fracturing shale gas drilling, whether vertical drilling or high-volume horizontal drilling, until this process can be proven safe. No regulations can make it safe. The accidents that occurred would have happened with the best regulations. This process is intrinsically contaminating. Our elected officials have the responsibility to protect the health and lives of the people who elected them to office.

Remember the BP oil spill in the Gulf of Mexico? The root cause lies in the deceptive policies and practices of the Oil and Gas industry. We clearly learned from the BP spill that it is inadvisable to take the Oil and Gas industry's word that their drilling methods are safe. The devastation caused by hydraulic fracturing is far more wide spread than the BP spill in the Gulf of Mexico since hydraulic fracturing is taking place right now in 34 states. We must stop this practice now. We must not allow hydraulic fracturing to take place in New York State and in the Delaware River Basin. New York State must push back against the Oil and Gas industry and set an example for the rest of the country.

Fossil fuels industry of gas, oil and coal are a dirty and dying industry of the past century. It is imperative that we move New York State forward with legislation that sets our energy future on a course that is both sustainable and compatible with human health. New York State is facing a critical choice right now. Now is the right time for New York State to become the true leader in green energy development and creation of new green energy jobs for the future.

Sincerely,



Ling Tsou
80 Beekman Street (5K), New York, NY 10038

NEW YORKERS FOR CLEAN WATER, INC.
[http://sites.google.com/site/cleanwaternewyork/
CleanWaterNY@aol.com](http://sites.google.com/site/cleanwaternewyork/CleanWaterNY@aol.com)

March 1, 2011

My name is Patricia Killen and I represent New Yorkers for Clean Water, Inc., an organization working to prohibit hydraulic fracturing in New York State and especially the New York City watershed.

Hydro fracking fluids, hundreds of unknown chemicals, unregulated by the Safe Drinking Water Act, are injected into the ground and cause contamination to water supplies, as evidenced by fracking in other states. Contamination of our water will lead to the need for filtration by New York City, costing upwards of \$30 billion dollars. Per the New York City Independent Budget Office 2009 brief, our water bills will be raised by 10.5% per year, and our tax bills will rise to build the plant, which will not be operational until 2026.

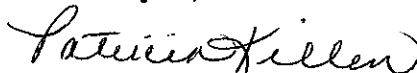
For each hydro fracking well, at least 1 million and as many as 7 million gallons of water are used. Water is the oil of the 21st Century. It is becoming scarcer, which will have an impact on our relations with other nations. We cannot allow our clean New York water to be used and decimated in this manner.

The New York State DEC study was woefully inadequate, and among myriad issues, did not take into account the cumulative effect of multiple wells, and the effects on agricultural products, roads, hospitals, the lack of special waste water treatment plants, as well as detrimental effects to forests, streams, rivers and wildlife. Each well requires one acre or more of deforestation, and the sound of drilling has been likened to the noise of a jet engine. Accumulation of methane in private wells and homes has caused explosions. Our rural, agricultural upstate environment will be lit up at night for drilling and will turn into an industrial zone.

Natural gas is not an interim, nor is it a clean energy source. The extraction of gas emits more CO2 into the atmosphere than the mining of coal. We need renewable, clean alternatives for energy.

We thank the New York City Council for its work in protecting our water and ask that you continue your resolution for a prohibition of hydraulic fracturing in New York State.

Thank you;


Patricia Killen

Statement to the New York City Council Committee on Environmental Protection

Owen Crowley
230 Riverside Dr. 9P
New York, NY 10025

28 March 2011

My name is Owen Crowley. I am a Director of United for Action, a grass roots organization that engages the public on the dangers of hydraulic fracturing.

I am also active at the Sane Energy Project, in which volunteers from multiple organizations are responding to Spectra Energy's application to build gas pipelines through New Jersey to New York City.

If approved, these gas pipelines will bring Marcellus gas within reach of proposed offshore facilities, where energy companies can line their pockets by selling gas to the highest global bidders. Meanwhile they will put residents of New York City and New Jersey at risk of deadly accidents and terrorism. They will decrease the value and insurability of properties and businesses near the pipeline. And through the Marcellus connection, they will lay waste to vital air, water and land resources across New York State and Pennsylvania.

In fossil fuel economies, the few accumulate wealth while the majority absorbs the cost and risk. This is accompanied by stunted economic and political development. Governments become as divorced from their populations as they are beholden to fossil fuel interests. It is not a coincidence that oil and gas exporting regions around the world have some of the most repressive, corrupt regimes.

The last thing we want as a society is to become, as industry shills are touting, "the Saudi Arabia of natural gas."

Already the DRBC is acting like an industry-captured agency. It is proceeding against all evidence, and its own charter, to allow gas drilling to forever pollute the Delaware Basin. This is just the latest example of government agencies ignoring or suppressing evidence of risk and actual contamination from shale gas production.

The City Council, through the leadership present at this Committee hearing, is stepping up to protect the future of our city. This is vitally important. We look to you to promote conservation and sustainable energy; and by all available means to halt any investment in a bleak, shale gas future.

COMMENTS TO DELAWARE RIVER BASIN COMMISSION'S PROPOSED
NATURAL GAS DEVELOPMENT REGULATIONS (December 9, 2010 Draft)

Catskill Citizens for Safe Energy ("CCSE") respectfully submits the following comments with respect to the December 9, 2010 draft Natural Gas Development Regulations (the "Draft Regulations") proposed by the Delaware River Basin Commission (the "DRBC")

GENERAL COMMENTS

1. As a threshold matter, the DRBC has recognized the necessity of a cumulative impact study of unconventional gas extraction employing horizontal drilling ("HD") and high volume hydraulic fracturing ("HVHF") in the Delaware River Basin (the "Basin"). However, the DRBC has elected without adequate justification to proceed to regulate and allow HVHF within the Basin in advance of such a study. The State members of the DRBC (Pennsylvania, Delaware, New Jersey and New York) have even divided votes, with the tie broken in favor of proceeding without a cumulative study by the Federal vote, cast by the Army Corps of Engineers. CCSE submits that this decision should be reconsidered for the following reasons:

First, the Federal vote was cast despite the objection of various other Federal actors, including Congressman Maurice Hinchey, and the pendency of a fully-funded study by the Environmental Protection Agency of the effect of HVHF on water safety which is expected to be completed by 2012.

Second, since the vote was cast, emerging reports of water contamination in Pennsylvania and other states in which HVHF has been employed have demonstrated the deleterious effects of HVHF on ground and surface water, the environment in general and the public health.

Third, the documented conduct of drilling companies in Pennsylvania during a period of mild regulation suggests that, without adequate study, powerful economic disincentives and sufficient financial safeguards, irreparable damage will be done with any possible remediation undertaken at the taxpayers' expense.

2. The Draft Regulations contain certain assumptions which lack basis and/or definition. Absent such definition, HVHF should not be permitted within the Basin. To wit:

Nowhere do the Draft Regulations define the risks attendant to HD and/or HVHF. Such definition is necessary for the Draft Regulations to prevent, assign responsibility for and enforce remediation for any negative consequence arising from HD and/or HVHF. At a minimum, the risks include contamination of surface water, ground water and aquifers, as well as fire, explosion and loss of human life. The Draft Regulations should be revised to address each such risk.

Terms such as “mitigation” and remediation” are employed throughout the Draft Regulations, thus implying that mitigation and remediation are possible. However, the DRBC has not addressed whether either is possible nor how either could be effected. To our knowledge, current technology cannot remediate a contaminated aquifer. The Draft Regulations do not address situations in which remediation is impossible.

The Draft Regulations provide for Approval By Rule (“ABR”) for various actions and permits without indicating the criteria for projects’ or actors’ eligibility for such streamlined approval and/or allowance. CCSE respectfully submits that, at the very least, in advance of a cumulative study of the effects of HD and HVHF within the Basin, ABR should be withheld and the Docket procedure employed so that the general public has notice an opportunity to be heard with respect to all activities related to gas drilling within the Basin. Additionally, while CCSE understands that the implicit purpose of ABR is to allow the participation of smaller drilling companies, this loophole is susceptible of easy manipulation by larger concerns through the establishment of individualized entities which submit such applications.

3. Over strong public objection and the express complaints of various elected officials within the Basin, the DRBC has elected to pursue an unreasonably truncated public comment session with respect to the Draft Regulations.

The number and location of public hearings are insufficient. Every potentially affected city with a population greater than one million should be afforded a public comment hearing, yet the DRBC has refused to schedule a public comment hearing in every such city affected.

Public hearings have been unduly restricted in overall length and the length of time afforded to individual speakers without justification. Each of the three public hearings is limited in length and oral comments may extend for no more than two (2) minutes. The DRBC should provide for hearings to proceed on a day-to-day basis as necessary to receive oral comments from all interested participants. Oral comments should not be restricted in length.

The sixty (60) day length of the public comment session is insufficient to afford the general public and interested entities and agencies an opportunity for analysis, study and proper response to the Draft Regulations. At a minimum, 180 days should be provided for public comments.

The DRBC has inappropriately restricted the manner in which comments may be submitted. All interested citizens and organizations should be entitled to submit comments by customary methods: mail, overnight delivery, email and telecopier.

4. The Draft Regulations are devoid of reference to a single scientific study of the effects of HD and/or HVHF on surface water, ground water, air quality and/or the environment in general. No provision is made for incorporation of any such study or adjustment of the regulations if they are ultimately promulgated in advance of the EPA

Study currently in progress.

5. The Draft Regulations advert to state regulation of gas extraction, HD and HVHF without any examination of the involved agencies or their level or scope of regulation. Additionally, defaulting to state regulation ignores the already-manifest gaps in regulation in evidence in Pennsylvania and New York with respect to new and emerging extraction techniques, as well as the lack of adequate enforcement personnel.

Bay Ridge Consumer Federation

P.O. Box 156 • Brooklyn, NY 11209-0156 • Tel: (718) 745-6383 • Email: brconfed@aol.com

March 1, 2011

Peter Killen

Executive Director

My name is Peter Killen and I am the Executive Director of the Bay Ridge Consumer Federation. And, I am totally opposed to drilling for gas any where in New York State.

Ten years ago, Christine Whitman, head of the Environmental Protection Agency, stood at Ground Zero and told the first responders, who were working on the "Pile", that it was safe to be there, the air was clean and they were doing good work.

During the past ten years, men and women who listened to her have died.

Thousands of first responders and others exposed to the toxins of Ground Zero are now injured and need help.

The James Zadroga Bill was just passed in Washington. It establishes a program to offer medical evaluation, screening, testing and treatment for the men and women who responded on that fateful day and afterwards.

Ten years from now, I do not want a bill in Washington, doing the same thing for all the residents of New York City, the visitors to New York City, for my Children and my Grandchildren because they have been poisoned, by greed, by toxins, by chemicals we know nothing about.

There are millions and millions of words written about the BP Oil Spill in the Gulf of Mexico and how over time the oil and the natural gas will dissipate and everything will be clean again, that is a lie. What they are really saying is, "Let's Drill, Baby, Drill."

I say "No." No drilling, no way, in New York State.

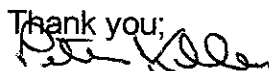
There will be scientific claims that there is no danger from the secret hydraulic fracturing fluid that will be pumped into the earth with millions of gallons of water for each well. Nor will there be any danger when those millions of gallons of water and hydraulic fracturing fluid are pumped back out and disposed of somewhere else.

That somewhere is mystery. Will it be dumped on the land or will it be poured into the streams and lakes or into the ocean.

Remember:

The tobacco industry has spent millions upon millions of dollars telling the world that smoking is good for you. They were talking about scientific claims, also.

Thank you;



Consumer Advocacy • Safety • Education • Information • Publicity • Seminars • Liaison

524 East 20th St. 2G
New York, N.Y. 10009

March 1, 2011

For the Record

Testimony to N.Y.C. Council by Anne Lazarus

I oppose the premature releasing of drilling regulations in the Delaware River Water Basin. The funds for a Cumulative Environmental Impact Study are available, and this study must be done.

The regulations as presently proposed are flawed, because of the following:

1. There are no spacing requirements for the tens of thousands of wells; which means that there are no limits to the numbers of wells that can be drilled and their proximity to each other. As a result there will be enormous ecological and environmental destruction to forests, streams, lakes and other natural areas. There will be on site and non-point pollution with negative impacts on water quality and drinking water sources.

2. There are no restrictions on the chemicals used for the hydrofracturing. Because of the Halliburton Loophole, gas and oil companies are not required to reveal the chemicals they use. They are exempt from the Clean Water Act, Clean Drinking Water Act, Clean Air Act and Superfund Act. A few of these dangerous chemicals are known.

- a. Benzene - unsafe at any level, a carcinogen. death at higher exposures
- b. Toluene - damages the liver, kidneys and nervous system
- c. Ethylbenzene - can cause tachycardia, low-grade fever, rapid respiration, and cyanosis
- d. xylene - even in low levels causes nervous system damage,

drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, unconsciousness and in higher exposures can cause leukemia and even death.

3. Because water and chemicals, including resin-coated sand are injected under high pressure into the ground, underground chemicals can be mobilized. ^{One} Some of these chemicals includes Barium. Barium exposure can result in high blood pressure and brain swelling. Other chemicals include arsenic, molybdenum, chromium and pyrites. Hydrogen Sulfide, a poisonous gas can be released. The Marcellus also has radio-active radium in several isotopes. This mineral can be a source of Radon gas. Radium is more radio-active than uranium. It can successfully compete with Calcium for deposition in the bones. It is a carcinogen. It reacts with water to form a dangerous highly alkaline hydroxide. Radio-active thorium can also be found in the Marcellus. There are no plans of which I am aware to remove

radio-active substances from the produced water and even if the technology were available, what would be done with the highly dangerous and toxic radio-active mass?

Because the Draft regulations allow states to establish weak rules in reference to waste treatment and disposal, contamination of water, air and land has been extensive. We read about gas explosions, well blow outs, contaminated wells, rivers, land and loss of farmland. Shockingly, until recently Pennsylvania was able to allow so-called treated waste water, contaminated with strontium and Barium to be dumped into waterways from which communities get their drinking water. New treatment plants do not allow produced water to be dumped with Barium and strontium contamination, but the old plants are still allowed to operate. The Draft Regulations do not deal with ^{adequately} setbacks from streams, rivers, lakes, reservoirs, wells and public buildings. In my opinion a 500 foot setback is almost meaningless.

Wastewater impoundments are a source of air pollution. These pits can contain 250,000 gallons of toxic fluid with volatile chemicals. This situation is unacceptable. Birds sometimes make the fatal decision of thinking that these containment pits are a source of water. Let me conclude by stating that we are not the only species on this planet, and we cannot survive without an intact ecology.

Anne Lazarus
524 East 20th St. Apt 2G
New York, N.Y. 10009



**NEW YORK CITY COUNCIL
SUBJECT: HYDRALLIC DRILLING IN NEW YORK STATE
TESTIMONY BY ARDEN DOWN
ENVIRONMENT & INFRASTRUCTURE CHAIR
WOMEN'S CITY CLUB OF NEW YORK
250 BROADWAY, 16TH FLOOR COMMITTEE ROOM
TUESDAY, MARCH 1, 2011**

NYC Council Speaker Quinn:

My name is Arden Down, and I am Chair of the Environment & Infrastructure Committee of the Women's City Club of New York, a nonprofit, nonpartisan, multi-issue organization founded in 1915. Our mission is to improve the lives of New Yorkers by helping to shape public policy and promoting responsible government.

On December 23, 2009, the New York City Department of Environmental Protection (DEP) released an 11-month technical study¹ on the impact of drilling for natural gas in the Marcellus Shale Rock formation. The Marcellus Shale Rock formation runs through Virginia, West Virginia, Ohio, Pennsylvania, and New York. According to the DEP, in New York State alone it extends for approximately 18,700 square miles, including underneath the City's entire 1,585 square mile West of Hudson watershed through the Upper Delaware River area.

According to an assessment report prepared by the DEP, the Marcellus formations contain naturally occurring contaminants such as hydrocarbons, metals, radionuclides, and high salinity. Well bore heads create conduits for fluid to flow between these previously isolated geologic formations. Each well to be drilled is assigned a spacing unit of up to 640 acres. Initial site activities include clearing, grading and construction of site access roads, well pads and utilities. Once the site is prepared and the drill rig and ancillary equipment are set up, operators begin drilling the well.

In the New York area, wells will likely consist of 3,000 to 7,000 foot deep vertical sections that extend from the surface to the target formation, in addition to horizontal sections that extend laterally for an additional 2,000 to 6,000 feet. After the well is drilled, cased, and grouted, the operator proceeds with hydraulic fracturing to stimulate gas production. The process entails injecting a mixture of water (typically three to eight million gallons), sand and chemical additives. For a four million gallon fracture operation, this translates to 80 to 330 tons of chemicals per well. The exact composition of many of the additives is not known but, of the known chemical components, many are toxic to the environment and human health. These chemicals mix with elements and chemicals that occur deep underground adding to the toxicity. Much of the chemically polluted water inserted into the wells remains underground, but at least as much has to be disposed of at ground surface. Toxic water has been discarded and has found its way into streams and rivers. According to the *New York*

¹New York City Department of Environmental Protection. *Final Impact Assessment Report: Impact Assessment of Natural Gas Production in the New York City Water Supply Watershed*. December 2009. Accessed at

Times, where water treatment is attempted, the results are poorly monitored and understood².

As a result of its purely technical assessment, the DEP called for a prohibition on drilling using present methods. Since spring 2010 New York had been functioning under a de facto moratorium until the State is satisfied with the Department of Environmental Conservation's Supplemental Generic Environmental Impact Statement (dSGEIS) on drilling/hydraulic fracturing. The federal Environmental Protection Agency has made it clear that the impacts of this drilling technology on water quality and public health are not settled, and on March 18th announced the initiation of a two-year study of the relevant science on the impacts of the current drilling technology.

Because of all of the uncertainty over the hydrofracking process and our overriding concern about maintaining the integrity of New York City's water supply as well as its farm and grazing land, the Women's City Club of New York has urged the State government to support a moratorium on hydrofracking (Assembly bill 10490 and Senate bill 7592). We appreciate the actions of New York City Council Speaker Christine Quinn and member James Gennaro who on July 14th called for a ban on hydrofracking in the state. In December 2010, Governor Paterson issued an executive order imposing a moratorium on hydrofracking in the Marcellus Shale in New York until July 2011.

With the BP oil spill and the continuing Exxon and Mobil gas spills in Nigeria, we are seeing the disastrous effects these "accidents" can have on people, farming, wildlife, fish, and water purity. We realize that many are pushing for more drilling for natural gas for economic development reasons and because burning natural gas is cleaner than using other hydrocarbons. But New Yorkers need assurance that their government is relying on the best, most objective and accurate science on the effects of hydrofracking in the drilling process when it decides whether to permit hydrofracking in the Marcellus Shale. Due to the number of documented incidents of well pollution, explosions caused by the release of methane, and numerous other "accidents," we remain opposed to drilling for natural gas. We will remain opposed to drilling for natural gas until we are assured that an environmentally safe way has been developed to do so. We must not endanger our New York City watershed.

² "Regulation Lax as Gas Wells' Tainted Water Hits Rivers" accessed at http://www.nytimes.com/2011/02/27/us/27gas.html?_r=1&scp=1&sq=hydrofracking&st=cse

Thousands of internal documents obtained by The New York Times from the Environmental Protection Agency, **state regulators and drillers show that the dangers to the environment and health are greater than previously understood**. Well researched investigative reporting by the NY Times published days ago clearly indicates that the Delaware River Basin of which we are a part is being poisoned.

Our governments, national and state, have not taken the measures essential to our protections. Right now, billions of gallons of filthy waste water from the fracking process which contains radioactivity in excess of the FDA drinking water standard by 100 times to 2122 times, depending on the well, is being given to water cleaning plants which admit that they do not have the capacity to remove these radioactive substances. After they have cleaned the waste water to the best of their limited ability, they throw it into the river system hoping to succeed with dilution.

However, only a few miles down river from some of them, there are drinking water intake plants. The drinking water intake plants have not checked for radioactivity since 2005, before the filthy fracking process had spread into the area. The EPA recognizes that radioactivity at this level causes cancer and other health problems. The crisis is now.

energy In addition to the threats to our water and lives, the *gas industry's* ~~economic~~ argument of "clean" ~~the DRBC's position~~ is completely undercut by the study of natural gas GHG emissions researched by Cornell professor Robert Howarth. I submit a web link to his conclusions, which indicate that natgas' GHG emissions equal and/or exceed those of coal. The research was recently revised based on new information from EPA and submitted for publication in a peer-reviewed journal, where it may appear as early as mid-March.

Link to Cornell Prof. Robt. Howarth's study:

Assessment of the Greenhouse Gas Footprint of Natural Gas from Shale Formations Obtained by High-Volume, Slick-Water Hydraulic Fracturing,

[http://www.eeb.cornell.edu/howarth/GHG%20update%20for%20web%20--%20Jan%202011%20\(2\).pdf](http://www.eeb.cornell.edu/howarth/GHG%20update%20for%20web%20--%20Jan%202011%20(2).pdf)

Submitted by:

Stephanie Low, 212 534 4103, stephlow@mindspring.com
1215 Fifth Ave., 11B
NY, NY 10029

3.1.11 - NYC Council's Committee On Enviro Protection DRBC – DEC regs Oversight Hearing

Local communities must have standing. Home Rule must B strengthened. NY must institute a FRACing ban for all Shale plays (Marcellus, Utica and whatever else rears its ugly head) and not accept any FRAC waste – which it currently does. Force Majeure is gonna big a huge legal battle upstate. DEC's Compulsory Integration is a perverted Forced Royalty in my opinion.

The city's long over due obliteration of the filthiest of heating oils to power BLDGs is commendable. TSB's 2% mix must B increased NOW – this action will be highly commendable. Bloomberg craves 2 slither the largest Nat Gas project in the NE – (S)Spectra Energy under NYC's front door. Replacing one filthy FF Oil w/another Nat Gas is Outrageous, Deplorable and from a Cradle to Grave analysis proves that PlaNYC is highly defective and loaded w/ Unrighteous Toxic Consequences. The unregulated test wells and proposed wells in the DRB along w/M. Shale and all Shale plays in the US and elsewhere – are part of this FRACed-Up project. Spectra and it's lap dance partner Chesapeake are both notorious violators of Health, Security and Enviro sustainability. Chesapeake 2.23.11 Fox News.com PA Gas Well Explosion Injure's 3. NO to Bloomberg's Hypocritical Nat Gas LuV affair!! *majority of NG 4 foreign export.*
Sane Energy Project sm

We support the development of regulations that will serve as incentives for conservation, thereby reducing the need for natural gas. We oppose any program that directly or indirectly leads to increased use of natural gas, as such programs will increase the likelihood of air, land and water pollution from Marcellus & all other potential FRACing plays. This was part of our DEP heating oil testimony 2.28.11.

The Delaware River Basin, the source of NYC's unfiltered (by law) pristine water and NYS must not bear FRACing's catastrophic risks. The FRACing plays will threaten 2 destroy NYC's highly precious and limited unfiltered water. Even if the FRACAHOLICS™ pay for a state of the art filtration system – no technology exists to save us from the VOCs & FRAC's toxic consequences. We R all aware that our Infrastructures both Economic and Enviro – incl of: tourism, property value, health, conventional, Org & sustainable agriculture, air, land and H2O quality will be destroyed. Scientific and legal expertise exists and continues to prove such. Creating greater unemployment and obsolete industries. The inexperienced that get the highly ltd jobs, exposed to the toxicity ie METH become chronic METHheads. Once U go FRAC baby U can Neva go back™

The CorruptOcrats play Psycho games of Russian Roulette with our lives. Our country is further converted into boundless Industrial Dead Zones allowing for the justification of Moratoriums and Bans – now that's SEXY.

Demand is made to disclose how much filthy lucre the DRBC commissioners have accepted from the CorruptOcrats. Nat Gas' world since 2009 has imploded and as I say – akin to the real estate debacle.

Our country is drying up – NYT 2.25.11 *Does the SW Face a Mega-Draught.* Yeah!! We no longer have Lake Mead. We R not a community on the Verge of a Nervous Breakdown – We R a World on the Verge of Water Wars!! PA DEP has *suspended all forms of life* – Pitts Post Gazette 2.26.11 Suspension of pollution rules sought for drilling.

Huge Shout Out to Buffalo

Denise Katzman: SANE ENERGY Project * younification@gmail.com
271 Madison Ave., NY, NY 10016 & 35 Hudson St., 2005 W., JC, NJ 07302

For The Record

SENATOR BOB GORDON
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February 22, 2011

Ms. Carol Collier, Executive Director
Commission Members
Delaware River Basin Commission
P.O. Box 7360
West Trenton, NJ 08628

Re: Natural Gas Development Regulations

Dear Director Collier and Commission Members,

We, the undersigned members of the New Jersey Legislature, ask you to delay the adoption of regulations on natural gas development in the Delaware River Basin until the scientific studies being compiled by the US Environmental Protection Agency (EPA) and the Delaware River Basin Commission (DRBC) are completed, and until strong, comprehensive federal rules on natural gas development are in place. The Delaware River Basin provides clean drinking water to approximately 3 million people and key industries in New Jersey, and

- hasty action to approve natural gas development in the Delaware River Basin would put this precious natural resource at risk of serious contamination.

Preventing degradation of the Delaware River Basin by natural gas development is essential to protecting New Jersey's water supply. The exceptional quality of the Upper

- Delaware River's headwaters sustains the drinking water for 15 million people across four states. The drilling technique to be used in the Delaware River Basin, a practice known as hydraulic fracturing, has been found to use a variety of contaminating chemicals and materials that can suddenly and in an uncontrolled manner be introduced into the surface waters and ground water of the State. The companies engaging in the use of this drilling technique have been less than forthcoming in revealing the "cocktail" of chemicals, and we are concerned that they can be introduced into these waters. In June 2010, there occurred an incident of an uncontrolled release of many gallons of contaminated water and natural gas from a hydraulic fracturing drill site in Clearfield County, Pennsylvania, and we fear that other such accidents are likely to occur. The regulations that the DRBC adopts regarding natural gas development will indelibly impact New Jersey's water resources, public health, and the environment. It is essential that the DRBC delay the adoption of natural gas development regulations in the Basin until the environmental studies currently being developed by the EPA and DRBC are completed and the potential primary, secondary, and cumulative impacts of hydraulic fracturing on the watershed are assessed. Taking action to adopt natural gas development rules now, before the scientific studies are completed and impacts are known, is premature and may jeopardize New Jersey's water supply.

Our representatives on the DRBC need to protect New Jersey's interests and ensure that state's drinking water and its economy are not placed at risk by adopting natural gas rules without sound science.

Sincerely, Senator Bob Gordon & Assemblywoman Connie Wagner

From: Kate.Millsaps@SierraClub.org
Sent: Thursday, February 24, 2011 12:32 PM
To: Gordon, Sen. D.O.; Wagner, Asw. D.O.
Subject: ATTN JENN & Chris: Sign-ons so far

Senator Bob Gordon
Assemblywoman Connie Wagner
Senate President Stephen M. Sweeney
Senate Majority Leader Barbara Buono
Senator Diane B. Allen, Deputy Minority Leader
Senator Bob Smith, Chair of the Senate Environment and Energy Committee
Senator Loretta Weinberg
Senator Joseph F. Vitale
Senator Donald Norcross
Senator Christopher Bateman, Deputy Conference Leader
Senator Paul Sarlo, Deputy Majority Leader
Senator Linda Greenstein
Senator Sandra B. Cunningham, Majority Whip
Assemblyman Reed Gusciora, Deputy Majority Leader
Assemblywoman Joan M. Voss, Deputy Majority Leader
Assemblywoman Celeste Riley
Assemblyman John J. Burzichelli, Deputy Speaker
Assemblyman John McKeon, Chair of the Assembly Environment and Solid Waste Committee
Assemblyman Peter J. Barnes III, Majority Whip
Assemblywoman Linda Stender
Assemblywoman Joan Quigley, Majority Conference Leader
Assemblyman Charles S. Mainor
Assemblywoman Valerie Vainieri Huttie
Assemblyman Upendra Chivukula, Deputy Speaker
Assemblyman Craig J. Coughlin
Assemblywoman Pamela R. Lampitt
Assemblywoman Caridad Rodriguez
Assemblyman Gordon M. Johnson, Deputy Conference Leader
Assemblywoman Bonnie Watson-Coleman
Assemblyman Angel Fuentes
Assemblyman Gilbert L. Wilson
Assemblyman Daniel R. Benson
Assemblyman Herb Conaway Jr.
Assemblyman Jack Connors, Deputy Speaker
Assemblyman Ralph R. Caputo

Kate Millsaps, Program Assistant
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NYC Council March 1, 2011

An examination of the American tax code indicates that gas and oil production is among the most heavily subsidized businesses, with tax breaks available at virtually every stage of the exploration and extraction process. According to a study by the Congressional Budget Office 'Taxing Capital Income: Effective Rates and Approaches to Reform' released in 2005, capital investments like land leases and drilling equipment are taxed at an effective rate of 9%, significantly lower than the 25% for businesses in general and lower than virtually any other industry. On small and mid-sized companies, the tax on capital investments is so low, it is more than eliminated by various credits. These companies have been aggressive in using foreign tax havens where they are subject to lower taxes and less stringent safety and staff regulations. They get record profits and pay little or no taxes.

Many say gas drilling will bring jobs and economic opportunity and the possibility of disaster is low. One disaster is too many in terms of environment clean-up costs (if that is possible to be achieved), also costs in terms of human health related problems. The agriculture industry is under tremendous threat, also the wine industry as well as tourism. Which teacher would be willing to take a class on an outdoor field trip when toxic hazards, seen and unseen, can be encountered in forests.

Fay Muir
Croton Watershed Clean Water Coalition

For the Record

Testimony before the New York City Council, March 1, 2011

Marilyn Stern

Thank you for holding this public hearing. Also thanks to the New York Times for its excellent exposée of February 27th. I urge *all* Council members to thoroughly read this article, and the upcoming series on the real and proven hazards of hydro-fracking -- both horizontal AND vertical.

I quote from this article: "... *thousands of internal documents obtained by The New York Times from the (EPA), state regulators and drillers show that the dangers to the environment and health are greater than previously understood. The documents reveal that the wastewater, which is sometimes hauled to sewage plants not designed to treat it and then discharged into rivers that supply drinking water, contains radioactivity at levels higher than previously known, and far higher than the level that federal regulators say is safe for these treatment plants to handle.*" The article goes on to say that these sewage treatment plants are not required to test for radioactivity.

I beseech you Council members to become informed. When you do, I'm sure you will all agree that we *must* have a moratorium in New York state against *all* hydraulic fracturing -- both horizontal AND vertical, until at least 2012 when the EPA's initial study will be released.

Next time you pour yourself a glass of clean New York City tapwater, ask yourself: Will your children and grandchildren be able to do the same? We cannot rely on the wishful thinking and outright lies of the natural gas industry. If the Albany legislature cannot take the lead on this, as it tried to do in 2010, then we here in New York City must take up the mantle of responsibility to preserve clean drinking water for ourselves and for future generations.

Thank you for your attention and concern.

City Council Oversight Hearing

Hydro Fracking

Testimony

By

Robert Cassara

March 1, 2011

For The Record

Good afternoon ladies and gentlemen, members of the City Council. My name is Bob Cassara. Thank you for giving me this opportunity to speak out on this topic. I live in Bay Ridge, Brooklyn and I am opposed to any hydraulic gas drilling in the Marcellus Shale. I am opposed to it from two main environmental positions. First and foremost it will immediately endanger our water resources and secondly and on a more pronounced level it will add millions of tons of carbon dioxide to our atmosphere as a result of burning natural gas.

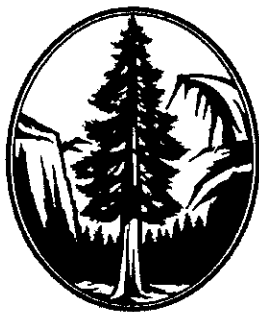
According to Charles T. Maxwell, "Natural Gas is going to be one of the saving graces in this search for substitutes for oil, and we will be learning how to use it for a lot more things, and it will be wonderful." He also claims that oil will reach \$300 per barrel by 2020. By 2014 we will be paying \$140 a barrel, followed by \$180 in 2015.

The true long-term cause of higher prices and the drilling for unconventional gas—shale gas—is that the demand continues to rise from greater economic activity around the world.

America has for too long built its economy on cheap oil, but as we can see this house of cards is now crumbling. With unrest in the Middle East, run away oil wells in the Gulf of Mexico and now an environmental assault in our own backyard by the gas drillers/oil companies, it is time that we turn the page on our cheap addiction to oil and natural gas. As Thomas L. Friedman, in his recent article in the New York Times article on Wednesday, February 23, 2011, "If Not Now, When? He states," The smart thing for us to do right now is to impose a \$1.00-a-gallon gasoline tax, to be phased in at 5 cents a month beginning in 2012 with all the money going to pay down the deficit." States could also follow suit and would then not be tempted by the billions of dollars being offered by the gas companies for their drilling permits.

So what are the real alternatives to these fossil fuel base energy supplies? The answer is nuclear. France has successfully implemented that strategy. The spent waste is reprocessed and the cycle continues. What little waste that is left over can easily be encapsulated in glass and securely buried in underground vaults with no chance of endangering our environment.

In closing, burning fossil fuels is wrong headed and will certainly lead to catastrophic consequences within this century. We will be reaching the tipping point by year 2040 to 2050 and there is no turning back. Lower Manhattan will be underwater as well as many other cities around the nation and the world. It is time to be bold and stop our addiction to fossil fuel. Thank you.



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Conservation Chair

My name is Ken Baer and I serve as Chair of the NYC Group of the Sierra Club. The Club has over 12,000 members in the City, over 37,000 members in the state, and 625,000 members nationwide. The Sierra Club thanks the City Council for this opportunity to testify on the DRBC Draft Natural Gas Drilling Regulations.

The Sierra Club believes that the Delaware River Basin Commission should suspend the current rulemaking process and not permit gas exploration or drilling within the basin until exhaustive studies are complete, including the current EPA study, the NYSDEC SGEIS, and a DRBC's assessment of cumulative impacts. The burden of proof should be on the natural gas industry to demonstrate that the process is safe and will not harm water quality. The DRBC has a statutory obligation to protect the water quality for the 15 million citizens that rely upon the Delaware River, its tributaries, and its groundwater for drinking water. The Commission should impose a strict burden on the drilling companies to demonstrate that these activities will not cause harm.

The draft rules do not address the cumulative impacts of water withdrawal, well development, or waste disposal. Without an accounting of how thousands of wells collectively may impact the land, streams, and the Delaware River itself, we may never understand the true impact embodied in an individual well.

The draft rules do not place any restrictions on the chemicals that drillers can use to drill and hydraulically fracture gas wells. Considering the hundreds of dangerous chemicals that are used, many of them carcinogenic and hazardous, and the fact that diesel fuel, a toxic substance, is being used in some areas to stimulate gas extraction, the Commission needs to adequately supervise this crucial aspect of drilling. Regulations should also make clear that any hydraulic fracturing wastes that meet the definition of 'hazardous' wastes should be subject to all hazardous waste generation, transportation, and disposal laws.

Among the most disturbing provisions within the DRBC's Fact Sheet are:

1. An expedited process, Approval By Rule, would be available and that some projects would be subject to less scrutiny than others.
2. Financial Assurance Requirements for the plugging, and remediation of pollution from natural gas activities would be set at a meager \$125,000 per gas well. A more realistic requirement would be a minimum of \$2M.
3. Not all sponsors would be required to prepare a Natural Gas Development Plan, when all entities should be subject to this process. Simply establishing another corporation or partnership would circumnavigate the threshold of 5 well pads or 3,200 acres.
4. Allowing minimum setbacks from occupied homes, and water supply wells, as established by the respective states, rather than a uniform stringent DRBC setback that would provide unquestioned safety.

Thank you.

Buck Moorhead with NYH2O

Thank you to this committee, and specifically Councilman Gennaro for his way-back when-no-one-knew-about-this efforts to raise awareness and action.

There are two things that I am certain about.

One is that everyone in this room wants to take care of NYC's drinking water.

What I am equally certain about is that no one in this room can say with any certainty what the quality of the NYC water will be in 5 or 10 or 20 years after 5,000 or 10,000 or 20,000 wells have been drilled in the Delaware River Basin.

No boundary establishing a no-drill-zone around the NYC's watershed will be large enough. I repeat: no boundary is large enough.

It appears that, absent a cumulative impact study and what that could teach the DRBC, that the DRBC will attempt to monitor the activity and adjust to any negative impacts.

This strategy does not protect NYC's water.

This strategy does not acknowledge that the hydrology of the river basin is a complex system. One of the properties of complex systems is that they have non-linear responses to inputs. In complexity science, that means that small inputs can lead to large changes, not necessarily predictable and proportional to the input.

The DRBC regulations do not address the 80% of fracking fluid and toxic water that is not pulled back to the surface, but remains in the brittle geology, as identified in the Hazen Sawyer report, and within the hydrologic system of the basin. Fluids migrate, particularly in a brittle geology.

It is time for NYC to fully recognize and acknowledge that to protect the water of NYC residents, it must address and comment upon this proposed activity well beyond the limits of the watershed.

Regulations absent a comprehensive cumulative impact study cannot be considered complete or acceptable.

Say this to the DRBC.

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**Comments on Natural Gas Developments - Article 7 of Part III -
Delaware River Basin Regulations
NYC Council Hearing - 3/1/2011**

I shall concentrate on just two topics:

- 1) The threats to water quality due to high levels of radioactivity;**
- 2) The threats to water quality due to the destruction of watershed forests.**

1. Levels of radium 226 in NYS's portion of the Marcellus Shale, including the DRB, are unusually high - 267 times the safe limit of discharge into the environment and 1000s of times the safe limit in drinking water. Radium 226 is an emitter of high energy alpha particles that can be fatal if inhaled or ingested. Young children are specially vulnerable, according to research conducted at the prestigious American Academy of Pediatrics. In addition, Radium 226 has a half-life of well over 1,000 years - over 40 generations that could be confronted with an increasing accumulation of dangerous radioactive waste. At present, after a cursory treatment, much of the radioactive and other waste is discharged into nearby streams and rivers. The Monongehela River is one such example where this waste is discharged upstream of the water filtration plant that is supposed to provide safe drinking water.

Unless a fail-safe disposal method can be found, there should be no fracking in the Delaware River Basin.

2. The NYS Marcellus is largely forested. It is a well-established, scientific fact that forests are among the very best producers of clean water. The intricate network of roads that would be needed to access the numerous drilling units, and the pipelines and the heavy equipment that are needed will fragment the forest and destroy its ability to provide clean, potable water. For every 10% increase in forest cover in a

municipal water system's watershed, costs of water treatment decrease by 20% (report by NYS Comptroller Di Napoli). Even if not a single drop of pollutants reached water resources due to fracking, the loss of forest would guarantee a severe loss of water quality.

Fracking should be prohibited in the forests of the DBR watershed.

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Environment, Public Health, and Public Safety Committee
March 18, 2009
PUBLIC HEARING

Resolution calling on the New York State Legislature, the New York State Department of Environmental Conservation, and New York State Governor David Paterson to PROHIBIT DRILLING FOR NATURAL GAS WITHIN NEW YORK STATE.

Whereas, Natural gas exploration and production companies, and mineral rights owners, are interested in developing a potentially significant gas resource in the Marcellus Shale through the use of horizontal drilling and a hydraulic fracturing technique known as "slick water fracturing" which requires large volumes of water; and

Whereas, the State Environmental Quality Review Act requires the Department of Environmental Conservation to review the methods used while accessing this natural gas that's located deep within the Earth; and

Whereas; We heard presentations from experts on this issue, among them: James Gennaro, Chair of New York City Council Environmental Protection Committee; Dr. Stephen Corson, Policy Analyst for Manhattan Borough President and lead author of the Borough President's report on this issue; Jared Chasow, Legislative Aide for Senator Tom Duane; Deborah Goldberg, Managing Attorney for Earth Justice's Northeast Office; Craig Michaels, Watershed Program Director for Riverkeeper; and Joe Levine, Co-founder of NY-H2O; and

Whereas, Our committee screened a film segment by Josh Fox showing recent destructive consequences/affects of this process; and

Whereas, Siobhan Watson spoke for New York City Council Speaker Christine Quinn and said the Speaker was keenly aware of this issue and hasn't taken a position yet; and

Whereas, Matthew Borden spoke for New York State Assembly Member Deborah Glick to say she is entirely opposed to this dangerous drilling activity and he distributed copies of her public testimony on the matter; and

Whereas, over 70 people attended this Public Hearing, including board members of Manhattan Community Boards 3, 6, & 7; and

Whereas, Hydraulic Fracturing mixes water with sand and 250+ toxic chemicals; and

Whereas, the 2005 Energy Policy Act exempts companies who employ Hydraulic Fracturing methods from having to comply with many public health laws which were specifically written to protect our natural resources and well being (e.g. Safe Drinking Water Act, Clean Water Act, Emergency Planning & Community Right-to-know Act); and

Whereas, Chapter 376 of the Laws of New York State of 2008 streamlined the permitting process for horizontal wells that use hydraulic fracturing, allowing the development of natural gas drilling sites within Marcellus Shale in New York to proceed more quickly; and

Whereas, the New York State Department of Environmental Conservation Division of Mineral Resources, Bureau of Oil & Gas Regulation held scoping hearings upstate for a Draft Supplemental Generic Environmental Impact Statement, but failed to hold any hearings within New York City despite the fact 90% of our water supply comes from the Catskill and Delaware watersheds; and

Whereas, Chemicals contained in hydraulic fracturing fluids cause a variety of irreversible and catastrophic damages to the air, water, public health, wildlife, and integrity of local communities; and

Whereas, Hydraulic fracturing presents risks of water contamination during drilling operations and during the storage and disposal of millions of gallons of the water and chemical additive mixture required for each well that is created; and

Whereas, Hydraulic fracturing has resulted in contaminated water supplies in other states, including Wyoming and New Mexico; and

Whereas, No amount of careful planning and operation can guarantee that there will be no chemical spills that could flow into reservoirs, underground migration of fracturing fluids toward the water supply, or other accidents resulting from drilling operations; and

Whereas, If the water supply should be contaminated, the City of New York would be required by the Environmental Protection Agency to build and operate a water filtration plant, the cost of which has been estimated to be approximately \$10 billion, which would be borne by New York City taxpayers; and

Whereas, Absolutely no evidence has been shown by any organization that fluids used during Hydraulic Fracturing can be completely filtered out of drinking water; and

Whereas, Council Member Gennaro has introduced Resolution No. 1850 in the New York City Council that calls for a ban for drilling within our Watershed Area; and

Whereas, There is no possible remedy once contamination has occurred; and

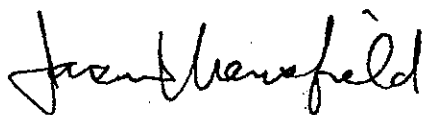
Therefore let it be resolved, this method for accessing natural gas is FAR TOO DANGEROUS to the air, water, public health, wildlife and integrity of local communities to be approved by any Federal or New York State entity; and

Therefore be it further resolved, Manhattan Community Board 2 calls on the New York State Legislature, the New York State Department of Environmental Conservation, and New York State Governor David Paterson to prohibit Hydraulic Fracturing drilling for natural gas within New York State.

Committee vote: Unanimous approval

Full board vote: Unanimous approval

Respectfully submitted,



Jason Mansfield
Chair
Environment, Public Safety, Public Health Committee



Brad Hoylman
Chair
Manhattan Community Board 2

Jo Hamilton, *Chair*
Bo Riccobono, *First Vice Chair*
Sheelah Feinberg, *Second Vice Chair*
Bob Gormley, *District Manager*



Erin Roeder, *Treasurer*
Susan Kent, *Secretary*
Elaine Young, *Assistant Secretary*

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Statement By Community Board 2 Regarding Hydraulic Fracturing
March 1, 2011

We appreciate the opportunity to provide a statement strongly opposing Hydrofracking and we join with the many others today who are calling for a ban of this process entirely, not only in our city's watershed, but within New York State as a whole.

Hydraulic Fracturing, or "Hydrofracking", is a very dangerous process that has been shown repeatedly to cause terrible, irreversible damage to humans, animals, and the environment.

Two years ago at our March 2009 full board meeting, we unanimously passed a resolution strongly opposing Hydrofracking, a copy of which is attached to this statement. We continue to stand by this resolution and are very proud that our board was in fact the first board to hold a hearing or pass a resolution on the matter. Since then, sadly, there have been many alarming revelations on the process, including that various federal and state officials have been lied to concerning the use of diesel fuel in the process (which is illegal) and it is shocking to learn this process produces large amounts of radioactive waste. Moreover, it has been revealed that the wastewater created in this process is typically dumped into clean water supplies. Regulation is not the answer since we know that enforcement is always the problem, so we continue to seek a complete ban of Hydrofracking altogether.

Thank you Chairman Generro for the opportunity to provide these comments and we are grateful to the Speaker for her leadership on this issue. This is a very important and complicated issue, and we urge the City Council to work towards a complete ban. We are the stewards of our land it is imperative that we do all we can to preserve it for future generations.

740 East 20 St
NYC 10009

Testimony of Joy Garland before the NYC Council Committee on the Environment, March 1, 2011

Members of the Council, My name is Joy Garland. I'm speaking as a mother and grandmother, as a member of Community Board 6 Manhattan, as a former science teacher at the UN International School, and presently as a Non-governmental representative of a women's organization at the United Nations,

Today's NY Times reports a 4.7 –magnitude earthquake in Arkansas and says that there is "a growing body of research suggesting that injections wells can induce earthquakes and there is some circumstantial evidence that this might be happening in Arkansas." (page A 14) I believe that the Hallibuton technology known as hydraulic fracturing is the biggest environmental threat we are facing, right up there with Climate Change. And not just in New York or the United States, but all over the world wherever natural gas is to be found. There is still little awareness of New Yorkers or the world's people of the price they would pay in the loss of millions of gallons of fresh water needed for consumption and growing crops, plus the contamination of the water due to the toxic cancer causing chemicals needed for the "hydrofracking" process and the natural underground radioactive minerals that are released into the water.

The world, including the United States is already running short of fresh water. Only about 3% of the world's water is fresh, and 2% of that has been locked up in glaciers and icebergs which are beginning to disappear due to global warming.. Of less than 1% of the fresh water left, how much is uncontaminated and available? Our bodies are made up of about 70% water. Instead of continuing the drilling for coal and natural gas, we should put our resources into developing renewable energy.

At a recent meeting in the General Assembly, I heard a young boy named Felix Feinbiener address the delegates, and Felix challenged them saying – We children know that you grownups know that the Earth's environment is in trouble and that there are actions you can take now to slow global climate change. What we don't understand is why you are not acting now so that we kids don't inherit a world where the water, land and air are poisoned and children are dying from pollution .

This is our chance to act now. We have a moral obligation to clean up and protect our water, land, and air for present and future generations. Ban fracking, Get drilling back again under the clean water and clean air acts, bring green jobs into the upstate depressed areas and remember that we can live without natural gas, but all life needs water.

Joe Levine

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March 1, 2011
NYC Council,
Councilman James Gennaro
Chairman of the Environmental Protect Committee

Public Hearing On DRBC Shale Gas Fracking Regulations

Shale gas fracking has not been proven to be safe. Regulations for shale gas fracking must be based upon a **Cumulative Impact Study**. These regulations, the best-made regulations **cannot make drilling safe**. This is proven by what is happening where drilling is happening – just look at PA.

Fracking is intrinsically contaminating; it is not a decades old proven technology – it is just a few years old and is allowed only because it is **exempt from relevant regulations**. There are no reports that can conclude this is safe because it's not possible to come to that conclusion. These regulations must **rescind the exemptions**.

The dominant elements of the hearing record are the H&S Report (from the NYCDEP), The NYS Watershed Inspector General's Report (from the AG's office) and no less than the 8 reports submitted (by DCS and DRN) to the DRBC. All of these reports say that **this technology is not safe; the risks are too great** and therefore you cannot allow it and it **must be banned until it is proven to be safe**. Even the Industry's own Society of Petroleum Engineers says that there is substantial risk from failures and accidents in all aspects of the drilling process.

The rate of accident or failure exceeds 1% by all reports. That means that if there are 20K wells there will be 200 accidents and failures. What will we do when our aquifers are contaminated – like in Dimock? One accident like the one in Clearville, PA will spew millions of gallons of toxic poison that does not degrade into our rivers. And nothing was done wrong in those incidents; it is just the nature of the operation. That's what I wrote before the NYTimes article. Now it's proven it's nothing less than sinister.

If you examine the record of shale gas fracking it poses too many risks to the Basin resources to be considered. There is no substantial evidence in the Hearing record over the last 3 years that refutes this conclusion. Consequently, any rule authorizing fracking anywhere in the basin fails for being **arbitrary and capricious and unsupported by the record**.

You must do a **cumulative impact study first to substantiate your regulations**. This is the Precautionary Principle, which is the responsibility of this commission.

Respectfully,

Joe Levine
NYH2O
<http://www.nyh2o.org>
DamascusCitizens
<http://www.damascuscitizens.org>

For the Record

My name is Jen Abrams and I am a Prospect Heights homeowner and longtime resident of Brooklyn. I have come here today to voice my strong opposition to hydraulic fracturing.

It is astonishing to me that a process that mortally threatens the entire water supply for the largest city in the country is even under discussion, particularly after we've seen with our own eyes the damage that has already been done by this process in western Pennsylvania.

At best, we can hope for perhaps ten years of lower fuel costs in return for permanent fouling of the water supply. The leaseholding farmers can at best hope for ten years of profits before being stuck with land that is permanently contaminated.

You know who seriously considers this kind of short-term payoff in exchange for long-term risk? Addicts. We're like a shivering heroin addict in a doorway, saying to our pusher, "just give me a hit right now, man, and I'll cut off my arm for you tomorrow. Please?"

The watershed is only part of the problem. After all, it would be possible for the gas companies to just leave the NYC watershed alone – there's plenty of other land upstate, right? But what about the foodshed? Are we going to allow the gas companies to destroy some of the best farmland in the northeast? Do we want to be forever dependent on food shipped from thousands of miles away?

And if hydrofracking is too dangerous for the residents of New York City, isn't it too dangerous for our friends to the north? If we want clean water and safe food for ourselves in the five boroughs, don't we want it for our neighbors in other counties as well?

We have a powerful voice here in New York City. Let's not allow ourselves to be divided from our friends and neighbors upstate. Let's not abandon them to the greed of the gas companies. We have to stand together as a region and say with one voice to the gas companies, NO. No to fracking, no to short-term profits, no to poisoning our precious land and water. No.

Jen Abrams
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**Testimony of David Warne
Assistant Commissioner, Bureau of Water Supply
New York City Department of Environmental Protection**

**Committee on Environmental Protection
Council of the City of New York**

**Oversight - The Continued Examination of Hydraulic Fracturing including the NYSDEC
and DRBC Processes**

**Tuesday, March 1, 2011, 1 pm
49-51 Chambers Street**

Good afternoon, Chairman Gennaro and Members. I am David Warne, Assistant Commissioner of Water Supply at the New York City Department of Environmental Protection (DEP). Thank you for the opportunity to testify today on the status of hydraulic fracturing in New York.

As you know, Mayor Bloomberg has made it clear that New York City (the City) is opposed to drilling for natural gas in the City's watershed using the technique known as horizontal drilling and high-volume hydraulic fracturing (hydrofracking). The Administration based this position on, among other things, the Final Impact Assessment Study, commissioned by DEP, which concluded that natural gas drilling and exploration are incompatible with the operation of New York City's unfiltered water supply system and pose unacceptable risks for more than nine million New Yorkers in the City and State. Until the technical assessment was complete, the Administration had deferred taking a stand on the advisability of drilling, preferring instead to be guided by science and technological expertise. Then, based on that assessment, the Administration called for a prohibition on any drilling in the New York City west-of-Hudson watershed.

At this time there are several activities regarding natural gas development underway that may impact the City's watershed in the future that I would like to update you on. These activities include: the New York State Draft Supplemental Generic Environmental Impact Statement (SGEIS); the Delaware River Basin Commission (DRBC) draft regulations on natural gas development; and the U.S. Environmental Protection Agency (EPA) Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources. In addition, I will comment briefly at the end of my testimony on this weekend's New York Times article on contamination related to gas drilling.

The New York State Department of Environmental Conservation (DEC) issued a draft SGEIS for Horizontal Drilling and High-Volume Hydraulic Fracturing on September 30, 2009. DEP's extensive comments on the Draft SGEIS reiterated the City's position, citing the up-to-6,000 wells required to extract natural gas based on current technology; seven million truck trips; one

million tons of concentrated chemicals; and millions of gallons of wastewater, all of which are the necessities and by-products of current extraction methods. Moreover, we expressed the concern that hydrofracking is inconsistent with the principles of watershed protection and pollution prevention that are incorporated into the City's Filtration Avoidance Determination. In April 2010, DEC announced that individual environmental reviews would be required for natural gas wells in the watersheds of the State's two unfiltered surface water supplies – New York City and Syracuse. DEC's action recognizes the unique characteristics of the City's water supply, and DEC has further committed to work with DEP to craft additional measures to protect the watershed and the City's infrastructure. However, DEP continues to believe, based on the best available science and current industry and technological practices, that drilling cannot be safely permitted in the City's watershed.

Most recently, in compliance with an Executive Order, issued by Governor Paterson in December 2010 and confirmed by Governor Cuomo, DEC will complete its review of over 13,000 public comments, make revisions to the Draft SGEIS and publish a Revised Draft SGEIS this June. It will then accept public comment on the revisions, and possibly schedule public hearings in the Marcellus shale region and New York City. No permits to drill will be issued prior to the completion of a Final SGEIS, and in no case before July 1, 2011 as stated in the Executive Order.

Meanwhile, on December 9, 2010 DRBC released draft regulations to protect the water resources of the Delaware River Basin during the construction and operation of natural gas development projects. There is a 90-day public comment period closing on March 16, 2011. DEP has been actively engaged in this process to ensure that the City's mandated water releases are not adversely impacted by withdrawals downstream in the basin and has commented on several previous versions of these regulations.

Overall the DRBC draft regulations are rigorous and comprehensive. They strike a good balance between deferring to state jurisdictions while still ensuring adequate protection to the Delaware River and downstream stakeholders and provide an additional layer of protection for the City's watershed. The required Natural Gas Development Plans will be valuable planning tools and will allow for more comprehensive reviews of natural gas development in the Delaware basin.

We will be submitting additional comments to DRBC urging that decisions about drilling within the shared Delaware River Basin should be made on the same strong analytical foundation as the City's position, and that DRBC should conduct a rigorous analysis of the potential cumulative impacts natural gas development could have on water quantity and water quality in the Delaware Basin. Given what is at stake and the estimates of natural gas wells in the Delaware River Basin numbering in the tens of thousands, we request that DRBC conduct a comprehensive cumulative analysis to inform the natural gas regulations.

We add that such a cumulative impact assessment for the Delaware Basin must also include a depletive water use budget, which is a term of art for an analysis of the total amount of water consumed or lost from a watershed. Depletive water use has a direct bearing on the basin's future development, its water quality, water quantity, ecological health, salinity intrusion, and drought management. This information is also critical for managing the effects of climate change. The water budget must consider secondary impacts to other stakeholders as well. The City is concerned about downstream withdrawals impacting the release requirements for its reservoirs. We therefore recommend that DRBC should mandate, as a condition of approval, that gas drilling companies take water only during times when the City is not required to make releases as directed by the Delaware River Master to meet mandated flow objectives.

The draft regulations bar the use of Approval by Rule (ABR), which is an expedited review and approval process of a drilling application, within the City's watershed. We support this provision. Additionally, we request that the Non-point Source Pollution Control Plans be required to be submitted to the City and to New York State if the project is within the City's watershed. The City has watershed rules and regulations governing stormwater that are based on New York State's regulatory program but in some situations are more stringent. We also recommend that DRBC consider adding post-construction requirements covering items such as continuing maintenance of access roads or structural integrity of the wells.

The setbacks provided in the draft regulations for surface water intake (500 ft.) and water supply reservoir (500 ft.) are inadequate even given the prohibition of siting a well pad in the 100-year floodplain. We urge DRBC to reconsider this and specify how this setback is measured. Horizontal drilling adds a new complication to traditional regulatory setbacks. If the setback is measured from the well pad then horizontal drilling may occur directly beneath the intake or reservoir. Instead, we recommend that the setback be measured from the end of the nearest horizontal drill leg to the resource in question.

Finally, given the rapid pace of natural gas development in this region and the constantly evolving technology, we urge that the duration of withdrawal approvals for natural gas extraction purposes be re-evaluated. Approvals lasting ten years may not give DRBC or other stakeholders an adequate opportunity to evaluate potential impacts in the context of current environmental conditions, recent technological advances or improved scientific understanding. Moreover, ABR provides an opportunity for a docket holder authorized to withdraw water for other purposes to reallocate a portion of its approved withdrawal for natural gas extraction purposes without an adequate opportunity for DRBC or other stakeholders to analyze the impacts of such a reallocation, or for DRBC to impose conditions to mitigate such impacts. The City therefore recommends that no withdrawal approval, whether through an original docket or through ABR, allow withdrawals for natural gas extraction purposes for longer than five years.

A copy of our comment letter on the DRBC draft regulations will be available on the DEP website (www.nyc.gov/dep).

In tandem with the processes going forward at DEC and DRBC, EPA is conducting a study of hydrofracking as well. In late 2010, Congress appropriated \$1.9 million for a focused study of this topic, which EPA scientists have undertaken to better understand any potential impacts of hydrofracking on drinking water and groundwater. EPA consulted with experts in the field through peer review and technical workshops, and engaged stakeholders in a dialogue about the study through facilitated public meetings.

EPA recently submitted its draft study plan on hydraulic fracturing for review to the agency's Science Advisory Board (SAB). The overall purpose of the study is to understand the relationship between hydraulic fracturing and drinking water resources. The scope of the proposed research includes the full lifespan of water in hydraulic fracturing, from acquisition of the water, through the mixing of chemicals and actual fracturing, to the post-fracturing stage, including the management of flowback and produced water and its ultimate treatment and disposal.

The SAB plans to review the draft plan on March 7-8, 2011. Consistent with the operating procedures of the SAB, an opportunity will be provided for stakeholders and the public to provide comments to the SAB during their review. EPA will revise the study plan in response to the SAB's comments and begin the study. Initial research results are expected by the end of 2012 with a goal for a report in 2014.

During the scoping process for this study, DEP submitted the Final Impact Assessment Report. Yesterday we submitted comments on the draft study plan. In them we acknowledge the challenge in defining a discrete study plan with a topic as complex as potential impacts of hydraulic fracturing. We also point out certain serious omissions in the draft plan as currently written. First, the study plan fails to define impact or contamination for the purposes of the study. Because regulations governing water utilities are very conservative, the definition of impact should be equally conservative in order to account for the broad range of potentially negative impacts to a utility from hydraulic fracturing, including regulatory, financial, operational, and public perception impacts. The issue of cumulative impacts is addressed only for water acquisition and ignored for chemical mixing, well injection, flowback and produced water, and wastewater treatment and waste disposal. Cumulative impacts from all hydraulic fracturing activities have the potential to be more severe than may be indicated by analyzing individual wells, and so should be included in the study plan.

Second, the plan does not explicitly include an evaluation of state regulations. Given the wide variations at the state level, there is a strong possibility that the effectiveness of state regulations and the capacity for inspections and enforcement will be a determining factor as to the potential for impacts to water quality and water supply. The plan repeatedly references the existence of state regulations for certain activities without providing any insight into the adequacy of state efforts to ensure compliance with the regulations or if the regulations themselves are sufficiently protective of drinking water supplies. Several pages of additional detailed comments were also

submitted, all supported by the City's Final Impact Assessment Report. A copy of DEP's comments will also be available on the DEP website.

Finally, the article in Sunday's Times covered the disposal of drilling wastewater, or flowback water, with a particular focus on radioactivity in the water. Radioactive material is found in the geological formations in the watershed. The radiation contained in flowback water could be a concern, as are the many other hazardous substances that we know would be present in the flowback. Like most of the other contaminants, the technology exists to remove radiological contamination. But it is not part of the conventional wastewater treatment regime. Improper handling, storage, transport or treatment of flowback water can lead to contamination of ground and surface waters. In short, potential for radiological contamination is just another of the many reasons we don't think this activity is appropriate for the watershed.

As we hope is evident from this update on hydrofracking at the state, interstate and federal levels, the Administration is actively engaged every step of the way. Though the implications for the water supply system remain uncertain, we will continue to work to ensure the system's integrity and safety.

Thank you for the opportunity to comment.



Testimony of Food & Water Watch
March 1, 2011
Committee on Environmental Protection

My name is Eric Weltman, and I'm from the New York City office of Food & Water Watch, a nonprofit organization whose mission is to ensure that our food and water is safe, accessible, and sustainably produced.

I want to thank the Committee on Environmental Protection and Chairman Gennaro for holding this hearing. We greatly appreciate your continued leadership in protecting New York's drinking water from the threat of fracking.

I would like to address three subjects regarding proposals to frack for natural gas in the Delaware River Basin and New York State: the need for thorough scientific review and public input; the weight of evidence that fracking endangers our water; and the role the City Council can play.

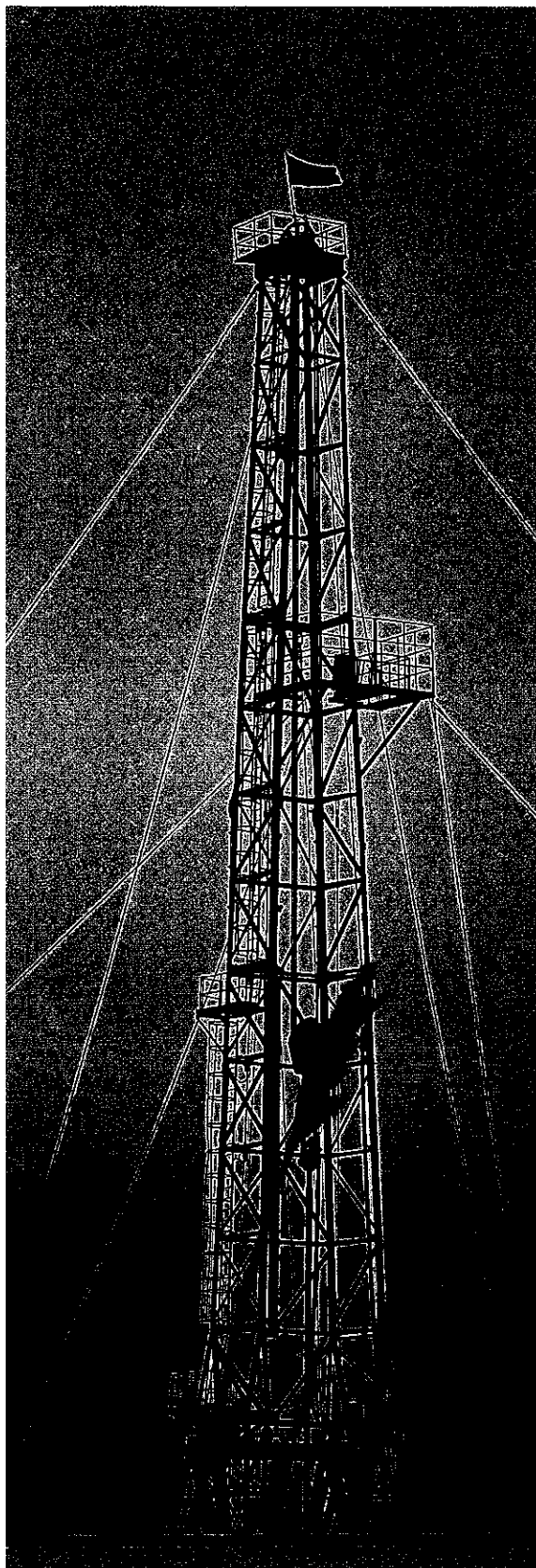
As you know, the Delaware River Basin Commission has proposed regulations to allow fracking in the Delaware River Basin, a source of drinking water for 15 million people. The DRBC should freeze implementation of any regulations until two conditions are met. First, the U.S. Environmental Protection Agency completes its assessment of the impacts of fracking on water resources. Second, the comment period is extended, including holding hearings in New York City and Philadelphia.

That said, when it comes to protecting public health, common sense wisdom often applies: Better safe than sorry, also known as the precautionary principle. Food & Water Watch supports a ban on fracking in the Delaware River Basin and New York State. The research and evidence is already clear: Under normal conditions, fracking poses a threat of spills and leaks into our water supply; produces hazardous waste; uses massive quantities of water; and causes gas to migrate into drinking water. And, as we've learned time and time again with fossil fuels, accidents can happen, they do happen, and they can be catastrophic. Even the strongest regulations can't protect us from insufficient government oversight or enforcement or shoddy corporate practices.

We thank the Committee on Environmental Protection and Chairman Gennaro once again for holding this hearing. By granting New York City a voice – and lending your own – you are already playing an important role. We have two additional suggestions at present. One is to join us in calling on the Obama Administration and the EPA in urging the U.S. Army Corps of Engineers, which sits on the DRBC, to vote against moving forward with the fracking regulations. Another is to urge the Cuomo Administration to provide the Department of Environmental Conservation with sufficient time, staff, and resources necessary – including waiting until the EPA completes its study – for the State's own regulatory review of fracking.

New York's drinking water is more important than dirty fossil fuels. We thank you once again for helping send the message about the need to protect our drinking water from the threat of fracking.

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Not So Fast, Natural Gas

**Why Accelerating Risky Drilling
Threatens America's Water**

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**THE COUNCIL OF THE CITY OF NEW YORK
COMMITTEE ON ENVIRONMENTAL PROTECTION**

PUBLIC HEARING

**THE CONTINUED EXAMINATION OF HYDRAULIC FRACTURING
INCLUDING THE NYSDEC AND DRBC PROCESSES**

MARCH 1, 2011

**Testimony of John H. Williams
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Good afternoon. The U.S. Geological Survey appreciates the opportunity to provide comments here today. For those of you who may not be familiar with the USGS, we are a non-regulatory, scientific organization within the U.S. Department of the Interior. In New York State, we conduct a wide range of surface-water and groundwater quantity and quality investigations in cooperation with other Federal, State, and local agencies. We continuously monitor hydrologic conditions at about 300 surface-water sites and 150 observation wells across New York State. We also maintain the USGS National Water Information System (NWIS) data base that contains hydrogeologic information from over 50,000 wells in the State.

I have worked for the USGS for the past 30 years in Pennsylvania and New York. I am currently the Groundwater Specialist for the USGS New York Water Science Center, responsible for technical oversight of the USGS groundwater data and investigation programs in New York State. I also coordinate a USGS-wide training and technology transfer program in borehole geophysics. My educational background includes a BA in Geology from Colgate University and a MS in Geoscience with specialization in hydrogeology from Penn State University.

Gas development in the Marcellus, Utica, and other organic-rich black shales in New York State will involve horizontal drilling and high-volume hydraulic fracturing. The draft Supplemental Generic Environmental Impact Statement (dSGEIS) proposes many critical measures to help minimize the impact of shale-gas development on the water

resources of the State. The DRBC Draft Natural Gas Development Regulations (dNGDR) makes important clarifications, refinements, and enhancements to a number of the water-resource protection measures proposed in the dSGEIS. Several characterization, monitoring, and mitigation measures and opportunities related to shale-gas development have not been addressed by either the dSGEIS or dNGDR.

According to Lash and Engelder (2008), pyrite is abundant in the high-TOC basal intervals of the Marcellus Shale. Oxidation and leaching of pyritic shale produces an acidic, metals-rich discharge commonly referred to as AMD (Acid Mine Discharge). A multi-horizontal well site will generate 100 to 500 times the volume of AMD-producing pyritic shale cuttings than generated at a single-vertical well site.

Onsite burial of drill cuttings at shale-gas development sites is allowable under the dSGEIS. The dNGDR states drill cuttings and fluids are to be transported offsite and properly disposed or put to beneficial use.

In upland settings of the Marcellus and Utica Shale play area, freshwater may occur in fractured Devonian bedrock as deep as 800 feet below land surface (Williams, 2011). As proposed in the dSGEIS, the installation of surface casing and cementing this casing annulus to land surface to protect freshwater aquifers of this depth is a sound approach. Also proposed in the dSGEIS are 1) cementing the production casing annulus to the land surface (where no intermediate casing is used) to provide needed additional protection and 2) requiring the collection of cement-bond logs for each casing string to help detect any uncemented annular spaces or gaps that may provide pathways for saltwater and (or) gas migration. Pockets of gas and saltwater zones locally are present above and below the base of the freshwater aquifer (Williams, 2011). The dSGEIS indicates that surface casing should not extend into zones known to contain measurable quantities of shallow gas. It is not clear from the dSGEIS how casing, cementing, and venting requirements will be modified to deal with these conditions. The dSGEIS does not require geophysical logging of the upper part of gas wells, which may be useful in delineating shallow gas or saltwater. The dNGDR defers to the dSGEIS on well construction and provides no clarification of this issue.

Completion records for most gas wells provide little or no information on aquifer conditions above the targeted gas horizon. This lack of reporting results in a huge loss of information that would be useful in understanding and protecting the State's groundwater resources. The dSGEIS and dNGDR do not rectify this situation. Completion forms that require recording of water quality and quantity with depth would be beneficial. These forms could require field measurement of specific conductance of drilling discharge water, which would provide a quantitative evaluation of salinity with depth.

Surface water and groundwater are a single resource. Groundwater discharge from bedrock and valley-fill aquifers is the source of stream baseflow. Induced river infiltration may supply up to 90 percent of the water to heavily pumped wellfields in the valley-fill aquifers of New York State. Natural infiltration of upland tributary streamflow and unchanneled runoff also is an important source of recharge to valley-fill aquifers (Randall, 1978 and Kontis and others, 2004). Upland tributaries are particularly

susceptible to impacts from surface-water and groundwater withdrawals under low-flow conditions. The dSGEIS and dNGDR require surface-water withdrawal rates for frackwater supply to be based on low-flow statistics. Aquifer-testing procedures and documentation to evaluate impacts of groundwater withdrawals for frackwater supply in areas outside the Susquehanna River Basin are not clearly defined in the dSGEIS. The dNGDR defines the aquifer-test procedures and documentation for the Delaware River Basin.

The Marcellus Shale is underlain by the Onondaga Limestone and is overlain by the Tully Limestone and Upper Hamilton shales and limestones. These bedrock units are purported to be barriers to fracture propagation from hydraulic fracturing of the Marcellus Shale. Although generally gently dipping and relatively homogeneous in their geophysical properties, the bedrock units display some local and regional variability related to depositional facies changes and structural features (folds and faults). The integrity of the frac barriers can be investigated through geophysical investigations including well logging and seismic surveys. Although geophysical investigations are commonly completed as part of gas exploration, documentation of frac barrier continuity and integrity is not required by the dSGEIS or dNGDR.

Microseismic is a geophysical method applied by the gas companies to monitor the horizontal and vertical extent of fracture propagation during hydraulic fracturing. Data from the gas industry for Marcellus fracs suggests that the upward vertical extent of hydraulic fractures decreases with decreasing depth with frac heights of 2,000 feet at a depth of 8,000 feet and 500 feet at a depth of 5,000 feet. Although microseismic is a proven technique that is increasingly being applied at shale-gas development sites by the industry, mapping the extent of hydraulic fractures using this geophysical method is not required by the dSGEIS or dNGDR.

The flowback water from hydraulic fracturing of Marcellus Shale wells has been shown to contain elevated dissolved solids, chlorides, barium and other heavy metals, and radioisotopes. The dNGDR state all wastewaters must be stored in suitable tanks rather than surface impoundments to prevent their release to the environment. Reuse of flowback water, which mitigates the disposal issue and reduces freshwater withdrawals, is increasingly being done by the gas industry and should be seriously considered for all sites..

Natural groundwater quality in the aquifers overlying the Marcellus and Utica play areas is highly variable. Concentrations of contaminants including chlorides, barium, strontium, and radium vary by two orders of magnitude in water sampled from groundwater wells (Williams and others, 1998). With such natural variability, documentation of water-quality impacts from gas drilling and hydraulic fracturing is extremely difficult. Water-quality sampling of groundwater wells in the vicinity of gas wells prior to development and following drilling and hydraulic fracturing is proposed in the dSGEIS. This water-well sampling program is in the best interest of the private well owners and the gas-development companies, and provides a means to determine short-

term, site-specific impacts on the existing groundwater wells. No groundwater monitoring is required by the dSGEIS if there are no groundwater wells in the vicinity of the gas-well pad or if permission to sample groundwater wells is not granted. The dNGDR states if there are no existing groundwater wells available, the gas-development company will be required to install a monitoring well within 1,000 ft of the gas-well pad. Surface water-quality monitoring is not considered in the dSGEIS (other than stormwater runoff). The dNGDR states that surface water-quality sampling will be done upgradient and downgradient of the gas-well pad.

The water-quality data collected during shale-gas development would provide an important database for understanding and protecting the State's groundwater and surface-water resources if made available to government agencies, academia, and other interested parties. The dSGEIS or dNGDR do not propose a mechanism for storing and sharing the water-quality data collected during shale-gas development.

Certain environmental settings are more susceptible to water-resource impacts of shale-gas development, and impacts will not only be site-specific but also cumulative. The dSGEIS takes a limited site-by-site regulatory approach. The Natural Gas Development Plan proposed in the dNGDR is designed to promote water-resource protection by taking a broader-scale planning-based approach.

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Testimony of Dusty Horwitt, JD***Senior Counsel
Environmental Working Group*****Oversight Hearing on the Continued Examination of Hydraulic Fracturing,
including the NYSDEC and DRBC Processes
Before the New York City Council Committee on Environmental Protection
Tuesday, March 1, 2011 at 1:00 p.m.**

Chairman Gennaro, distinguished members of the committee:

Thank you for the opportunity to testify today on the draft regulations issued by the Delaware River Basin Commission (DRBC) and the review process for the New York State Department of Environmental Conservation (NYSDEC). As you know, the Commission's proposal and a decision to allow drilling by the NYSDEC could allow for natural gas drilling in the Delaware River Basin (DRB), which includes much of the watershed for New York City's drinking water supply.

My name is Dusty Horwitt, and I am Senior Counsel at Environmental Working Group (EWG), a nonprofit research and advocacy organization based in Washington, D.C., with offices in Ames, Iowa and Oakland, California.

Environmental Working Group has testified before the council on three previous occasions, and we are here again today because of the great importance of this issue and because the city council's leadership has helped avert the kinds of widespread environmental contamination we are witnessing just across the border in Pennsylvania. Your efforts have made a difference, and we stand ready to assist you in any way we can.

In my previous testimony, I warned about the serious risks to drinking water posed by natural gas drilling. It is EWG's position that no drilling should be allowed near the city's drinking water supplies or near other drinking water supplies in New York state. We stand by our previous testimony, and our concerns about drilling pollution have only increased following last Sunday's alarming article in *The New York Times*, a recent Congressional investigation on the use of diesel in hydraulic fracturing and our continuing research at Environmental Working Group.

Currently, the DRBC is nearing a March 16 deadline for comments on its draft regulations for gas drilling in the Delaware River Basin, and New York State's June 1 deadline for issuing a draft environmental impact statement for gas drilling is not that far off. With these dates approaching, we are concerned that the DRBC and New York State might issue drilling regulations that would allow companies to continue violating federal law and to drill too close to irreplaceable drinking water sources. We are also concerned that the DRBC and New York State will promulgate these rules before regulators can adequately mitigate drilling risks or assess exactly what the risks are.

Issuing Regulations Now Would Reward Violations of Safe Drinking Water Act

Neither the DRBC nor New York state should issue any regulations for drilling at a time when the industry appears to be violating with impunity the federal Safe Drinking Water Act (SDWA), one of the nation's most important environmental laws. The Environmental Protection Agency (EPA) has yet to show any real interest in enforcing this law when it comes to drilling for natural gas and hydraulic fracturing.

Congress passed the Safe Drinking Water Act in large part to protect underground sources of drinking water. In 2005, Congress amended this law to generally exempt hydraulic fracturing, the drilling process that today is used in more than 90 percent of natural gas and oil wells. It is certain that this technology will be extensively used in the Delaware River Basin if drilling is permitted.

“Fracking,” as it is known, involves injecting a mix of water, sand and chemicals into a well under high pressure in order to fracture underground rock formations and unlock trapped gas and oil. Importantly, when Congress changed the law in 2005, Congress made an exception for diesel fuel. That means that drillers must obtain a permit before they use diesel fuel as part of the mix in their hydraulic fracturing operations.¹ Congress did not specify a reason for singling out diesel for concern, but legislators likely based the action on EPA's 2004 finding that “the use of diesel fuel in fracturing fluids poses the greatest threat to” underground sources of drinking water. EPA specifically noted that diesel contains four toxic compounds, known collectively as BTEX, that would exceed the allowable contaminant level at the point of injection when used in fracking.² BTEX refers to benzene, toluene, ethylbenzene and xylene, which are toxic in water at very low concentrations.

EWG highlighted this legal provision in our 2010 report, *Drilling Around the Law*, which found that companies were injecting diesel fuel and related petroleum products, known as distillates, in their hydraulic fracturing operations. We surveyed state and federal regulatory offices in New York, Pennsylvania, Montana, Texas and Wyoming and were told that none of the offices had issued permits for fracturing with diesel.³

In January of this year, investigators for the Energy and Commerce Committee of the U.S. House of Representatives reported that from 2005 to 2009, oil and gas service companies had injected more than 32 million gallons of diesel fuel, or fluids containing diesel fuel, in hydraulic fracturing operations in 19 states. They also found that no state or federal regulators had issued the required permits for this use of diesel fuel, an apparent violation of the Safe Drinking Water Act. The investigators said that one of the states where companies had injected diesel was Pennsylvania, which includes part of the Delaware River Basin.⁴

¹ The Safe Drinking Water Act (SDWA). 2009. 42 USC 300h (2011).

² U.S. Environmental Protection Agency, Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs, Final, June 2004, at 4-11. Accessed online February 28, 2011 at http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.cfm.

³ Environmental Working Group, *Drilling Around the Law*, January 20, 2010. Accessed online February 28, 2011 at <http://www.ewg.org/drillingaroundthelaw/pressrelease>.

⁴ Letter from U.S. Reps. Henry A. Waxman, Edward J. Markey, and Diana DeGette to Lisa Jackson, U.S. Environmental Protection Agency Administrator (Jan. 31, 2011).

In response to the investigation, the industry did not deny that companies had injected diesel without the required permits. Instead, the industry said that it could not comply with the law because the Environmental Protection Agency had never issued regulations to implement the measure.⁵ The law, however, is clear. It says that companies may not inject diesel in hydraulic fracturing operations without a permit. Yet this is exactly what they have done -- to the tune of 32 million gallons in 19 different states including Pennsylvania.

Having flouted a major federal environmental law, the industry now wants to drill in the Delaware River Basin, which provides drinking water for 15 million people, including about seven million in New York City and northern New Jersey. The only conceivable answer to the industry's request is, NO.

To allow the industry to drill now would be to reward its blatant disregard of federal law and to put the health of millions of people at risk. This is an industry that won exemptions from almost every piece of federal environmental law except the requirement to obtain permits if it used diesel in fracking fluids, yet drilling companies can't even comply with this limited provision.

Before the DRBC or New York State allows drilling in their jurisdictions, industry and EPA must, at a minimum, show clearly how the industry will comply with the Safe Drinking Water Act and how this compliance will be enforced. The industry must also disclose where it has injected diesel fuel without permits, and scientists must test water sources near those injections for benzene, toluene, ethylbenzene and xylene. Only in this way can citizens and regulators know what risks they might encounter from drilling.

Unfortunately, however, the DRBC's draft regulations make no mention of diesel fuel or the Safe Drinking Water Act's requirement that companies obtain a permit before injecting diesel.⁶

Setback Distances in the DRBC Draft Regulations are Inadequate

The DRBC's setback requirements would allow drilling too close to water sources. The DRBC has proposed that well pads must be located at least 500 feet from water bodies, wetlands, surface water supply intakes and water supply reservoirs.⁷ These are wholly inadequate distances that would put water supplies at great risk.

This is not just a theoretical risk. In 2004, for example, drillers working for EnCana Corp., a natural gas company, hydraulically fractured an improperly cemented well in Garfield County, Colorado. Gas escaped from about 7,000 feet underground, entered a natural fracture about 3,000 feet below the surface and traveled laterally about 3,500 feet to contaminate Divide Creek, a nearby stream. The resulting contamination forced area residents to drink bottled water.⁸ The lateral distance that gas traveled is

⁵ Tom Zeller Jr. A Gas Drilling Technique Is Labeled a Violation, *The New York Times*, Feb. 1, 2011 at B1.

⁶ Delaware River Basin Commission, Draft Natural Gas Development Regulations. Accessed online http://www.state.nj.us/drbc/notice_naturalgas-draftregs.htm.

⁷ See id at 49.

⁸ Gargi Chakrabarty, Toxic Bubbles Trouble Silt; Divide Creek Tainted by Natural Gas Leak, Toxic Benzene, *Rocky Mountain News*, April 13, 2004, at 1B; Gargi Chakrabarty, Regulators Seek Record Fine for Gas Seep, *Rocky Mountain News*, August 17, 2004, at 1B; Gargi Chakrabarty, Commission OKs Record Fine for EnCana Gas Seep, *Rocky Mountain News*, Aug. 18, 2004, at 3B; Colorado Oil and Gas Conservation Commission, Library, Public Presentations, Materials Related to the July 14-15, 2009 Commission Hearing in Glenwood Springs, West Divide Creek by Geoffrey Thyne. Accessed online Oct. 22, 2009 at <http://cogcc.state.co.us/>; Telephone interview with Geoffrey Thyne (Oct. 22, 2009); G.

seven times greater than the setbacks proposed by the DRBC in many cases.

One day after residents noticed unusual bubbles in the creek, state inspectors found high levels of benzene in Divide Creek. The exact concentration was 99 parts per billion, nearly 20 times the safe level of five parts per billion. One resident, Lisa Bracken, described the creek as having so many bubbles it looked like a “popped can of soda.” Another resident, Steve Thompson, said, “I came down with a funnel and scooped some of the biggest bubbles with it... I lit the bubbles with a match, and they burned like gas. It even melted my funnel.”⁹

A report prepared for Garfield County found that the contaminants in Divide Creek included methane gas and the BTEX chemicals.¹⁰ In August 2004, the Colorado Oil and Gas Conservation Commission (COGCC) concluded that Encana’s drilling had caused the contamination, levied the highest fine in its history on the company (\$371,200) and imposed a moratorium on drilling within a two-mile radius.¹¹ For at least four years thereafter, EnCana operated a so-called “air sparge” decontamination system that injects air into the creek to dissipate benzene into the atmosphere.¹²

Other Evidence Points Toward Caution

EWG is doubly concerned about the rush to allow drilling in or near vulnerable watersheds considering new information that has come to light recently -- or will come to light soon. The *New York Times* story on Sunday painted a picture of massive regulatory failure in Pennsylvania, where companies are dumping high levels of radioactive wastewater into waterways and regulators are rarely testing for these contaminants in drinking water pulled from the very same waterways. In fact, The *Times* reported that this testing typically occurs only once every six or nine years. The EPA has indicated that it has serious concerns over this radioactive wastewater, but the agency has not intervened.¹³ Given this regulatory failure in Pennsylvania generally, how can we have confidence that there will not be similar problems in the Delaware River Basin?

The EPA is currently conducting a national study of hydraulic fracturing and drinking water as well as an ongoing study of water contamination and gas drilling activity in Pavillion, Wyoming. Until recently, remarkably, there have been few, if any, scientific studies on this topic. Indeed, EWG learned through a Freedom of Information request to New York State in 2008 that the state had not conducted a single test to determine whether hydraulic fracturing might be a threat to the state’s drinking water.¹⁴ The EPA’s current studies are some of the first of their kind, and the study in Pavillion has already found

Thyne, Review of the Data for the West Divide Creek Gas Seep. Prepared for Garfield County, by Science Based Solutions Inc. Aug. 6, 2004.

⁹ See id.

¹⁰ G. Thyne, Review of the Data for the West Divide Creek Gas Seep. Prepared for Garfield County, by Science Based Solutions Inc. Aug. 6, 2004.

¹¹ Supra note 8.

¹² Telephone interview with Geoffrey Thyne (Oct. 22, 2009); Colorado Oil and Gas Conservation Commission, Library, Public Presentations, Materials Related to the July 14-15, 2009 Commission Hearing in Glenwood Springs, West Divide Creek Gas Seep Overview by EnCana. Accessed online Oct. 22, 2009 at <http://cogcc.state.co.us/>; U.S. Environmental Protection Agency (EPA Sparge), 2009. Underground Storage Tanks, Air Sparging. Accessed online Oct. 22, 2009 at <http://www.epa.gov/swerstl/cat/airsparg.htm>.

¹³ Ian Urbina, Regulation Lax as Gas Wells’ Tainted Water Hits Rivers, The New York Times, Feb. 27, 2011 at A1.

¹⁴ Environmental Working Group, New York State Admits Ignoring Threat to City’s Drinking Water, February 20, 2009. Accessed online February 28, 2011 at <http://www.ewg.org/release/ny-state-admits-ignoring-threat-city-s-drinking-water>.

contaminants in water wells that may have come from drilling operations. (The federal government's Department of Health and Human Services, which has been working closely with the EPA on the Pavillion study, has recommended that people in the Pavillion area using private well water use other water for cooking and drinking.)¹⁵

We are cautiously optimistic that the EPA will finally bring scientific standards to the topic of drilling and hydraulic fracturing, in contrast to the EPA's deeply flawed 2004 study of hydraulic fracturing that included no on-the-ground testing and was criticized by an internal whistleblower for its lack of scientific rigor and a review panel stacked with industry representatives.¹⁶ It would simply be common sense for the DRBC and New York to wait and at least see what the EPA's studies conclude before allowing an inherently risky process such as gas drilling in a watershed serving 15 million people.

The DRBC and New York State have the power – and the responsibility -- to protect clean water for millions of citizens. Given what we know of gas drilling's recent track record, the risks are still too great to allow drilling near water supplies. Both regulatory bodies should insist that the industry obey the law, increase setback distances from water supplies and wait for more evidence about drilling risks before moving forward with regulations that would allow drilling to begin in their jurisdictions.

Thank you for this opportunity to testify. I look forward to your questions.

¹⁵ U.S. Environmental Protection Agency, Pavillion, Wyoming Groundwater Investigation, January 2010 Sampling Results and Site Update. Accessed online March 1, 2011 at <http://www.epa.gov/region8/superfund/wy/pavillion/index.html>.

¹⁶ Weston Wilson. Letter from Weston Wilson, EPA Employee, Denver Colorado to U.S. Senator Wayne Allard et al., Oct. 8, 2004. Accessed online November 8, 2010 at <http://www.earthworksaction.org/publications.cfm?pubID=372>.

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Hearing on the Continued Examination of Hydraulic Fracturing Including the NYSDEC and DRBC Processes

New York City Council Committee on Environmental Protection

250 Broadway, New York, NY

March 1st, 2011

Professional Qualifications & Experience

Dr Brian Rahm is currently a Post-doctoral Research Associate with the New York State Water Resources Institute where he is engaged in education and research on topics related to the State's water resources. He received his M.S. in environmental engineering from the University of California at Berkeley and Ph.D from Cornell, where he worked on bacterial remediation of groundwater contamination. He then moved to New Zealand and spent a year engaged in climate change policy analysis for Wellington City Council. Since then he has performed research on greenhouse gas emissions from wastewater treatment plants, and has also developed and taught a course on the role of microorganisms in climate change at the American Museum of Natural History.

Testimony of Brian G. Rahm

Thank you for the opportunity to participate in this discussion.

Natural gas extraction via high volume hydraulic fracturing is now an issue that New York and its neighbors are facing. In NY, there will likely be some economic benefit, as well as some negative social and environmental consequences. It is complicated. That being said, this testimony is offered under the assumption that gas drilling in unconventional shale plays like the Marcellus will be allowed in NY within the next year or so. Given this assumption, it is critically important that NY prepares itself through creation of reasonable and protective regulations that balance the needs and perspectives of the various stakeholders involved. It is also critically important for scientists and engineers to attempt to understand how research can help policy makers craft effective legislation, and to continue to carry out research that improves shale gas operations while enhancing our ability to understand and minimize their impacts.

Previously, WRI has provided comments to the DEC on the dSGEIS. **Here, I will focus solely on the draft regulations proposed by the DRBC.** On December 9th, 2010, the Delaware River Basin Commission (DRBC) released draft regulations proposed to cover natural gas development. These regulations must be viewed in the context of other regulatory frameworks and jurisdictions, specifically:

- New York State Department of Environmental Conservation's (DEC) draft Supplemental Generic Environmental Impact Statement (dSGEIS)

- Pennsylvania Department of Environmental Protection (PADEP)
- Susquehanna River Basin Commission's (SRBC) Regulation of Projects

Existing regulation established by PADEP and the SRBC should act as an example and frame of reference for the proposed DRBC regulations. Unlike the SRBC, which is primarily tasked with managing water *quantity* only, the DRBC also has significant regulatory authority over water *quality*. In NY, this authority exists in parallel with that of the DEC. A review of the draft DRBC regulations indicates that they are much broader than those of the SRBC (i.e. cover a greater number of activities), and that they overlap in many ways with the dSGEIS. The DRBC regulations also incorporate recent rulemaking by PADEP, such as specifying limits on the concentration of Total Dissolved Solids (TDS) in streams.

In general, the DRBC draft regulations attempt to combine protective elements from both NY and PA within the Delaware River basin while deferring authority in most cases to each state's main environmental regulatory agency. This is the right approach. That being said, there are several areas that could be improved in order to increase the protectiveness of the proposed regulations while facilitating responsible resource extraction.

Specific Comments

1) §7.4(d)(1)(xi) and §7.4(e)(3)(ii) **Pass-by Flow Requirement**

Pass-by flow requirements are important to insure that adequate quantities of water are available for all human and ecological uses. The DRBC specifies the Q7-10 flow as a default pass-by flow for the determination of water withdrawal privileges, while deferring to more stringent state requirements where they exist. The dSGEIS specifies the Natural Flow Regime Method (NFRM) for use in NY, which provides for greater protection than the Q7-10 method. **WRI recommends that the DRBC establish a more stringent default pass-by flow that explicitly accounts for ecological stream health (such as the NFRM), particularly in upstream headwaters that are more sensitive to perturbation.**

2) §7.4(e)(2) **Pollution Control Plan**

Examination of recent violations given to shale gas operators in PA reveals that spills and leaks at well pad sites represent a chronic and locally significant threat to soils and surface waters. Safely containing spills and leaks before they are released to the environment is an effective way to prevent contamination. DRBC regulations cover various aspects of well site management, but could be strengthened by addressing spills and leaks. **WRI recommends that the DRBC consider requiring secondary containment measures for chemicals and other hazardous liquids stored at well pads.**

3) §7.5(c) **Natural Gas Development Plans**

Natural gas development plans (NGDP) are a novel concept introduced by the DRBC. According to the DRBC, an NGDP serves to "facilitate analysis of potential water resource impacts and identify measures to minimize these impacts." However, with the exception of extensive mapping requirements, the NGDP application makes no additional mention of water resources or their management. For watersheds containing multiple well pads, activities related to water withdrawal, transport, storage, and treatment could significantly stress engineered and natural systems. The NGDP approach could represent an opportunity to plan these activities over time and space in a way that increases efficiency and ecological protection. To do so would require the expansion of the NGDP concept beyond mapping to include

activity planning at leasehold, watershed, and community scales. There is also an opportunity to reduce operational costs through better coordination of activities related to (e.g.) trucking and equipment transport. **WRI supports the concept of the NGDP and its goal of minimizing water resource impacts, but recommends that the DRBC critically re-evaluate how the draft regulations will actually achieve this.**

4) §7.5(h)(2)(i) **Groundwater and Surface Water Monitoring**

Contamination of groundwater, well water, and surface water as a result of shale gas operations is a major public concern. Monitoring helps to alleviate this concern by providing baseline water quality data with which to compare future changes, as well as by offering a diagnostic tool for detecting and tracking contamination in some cases. Water quality monitoring also has the potential co-benefit of yielding useful information to researchers and public health officials who may be interested in issues un-related to shale gas. The DRBC draft regulations outline a relatively stringent monitoring routine that must be followed by operators, but do not provide detail on what parameters will be specifically monitored, or how results will be managed. Transparent and specific information on monitored parameters is important so that the scientific community can track and research the effectiveness of monitoring protocols. **WRI supports the proposed monitoring requirements, but recommends that specific parameters be publicized. WRI also recommends the creation of a publicly available water quality database.**

5) §7.5(h)(2)(ii) **Hydraulic Fracturing**

A variety of chemicals can be used during the hydraulic fracturing of a well. Pressure from the public and regulators have pushed industry to find more benign substitutes for many of these chemicals, and some operators claim to use no harmful additives. **WRI recommends that, with the help of toxicologists, the DRBC consider banning or otherwise discouraging the use of some of the most hazardous chemicals (e.g. diesel, phenol-based surfactants).**

6) §7.5(h)(2)(v) **Wastewater Treatment and Disposal Plan**

Recent PADEP regulations (PA Code Title 25 Ch 95) prohibit publically owned treatment works (POTW) from accepting new sources of high TDS drilling wastewater. In PA, such wastewater must now be sent to an industrial treatment facility first, with subsequent release to a POTW if necessary. Although some POTWs are capable of treating industrial waste, many others are not specifically designed to treat the kinds of constituents commonly found in shale gas wastewaters. **WRI recommends that the DRBC consider prohibiting the direct acceptance of shale gas wastewaters by POTWs, favoring instead the more conservative approach of preliminary treatment at purpose-built industrial facilities or mobile units.**

7) **Remote Water Quality Monitoring**

The SRBC, with funding from industry and state agencies, has established a remote water quality monitoring network which tracks basic water quality parameters at various locations throughout the basin. Like other monitoring protocols, this serves to establish baseline water quality. It also highlights potential changes in water quality over time that may occur as a result of cumulative natural gas development activities. **WRI recommends that the DRBC consider instituting a remote monitoring program specifically designed to track cumulative water quality impacts throughout the basin.**



NATURAL RESOURCES DEFENSE COUNCIL

**Statement of the Natural Resources Defense Council
Before the New York City Council on
The Continued Examination of Hydraulic Fracturing
Including the NYSDEC and DRBC Processes
March 1, 2011**

Mr. Chairman and Council Members, my name is Johanna Dyer and I am a Legal Fellow for the Natural Resources Defense Council (NRDC). NRDC has worked for 40 years to protect the people and environment of New York City and New York State. For the past few years, we have been advocating for the need for New York State to take an extremely cautious approach to proposed expanded natural gas development, and to ensure that no new drilling is allowed to proceed unless and until it can be demonstrated to be safe. We have further advocated that drilling in the New York City watershed can never be considered safe and must be formally banned by the state. Thank you for the opportunity to testify before the Council today.

We would like to commend the Council for its ongoing recognition of the critical issue of natural gas development through hydraulic fracturing, and for shaping the dialogue surrounding it. Public opinion in New York is shifting away from a rush toward irresponsible fracking, and we hope that on this issue our state and city will be a model for the country and, indeed, the world. An important article in Sunday's New York Times underscored the value of New York's more careful approach to hydraulic fracturing by showing the numerous unknowns and risks involved in the process, as well as the serious harms that some communities have suffered as a result of hasty and short-sighted permitting of fracking activity. The Times noted that "hydrofracking impacts associated with health problems as well as widespread air and water contamination have been reported in at least a dozen states." Important progress has been made in our state, but there still remains much work to do. My comments today will focus on two issues: first, New York State's ongoing review process for natural gas activity, and second, the Delaware River Basin Commission's recently-issued draft regulations regarding natural gas drilling.

First, thus far, in comparison with many other states with significant natural gas resources, New York State has taken a slower and more measured approach to allowing new fracking within our borders – an approach we must continue, rather than rushing our environmental review process in response to industry pressure. Last year, Governor Paterson issued an executive order, which Governor Cuomo subsequently reauthorized, that ordered the state's Department of Environmental Conservation (DEC) to prepare a new draft supplemental environmental impact statement analyzing the environmental impacts of hydrofracking before it makes a decision on whether to permit this risky activity – effectively ensuring that no new permits would be issued until that assessment is complete. This was a welcome development, as the original draft supplemental generic environmental impact statement was fatally flawed in numerous regards. It is critical that the new statement correct its many serious deficiencies, which include a failure to properly consider alternatives that would result in fewer unmitigated significant environmental

impacts, a failure to propose a new and complete regulatory process for oil and gas drilling, and most importantly, the lack of a meaningful cumulative impact analysis. Despite the importance of requiring a new, thorough assessment, the order contains an unfortunate target date of June 1st of this year for completion of the new draft, which, given DEC's current dire staffing and budgetary circumstances, as well as the numerous deficiencies that remain to be addressed, is an entirely insufficient period of time to conduct a thorough review.

We therefore urge the City Council to issue a resolution calling for Governor Cuomo to make clear that there is no binding deadline on DEC for the completion of its new draft environmental impact statement. The Department should be given the time – as well as the staff and resources – that it needs to develop a comprehensive, science-based study on fracking and all of its impacts before considering moving forward with any hydrofracking activity.

The Council should further call on DEC to promulgate comprehensive formal regulations at the end of the SEQRA process, instead of continuing to regulate gas drilling in the state by through the issuance of permit conditions on a case-by-case basis, as is currently proposed. Formal regulations are essential for New Yorkers to understand the rules that all gas companies would be required to follow, and would also lead to greater accountability from oil and gas corporations.

Second, in December the Delaware River Basin Commission (DRBC) issued draft regulations for natural gas development through hydrofracking that would fall far short of protecting our critical water resources. Procedurally, the draft regulations are problematic, if not illegal, because no comprehensive environmental impact statement was prepared by the DRBC before the regulations were issued. In addition, the public comment period of just 90 days is entirely inadequate to allow for thorough review and comment by interested parties, particularly in light of the failure to conduct an environmental review.

Equally troublesome are the regulations themselves. To name just a few of the critical failings that would put the river and surrounding areas and communities at risk: (1) the regulations do not consider the cumulative impacts of water withdrawal and gas development and they lack a method to control environmental degradation resulting from natural gas drilling and water depletion; (2) they allow for excessive waivers from many requirements, fail to restrict the use of any toxic chemicals, and permit open-air impoundments and reserve pits for toxic waste; (3) perhaps even more importantly, the regulations rely on state regulations and regulators in many important areas, even though the states' existing regulations are seriously deficient in many regards (and in New York, as noted, we do not even yet have a comprehensive new set of regulations pending completion of the ongoing environmental review process), and the regulators are inadequately funded to properly administer or enforce the regulations that do exist. Of course, the proposed reliance on state rules reiterates why it is so imperative that New York State properly studies and controls all hydrofracking activity – we can depend on no one else to protect our health and environment.

We would like to thank the City Council for its letter to the DRBC asking for an extension of the comment period and for a hearing to be held in New York City. We ask that the City Council now issue a formal resolution calling for these same procedural safeguards to ensure that more

voices are heard on this issue of critical importance for every New Yorker. The Council should further insist that DRBC not proceed with issuance of final regulations until it has either completed its own proper, comprehensive environmental impact analysis, including cumulative impacts, or -- at a minimum -- New York State completes its own environmental review process.

Let me reiterate our appreciation for the City's leadership on this issue, which has been, and continues to be, of critical importance to every New Yorker and even to many beyond our state's borders. We ask the Council to continue in its efforts ensure that hydrofracking is not undertaken hastily or recklessly in our state, and that we act carefully to protect our water supply, health and way of life.

Thank you again for the opportunity to testify today. NRDC stands ready to work with this Committee and the City Council as a whole on this complex issue of hydraulic fracturing in natural gas development.

**Testimony of
Dylan Hershkowitz
Deputy Director, Catskill Mountainkeeper
Before
The New York City Council
Committee on Environmental Protection
March 1, 2011**

Good afternoon. My name is Dylan Hershkowitz and I am the Deputy Director of the Catskill Mountainkeeper, an organization that represents more than 12,000 people living across 6 counties within the NYC and Delaware River watersheds.

Thank you, Mr. Chairman, for inviting me to speak today. I have three brief points that I would like to make regarding the important issue of hydraulic fracturing in New York State.

1. Hydraulic Gas Drilling Is Not Safe. The first point that I would like to make is that the current practice of gas drilling with hydraulic fracturing is not safe. There are many unaddressed environmental and health concerns associated with this process. Although you might be more familiar with the threats to water quality from hydraulic fracturing, there are also many instances of gas drilling being associated with decreased air qualities nationwide due to the industrial activities and heavy 18 wheeler truck traffic. Some rural areas where fracturing takes place have even reported lower air qualities than major cities like Los Angeles and Houston.

The threat of water contamination from hydraulic fracturing poses a serious risk to the health of our people and environment. The process of hydraulic fracturing involves contaminating water with many toxic chemicals and radioactive elements. For every 1 million gallons of water used, 40,000lbs of toxic chemicals are added to create the fracking fluid mixture. Over the lifespan of one well, billions of gallons of water can be used. But the water used for the fracking fluid is not only contaminated by the drillers' addition of toxic chemicals. Once the fluid is pumped into the ground, it can come in contact with radioactive elements like Radium and Uranium, which then become suspended in the mixture at levels which can be more than 1000 times the acceptable concentration of radiation for drinking water.

Once the fracturing is complete, drilling companies attempt to recover the fracking fluids from the earth, but that process is only partially effective and anywhere from 60-80% of the contaminated mixture remains underground. This poses a serious risk of contaminating underground aquifers because although the depth at which the fracturing takes place is below the groundwater aquifers, naturally occurring geologic imperfections exist within the rock formations that could allow the chemically laden and radioactive fracking fluids to enter the water table, thereby entering our drinking water supply.

Even the water that is recovered from the gas wells poses a threat to our water supply. The recovered fluids are either stored in above ground or underground holding tanks, or are sent to sewage treatment facilities to be processed. Untreated fracking fluid stored in containment tanks is at risk of contaminating our environment through surface spills and leaks from the tanks. In many states, there are no federal or state regulators assigned to or required to inspect the holding facilities. The job of inspecting the tanks is often left to the drilling companies themselves, who are notorious for under reporting spills and leaks, as it is not in their immediate best interest to do so. Additionally, as the holding infrastructure ages, problems with its integrity increase, resulting in more leaks and spills and demonstrating that holding tanks are not an effective long-term management practice.

Sending wastewater to sewage treatment plants also poses its set of risks. Sewage treatment plants are designed to process biological wastes and are not intended for processing the heavy chemical and radioactive loads present in fracking wastewater. While it may be suggested that the method for settling contaminants currently used at these facilities is sufficient to remove the chemical load of fracking wastewater, there is a lack of scientific evidence on the matter and it is unwise to continue this process without clear evidence that it effectively removes the chemicals in the fracking wastewater. Furthermore, sewage treatment facilities are not designed to remove radioactive contaminants. Consequently, much of the radioactivity from the fracking fluids, which can be more than 1,000 times the acceptable standard for drinking water, could remain in the outflow. And as there is

often an infrequent requirement to test sewage outflow for radiation, it is unsafe to allow fracking fluids to be processed through these plants, which discharge their outflow into water systems that are then often used for drinking water or recreation.

2. Hydraulic Gas Drilling Is Inadequately Regulated. This leads me to my second point, which is that current regulations do not exist to ensure gas drilling with hydraulic fracturing is carried out in a safe manner. In addition to the risks posed by adequate regulations of the radioactive outflow of sewage treatment plants processing fracking fluids, the gas companies are exempt from many federal environmental laws designed to protect our health and the environment. The gas companies have fought tirelessly to exempt the process of hydraulic fracturing from federal government regulation, claiming that complying with federal environmental laws would cripple their business and that the state regulations that are in place are already strong enough. Thus, they have managed to evade regulation and hydrofracking is currently exempt from critical provisions of the Clean Water Act, Clean Air Act, the Safe Drinking Water Act and the Resource Conservation and Recovery Act, which was passed by Congress in 1976 to protect the public and the environment from potential hazards of waste disposal.

3. This Committee Can and Should Protect New Yorkers From the Risks of Hydraulic Fracturing. Finally, we at the Catskill Mountainkeeper believe that the work of this Committee is essential to making sure any industrial process affecting the health and wellbeing of New Yorkers does not proceed before it can be proven safe.

The many instances of environmental and health concerns related to fracking, the improper treatment of fracking wastewater, and the lack of adequate regulations all emphasize the importance of a taking cautious approach to allowing fracking within the NYC/Delaware River watersheds. It is our recommendation that no drilling actions be permitted until we can call this process safe.

Thank you very much for your time and I hope you will take this testimony into consideration.



Testimony of Katherine Hudson, Watershed Program Director, Riverkeeper, Inc.

**New York City Council
Committee on the Environmental Protection**

**Oversight – The Continued Examination of Hydraulic Fracturing
including the NYSDEC and DRBC Processes**

March 1, 2011

Riverkeeper is a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries and protecting the drinking water supply of nine million New York City and Hudson valley residents. As one of the signatories to the 1997 New York City Watershed Memorandum of Agreement (MOA), and in keeping with our mission to safeguard the ecological integrity of the Hudson River, and the New York City drinking water supply watershed, Riverkeeper welcomes the opportunity to participate in this hearing.

I. What is at stake. Natural gas drilling in the Marcellus Shale has the potential to put the New York City Watershed, the City's greatest capital asset and the state's most precious natural resource, at risk, as well as to negatively impact other waters of the state.

Natural gas development has been progressing across the vast Marcellus Shale at a pace and scale that no one ever envisioned. Sometimes lost in the rush for access to this mineral reserve is the fact that the entire West-of Hudson portion of the New York City Watershed sits on top of the Marcellus Shale. That portion of the watershed currently supplies 100% of the 1.2 billion gallons of water consumed by over 9 million New Yorkers on a daily basis. In addition, over 15 million people, including New York City and Philadelphia residents, rely on the waters of the Delaware River Basin for which the Delaware River Basin Commission (DRBC) is responsible (approximately five percent of the nation's population). In its December 2009 comments on New York State DEC's draft Supplemental Generic Environmental Impact Statement (dSGEIS), the US EPA expressed the following significant concerns with potential impacts that gas drilling might have on the NYC watershed: "Despite the mitigation measures already proposed by DEC in the dSGEIS, EPA has serious reservations about whether gas drilling in the New York City watershed is consistent with the vision of long-term maintenance of a high quality unfiltered water supply."

II. New information concerning the dangers of hydrofracking. Recent articles by the New York Times and ProPublica have chronicled the dangers to health and the environment associated with high volume horizontal hydraulic fracturing, information that was unavailable to and therefore not considered by either the DRBC rule-making process or the NYS DEC environmental review process currently addressing the permitting of gas drilling activities in New York State and the Delaware River Basin. Consideration of this information concerning the hydrofracking waste stream and the use of diesel fuel in fracturing fluids, as well as the filling of additional data gaps that still exist, is critical to insuring that the DRBC and DEC processes are sufficiently comprehensive and protective.

A. The Hydrofracking Waste Stream .

The ground-breaking New York Times article titled **Regulation Lax as Gas Wells' Tainted Water Hits Rivers**, catalogues an extensive and disturbing amount of information that was gathered from EPA, state regulators and gas drilling companies that has not been previously made available, either to the public or to other government regulators and decision-makers. These records include "30,000 pages of federal, state and company records relating to more than 200 gas wells in Pennsylvania, 40 in West Virginia and 20 public and private wastewater treatment plants," providing a more complete and more accurate picture of the wastewater produced by the drilling process and the threat it poses to health and the environment that the Times characterizes as "greater than previously understood."

These documents reveal a practice of drillers hauling chemically-laced fracking waste to public sewage treatment plants in Pennsylvania, New York and West Virginia not designed to treat that waste. These plants then discharged that partially treated waste into rivers that supply drinking water. One hydrofracking well can produce over a million gallons of waste water that often contains corrosive salts, carcinogens like benzene and radioactive elements like radon which occur naturally underground, in addition to other carcinogenic chemicals added as a part of the hydrofracking process. The documents reviewed by the Times revealed that more than 1.3 billion gallons of wastewater were produced by Pennsylvania wells over the past three years, most of which was sent to treatment plants not equipped to remove many of the toxic materials in the drilling waste.

Federal regulators who were concerned were not sharing those concerns. Several key EPA studies uncovered by the Times had not previously been reported or made public, including a 2009 study written by an EPA consultant who concluded that some sewage treatment plants were incapable of removing certain drilling waste contaminants and were probably violating the law, and a never-reported study by the EPA that concluded that radioactivity in drilling waste cannot be fully diluted in rivers and other waterways. Pennsylvania regulators interviewed by the Times indicated that they were unaware of the EPA studies.

According to the Times, the drilling industry has also hidden the conclusions reached by its own studies, while publicly taking the position that the radioactive elements in drilling waste are not a concern, including a confidential industry study that agreed with EPA's conclusion that radioactivity in drilling waste cannot be fully diluted by discharging it into rivers and other waterways and another in 1990 that found that radium in drilling wastewater dumped in the Louisiana coast posed "potentially significant risks" of cancer for people who regularly eat fish from those waters.

In addition, sewage treatment plant operators receiving this waste told the Times that: 1) they were not sure of the waste's content because the limited information provided by the drillers usually goes to state officials ("we count on state regulators to make sure that it's done properly"), 2) their plants were not equipped to remove radioactive material and 3) they were not required to test for that material.

The final unknown results from the failure of EPA and state regulators to require sewage treatment plants accepting drilling waste or the drinking water intake plants downstream of those treatment plants to test for radioactivity, so there is no way of knowing if the resulting drinking water provided by those plants is safe.

B. The Diesel Fuel Lie.

Another significant piece of information directly linked to the potential risks of hydrofracking and the dangers to health and the environment presented by the waste fluids that it generates that only recently came to light, the industry's surreptitious use of diesel fuel as a component of its fracking solution. According to the ProPublica website, after accepting EPA's finding in 2003 that diesel fuel used in hydraulic fracturing operations endangers drinking water supplies, the gas drilling contractors responsible for 95 percent of the country's fracturing operations voluntarily agreed to stop using diesel fuel in coal bed methane gas wells. As of 2008, the gas industry continued to report to EPA that it was no longer using diesel fuel in fracturing operations.

However, as a result of a Congressional investigation conducted in the last few months, on February 1, 2011 three members of Congress reported to EPA that drilling companies have been injecting large volumes of diesel fuel during hydraulic fracturing operations of oil and gas wells. The benzene in diesel fuel is carcinogenic and has been detected in water supplies near drilling operations across the country. Congressional investigators reported that between 2005 and 2009 one of the three largest U.S. drilling contractors injected more than 11.5 million gallons of diesel fuel into gas wells. Now the gas industry is claiming that EPA never promulgated rules under the Safe Drinking Water Act for the use of diesel fuel in any applications other than coal bed methane wells; therefore, its use in hydraulic fracturing in the Marcellus and other shale is exempt from regulation.

III. What we still don't know – a sampling of significant information that should be gathered and considered by regulators before both NY's environmental review process is concluded, and rule-making by both DRBC and NYS DEC is finalized.

Water quality-specific data gaps:

1. Reliable information about the chemical composition of drilling muds and fracturing fluids and their associated environmental and health risks
2. Reliable information about the risks associated with drilling wastewater and the availability of adequate and safe wastewater treatment and disposal
3. Analysis of how current hydraulic fracturing operations intersect with abandoned and/or poorly constructed wells, faults and fractures to alter the expected impacts on water quality
4. Analysis of the cumulative impacts of stormwater discharges of greater than pre-construction volumes and velocities due to the increased imperviousness of drilling sites
5. Analysis of the impacts of stormwater runoff in highly erodible soils in Marcellus shale drilling areas
6. Field studies designed and appropriately timed to sample groundwater near fracking wells to empirically characterize the fate and transport of injected fracking fluids
7. Study of naturally occurring radioactive material (NORM) levels in production brine at gas well sites.

IV. Pennsylvania Regrets - A Cautionary Tale. The lessons that the DRBC and DEC could take advantage of if they allowed themselves the time.

"We're burning furniture to heat the house," reported the NY Times, quoting John Quigley, newly departed former secretary of Pennsylvania's Department of Conservation and Natural Resources. Quigley

bemoaned the fact that in shifting from coal to natural gas, “we’re producing massive amounts of toxic wastewater with salts and naturally occurring radioactive materials, and it’s not clear we have a plan for properly handling this waste.” The NY Times also opined that the industry has outpaced regulators in Pennsylvania, quoting a DEP inspector as saying “We simply can’t keep up. There’s just too much waste.”

In a February 10, 2011 article in ProPublica, John Hangar, who headed Pennsylvania’s Department of Environmental Protection until January 2011, reflected on the unanticipated challenges of regulating the natural gas industry and expressed his thoughts about how it could and should be done better.

His advice should be a caution to DEC, the DRBC and us all:

1. First, you have to have adequate staff, “a question that has to be asked and answered every year.”
2. The second thing you need is the will to enforce. “If you’re not willing to really enforce the rules and regulations it doesn’t matter how many people you have on the regulatory staff.”
3. The regulations needed a complete re-write when he came to the job in 2008, and there is an on-going need “to review regulations to make sure they’re adequate to the task.”
4. The amount of the bonds that drillers are required to post need to be raised; “the bonding rate in Pennsylvania is scandalously low.”
5. Maximum fines for rule violations also need to be increased.
6. Regulation of air emissions from natural gas production facilities needs to be more adequately addressed.
7. “It’s absolutely vital that this industry pay a reasonable drilling tax.” The state legislature must be persuaded to levy a tax on natural gas extraction.
8. Finally, as Hangar asserted in the NY Times article, “There are business pressures on companies to cut corners. It’s cheaper to dump wastewater than to treat it.”

V. Recommendations going forward.

Given what is at stake, the protection of not only the New York City Watershed but also all other potentially impacted waters of the state, and in light of the recent revelations of the significant dangers to health and the environment resulting from gas drilling activities and the waste stream that it generates, Riverkeeper’s position on industrial gas drilling in New York State remains unchanged. High-volume horizontal hydraulic fracturing should not be permitted until proper regulations and enforcement mechanisms and penalties are in place. As no new regulations have been proposed and severe budget and staff cuts continue to plague DEC, we have no confidence that the state has the legal basis or the staff resources to monitor gas drilling activities and enforce their compliance with environmental laws where necessary. Hydrofracking for natural gas is acceptable only if safeguards governing the entire extraction process and subsequent handling of the waste stream are in place. Right now they are not; New York is simply not ready at this time.

It is critical that both New York State and the Delaware Basin Commission take the time necessary to evaluate the new information that has just been made available in the past month or two, and any additional information that may come to light in the two additional articles that the NY Times intends to publish on this subject. A clear and comprehensive regulatory structure, a realistic penalty structure and a commitment to aggressive and consistent enforcement is important to both citizens and the industry. Clear law and regulations give the industry certainty, guide them so that they can make the best planning and technical judgments at the outset. Realistic penalties and consistent enforcement level the economic

playing field for companies who do want to comply with the law and dis-incentivize non-compliance with the law and regulations, so that it is not cheaper to break the law than to comply with it, avoiding the race to the bottom. Making certain that these protections are in place before proceeding with any permitting is crucial given the conduct of the oil and gas industry which continues to lobby against federal regulatory oversight, operate in secrecy with empty promises of cooperation, cut corners at the expense of workers and communities, and demonize the opposition rather than acknowledging risk and undeniable impacts.

A. The DRBC Process

The DRBC draft rules, released for public comment in early December, by definition, do not take into consideration the implications of recent reports that revealed the industry's widespread use of diesel fuel in fracking fluids, nor yesterday's NY Times report chronicling the much greater dangers to human health and the environment posed by natural gas drilling and its associated waste stream than previously thought. At a minimum, the draft rules should require disclosure of fracking fluid components prior to their use, rather than after drilling operations have been conducted as they currently provide.

In addition, the DRBC should take the time to consider the lessons learned from Pennsylvania. The DRBC does not have the staff to regulate drilling activities, nor is it realistic for the Commission to rely on over-burdened state agencies like New York to enforce its regulations. Moreover, since New York has not adopted any regulations or procedures to specifically govern high volume, horizontal hydraulic fracturing, the reliance of DRBC's draft regulations on host state rules and regulations on issues such as setbacks and other matters will mean that DRBC's management of drilling activities will be based on dated, generic mining rules and regulations which were put in place in New York before the State had even commenced its supplemental environmental review. In addition, the DRBC should not rely on the industry to self-report violations with an industry that has shown itself to have significant difficulties with self-policing. Finally, the DRBC regulations need to require that adequate financial assurance is posted by drillers so that taxpayers will not have to pay the cost of cleaning up environmental accidents. The \$125,000 per well that the regulations currently require is inadequate to cover likely costs.

Therefore, Riverkeeper intends to submit comments to the DRBC urging it to suspend the current rule-making process and deadlines to afford itself the time to assemble the scientific data necessary, to consider the recently released information regarding previously unknown or unreported hydraulic fracturing practices and impacts in the documents made available to the NY Times, and to allow itself the opportunity to analyze the regulatory package developed by New York on which the DRBC regulations intend to rely.

Riverkeeper would ask that the City Council consider submitting new comments to the DBRC similarly urging the DRBC to give itself the time, the information and the regulatory tools necessary to require the gas extraction industry to conduct its activities in a manner that is protective of human health and the environment before the Commission promulgates its revised regulations and proceeds with any permitting.

B. The NYS DEC Process

Similarly, DEC's environmental review process must be re-opened to allow DEC to consider the important new information that has recently become available and to evaluate whether it is significant enough to warrant re-opening the GEIS. A great deal of new information has become available since the scoping process for the SGEIS ended. At that time, DEC concluded, in its Final SGEIS Scope, that "[i]n

the absence of a pattern of incidents that indicates a regulatory weakness or gap, the occurrence of isolated incidents or violations do not themselves constitute reason to re-open the GEIS.” The pattern of incidents regarding the handling of the fracking waste generated by hydrofracking activities documented in yesterday’s NY Times article would seem to provide more than sufficient basis to justify a re-opening of the GEIS. At a minimum, consistent with Executive Order No. 41, which requires DEC to make such revisions in the SGEIS that are necessary “to analyze comprehensively the environmental impacts associated with high-volume hydraulic fracturing combined with horizontal drilling, ensure that such impacts are appropriately avoided or mitigated . . . and ensures (stet) that adequate regulatory measures are identified to protect public health and the environment,” NYS DEC must be afforded more time to be able to incorporate newly available information in order to satisfy the mandate of the Executive Order to comprehensively analyze environmental impacts and ensure adequate regulatory measures.

Therefore, Riverkeeper intends to urge the Governor to extend Executive Order No. 41 for at least a year beyond July 1, 2011 to afford DEC the time necessary to update the 1992 GEIS on a comprehensive basis, incorporating a cumulative impact analysis, and to ask the Governor to take steps to ensure that DEC has the staff and budget necessary to complete the SEQRA process and to do a formal rule-making after that process is complete.

We would urge the City Council to consider a resolution that would similarly call on the Governor to extend the current moratorium until DEC can complete a thorough environmental review and rule-making process. Riverkeeper would also request that the City Council consider calling the DEC Commissioner before a full City Council hearing to ask his assurance that the SGEIS will be comprehensively revised “from the ground up,” given its current, fundamental inadequacies, and to press him on whether he plans new regulations or will recommend new laws and how he will assure fully-funded and independent-minded inspectors, given the agency’s clear staffing problems.

Ultimately, if and when DRBC does issue final regulations, we would encourage the City Council to ask the Mayor to direct the City law department and the DEP to do an independent analysis of those regulations and recommend whether in their opinion, a lawsuit is appropriate. A similar independent analysis of the actions that DEC takes with respect to finalizing New York’s SGEIS process and any subsequent rule making and recommendations regarding the possibility of a lawsuit would be equally important for the City Council to request that the Mayor direct his agencies to undertake.

Conclusion

Given the importance of the resources at risk, the DRBC and the State of New York must make certain that they have all of the information, the legal authority, the staff and the commitment to require the gas extraction industry to conduct its activities in a manner protective of both human health and the environment before they proceed with any permitting. This is critical to avoiding the pollution chronicled by the NY Times on Sunday that can result from a rush to permit and drill with insufficient oversight.

Riverkeeper thanks the City Council for the opportunity to participate in today’s hearing and for the important role that the City Council continues to play on the issue of hydraulic fracturing in New York State. We look forward to continuing to work with the Council on this area of significant environmental concern.

Contact:

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Resources:

Drilling Down – The Waste Problem, Regulation Lax as Gas Wells' Tainted Water Hits Rivers, Ian Urbina, New York Times, February 28, 2011.

Gas Drilling Technique is Labeled Violation, Tom Zeller Jr., New York Times, January 31, 2011.

Buried Secrets – Gas Drilling's Environmental Threat, Drilling Industry Says Diesel Use Was Legal, Abrahm Lustgarten, ProPublica, February 2, 2011.

Buried Secrets – Gas Drilling's Environmental Threat, John Hangar, PA's Former Environmental Chief, Talks About Challenges of Keeping Gas Drilling Safe, Nicholas Kusnetz, ProPublica, February 10, 2011.

DEP Hearing on Hydraulic Fracturing, NYSDEC and DRBC Processes March 1, 2011

Lessons learned from BP oil rig explosion April 20, 2010 BP oil rig explosion in Gulf of Mexico killed 11 rig workers and injured 17 others. The leaking oil slows down local economy, poses a serious threat to wildlife and damages the environment along the coastal areas of Louisiana, Mississippi, Alabama, and Florida, which takes years to recover. It costs BP 41 billion dollars. The reasons are (1) the industry puts profit over science and safety, (2) government rubber-stamps drilling permits, and (3) government fails to oversee operation on the rig.

Is natural gas hydraulic fracturing safe? Do people have enough clean water to drink in case of draught? Do we have the budget to deal with resident health problem and environmental hazards caused by chemical and radioactive materials? Do we have the budget to fix the problem if disaster strikes? Although hydraulic fracturing has been around for 60 years, the current hydrofracking involves drilling of vertical 4,000-8,000 feet and then horizontal 3,000-5,000 feet. It is much more dangerous than the conventional vertical hydrofracking and consumes much more water. (1) It uses 4 million gallons of water per well instead of 80,000 gallons. (2) The drilling pressure and injection rates can reach 15,000 psi and 100 barrels per minute. (3) The secret chemicals used in hydrofracking (it may contain diesel fuel) and the by-product of rock cuttings and massive toxic waste are highly corrosive salts, carcinogens, heavy metals, and radioactive elements such as radium 226 and radon. (4) If operation improperly handled, the massive toxic waste may contaminate air and drinking water and leaking methane may cause explosion.

Just like BP oil spill, companies trump profit over safety and government lax in regulation and oversight, the accidents listed below had happened in past few years. (1) April, 2010, Drinking water contamination of 14 homes in Dimock Township, Pennsylvania. (2) June 3, 2010, A well blowout in Clearfield County, PA sent more than 35,000 gallons of hydraulic fracturing fluids into the air and onto the surrounding landscape in a forested area. (3) Pennsylvania's DEP has logged 1,435 violations of the state's oil and gas laws in the Marcellus Shale in last two and a half years, 30 stray gases migration in gas well and 5 explosion between 2006-2010. (4) Feb. 23, 2011, fire at hydrofracking drilling site injured 3 worker in Avella, PA. (5) More than 30 cases of groundwater and drinking water contamination in Colorado and Wyoming. (6) Reports of minor tremors of no greater than 2.8 on the Richter scale were reported on June 2, 2009 in Cleburne, Texas, the first in the town's 140-year history.

Due to the innumerable drinking water problems associated with fracking, Congress gave approval for the EPA to study the effects of fracking on drinking water. EPA will initiate a study includes the full lifespan of water in hydraulic fracturing, from acquisition of the water, through the mixing of chemicals and actual fracturing, to the post-fracturing stage, including the management of flowback and produced water and its ultimate treatment and disposal. The study starts in 2011 and is expected to be finished in 2012. Furthermore, January 31, 2011, U.S. Reps. H. Waxman (D-CA), E. Markey (D-MA), and D. DeGette (D-CO) requested EPA to include diesel fuel as part of fracking fluid study based on the investigation that showed 12 drilling companies have used 30 million gallons of diesel fuel in hydraulic fracturing fluids **without** permits. These activities appear to be a violation of the Safe Drinking Water Act.

90% of NYC drinking water is from Catskill/Delaware system. It is high quality and is delivered to New York consumers unfiltered. NYC has invested more than \$1.5 billion in 1,600 square miles watershed protection programs. In order to protect water quality for the 15 million people who rely on the Delaware River watershed for clean, unfiltered drinking water, Delaware River Basin Commission (DRBC) should keep the Basin the way it is and should not allow hydrofracking operation within 1.5 miles distance of watershed (The current hydrofracking operation is 1 mile horizontal drilling after 1 mile vertical drilling).

Being a Taiwanese (not Chinese) American, an advocate, an active member of Gray Panthers, and Gray and Green Coalition, it is my responsibility to make the voices heard. It is the responsibilities of public representatives and government officers to protect people, safeguard environment and improve economic growth. The victims of hydrofracking show health related disease such as neurological disorders, brain damage, respiratory problems and cancers. When the hydrofracking operation and the emission from methane (72 times more potent than CO₂) are concerned, it is dirtier, more polluting and far more toxic than the renewable energy. We, as citizens of New York, and as consumers, are outraged that DRBC is considering hydrofracking without scientific evidence and technical review, disregarding accidents in other states, disregarding budget cut and oversight capacity shortage, and disregarding possible future water shortage. We are raising our voices to ensure that hydrofracking should be banned for the protection of our health and environment and for the future generations. Numerous legislature representatives and government officers already voice to ban the hydrofracking, because under current state of technology, hydrofracking cannot safely be conducted in the New York City Watershed.

It is unwise to sale water to the drilling companies and has to carry the responsibility of hydrofracking's impact on drinking water, human health, environment contamination, ecosystem, and tourism. If DRBC insists on release of draft regulations, we urge DRBC to wait until EPA completes its study on impact of hydrofracking on drinking water and ground water. We also urge DRBC to modify the draft to reflect current horizontal hydrofracking. Suggestion as following: (A) Request applicants, before permit release, (1) to submit the scientific data of fracking fluid, flowback, and waste products including radioactive radium 226, their potential hazards, and standard disposal methods; (2) to prove the method of waste storage and disposal are effectively managed without contamination of air, surface water, and ground water; (3) to collect and submit seismic data on each new lateral section to be fracked to be sure faulting is not present in the target zone and is not communicated with any aquifers; and (4) to document procedure on how to handle disaster. (B) Tax the gas production heavily and hire inspectors to oversee the operation daily as USDA does to the meat companies. Additional suggestion on DRBC Draft 7.5 are (1) setback distance is 1.5 miles; (2) all storage tanks, pit, and pool must be covered and leak proof; (3) flowback and waste water must be tested and recorded for shale natural occur radioactive materials, such as radium and radon, heavy metals, and fracking chemicals before disposal following the government standard rule and regulation; and (4) cumulative air emission on the operation site must be recorded.

Strict regulation and strong enforcement are the keys to successful operation.

An ounce of prevention is worth a pound of cure. Insist on "no hydraulic fracturing."

Written testimony by Mrs. Shiuho Lin, Gray Panthers

75-55 183 Street, Fresh Meadows, NY 11366-1617



Testimony Before
New York City Council Committee on Environmental Protection
On Delaware River Basin Commission
Draft Natural Gas Development Regulations
March 1, 2011

Thank you for taking testimony regarding the Draft Natural Gas Development Regulations issued by the Delaware River Basin Commission. We have requested that the DRBC hold an official public hearing on these draft rules in New York City, where between 7-9 million people drink Delaware River water every day, but they have not done this. Your Hearing today shows your concern about this issue and your commitment to protecting New Yorker's drinking water.

The Delaware River Basin Commission issued Draft Natural Gas Development Regulations in December 2010 with a comment period that will close just over 2 weeks from today, March 16. As you know, the DRBC was established as an interstate agency responsible for conserving and managing the water resources of the Delaware River Basin with the creation of Delaware River Basin Compact of 1961. New York, New Jersey, Pennsylvania and Delaware are the four states whose tributaries flow to the Delaware and they, with a federal partner, the Army Corps of Engineers, make up the five votes that will decide the fate of these proposed regulations.

The DRBC is required to maintain the exceptional water quality of the River due to strict anti-degradation standards that have been adopted over the last decades, starting with Congress' recognition of the outstanding values of the River by the designation of the Upper and Middle Delaware as a Wild and Scenic River in 1978. Delaware Riverkeeper Network filed a Petition with the DRBC in 1989 to develop a program to protect those outstanding resources and water quality pursuant to the Outstanding Natural Resource Waters (ONRW) provision of the

federal Clean Water Act. In 1990, the Commission created its version of ONRW by amending its Water Code to include its Special Protection Waters (SPW) program. In 1992 DRBC classified the Upper and Middle Delaware River as Outstanding Basin Waters under its SPW program.

Then in 2000, Congress designated the Lower Delaware River as Wild and Scenic and adopted its management plan into the DRBC's Comprehensive Plan and Delaware Riverkeeper Network filed a Petition for SPW for the Lower Delaware. In 2008, DRBC granted the Lower Delaware River SPW designation. This means that the entire nontidal Delaware River, 197 miles, is designated SPW, the longest stretch of anti-degradation waters in the Nation.

The Delaware River's SPW have been regularly tested for decades and the existing water quality is "exceptional" or "above standard" due to the high water quality of the nontidal River. This designation requires that this exceptional water quality be maintained. But, in our opinion, the draft gas rules do not provide the regulatory framework which would meet the mandate of "no measurable change in water quality except towards natural conditions" and the protection of the water resources of the Basin (*Water Code Article 3.10.3.A.2 et seq.*, *See also 18 C.F.R. Part 410*). We will be filing extensive written comment explaining why, informed by technical experts who we have engaged to analyze the proposed regulations.

The Commission had applied for federal funding to conduct an environmental impact analysis of natural gas development on the water resources of the Basin in the last legislative session. The \$1 M request was approved by the House Appropriations Committee Subcommittee on Interior, Environment, and Related Agencies in June 2010 but, as an earmark, it died in the last session. We are still working to get the funding for this study and the Commission still desires to complete such a study.

In addition, the EPA's hydraulic fracturing study will be most informative about that aspect of gas drilling and we consider that technical input to be crucial. Further, as you are well aware, New York State is in the process of conducting its own analysis while it develops a new Supplemental Generic Environmental Impact Study for high volume hydraulic fracturing. All of these studies will provide the sorely missing pieces that the Commission needs to craft effective regulations that can meet their mandate, preventing pollution and avoiding

degradation. Until these analyses are done, the Commission just doesn't have the scientific basis it requires to put meaningful rules in place.

We are not alone in this opinion. Federal elected representatives Congressmen Maurice Hinchey (NY) and Rush Holt (NJ) have filed a letter with the DRBC asking them to wait for the EPA's study and other scientific analyses before issuing gas drilling rules. The State of New York also asked the DRBC not to issue the Draft rules prematurely in December (Governor Paterson's representative to the last meeting of the Commission in December voted against the release of the Draft rules and submitted an official statement in opposition to the rule publication). Several State Senators in New York and legislators in New Jersey have also asked that the rules be delayed until the EPA and other studies are completed and can be used to inform regulations. Philadelphia City Council passed a resolution saying this as well and submitted it to the Commission. And of course New York City Council passed a resolution related to hydraulic fracturing in the Basin and the City has submitted numerous comments on this subject to the DRBC, most recently at the DRBC's Hearing in Liberty, New York last week. And 8000 letters from the public were submitted between April and December asking the Commission to complete scientific studies first, before drafting gas regulations.

Unfortunately, all of this fell on deaf ears. The DRBC prematurely issued weak and poorly informed regulations that are little more than what the states provide. These draft rules fall far short of meeting the high bar set for the River even though some of the regulatory proposals are stricter than the states', a good start in some areas—but just a start. In far too many aspects the DRBC acquiesces to state standards or does not take the path far enough to make a difference; the DRBC actually states they are "mitigating" impacts, which is contrary to their charge, to prevent degradation. The point here is of course not for the DRBC to duplicate or make half-hearted attempts but to provide the needed regulation that would prevent pollution and avoid degradation. Anything less is a waste and, worse, a ruse. A rubber stamp agency is not worth its weight.

Specific areas of concern in the draft regulations are:

- ✓ There are no spacing requirements for the tens of thousands of wells expected that would limit how many wells can be drilled and how close they can be to each other, facilitating an industrial landscape. Proposed Natural Gas Development Plan thresholds are too high—much gas development will not be captured and it is not clear how the plans will address individual and

cumulative impacts. How will the loss of freshwater flows from the headwaters and the destruction of the now 89% forested Upper Delaware affect water quality, clean drinking water, habitats and ecology downstream?

- ✓ The draft rules do not place any restrictions on the chemicals that drillers can use to drill and hydraulically fracture ("frack") gas wells. Considering the hundreds of dangerous chemicals that are used, many of them carcinogenic and hazardous, and the fact that diesel fuel, a toxic substance, is being used in some areas to stimulate gas extraction, the DRBC's "hands off" approach to this central aspect which they could rightfully regulate is irresponsible. The DRBC proposes to ask for full disclosure of all fracking formulas, a good step, but the same cloak of secrecy for frackers will remain in place since the DRBC will honor companies' request for trade secrecy protection to shield frackers from public exposure. Why isn't the DRBC prohibiting the use of contaminants in gas extraction processes or at least waiting for the EPA to finish its study of hydraulic fracturing practices to protect drinking water? If the DRBC isn't going to publicly disclose the formulas themselves then why don't they prohibit the use of secret fracking chemicals?
- ✓ The draft rules do not prescribe wastewater standards for all of the specific constituents of gas drilling wastewater; under the draft rules the removal of all toxic substances won't happen. Many highly dangerous chemical hazards are in gas drilling wastewater and because of the federal exemption from disclosure, they are not all known. But hundreds are listed in NY's Draft Supplemental Generic Environmental Impact Statement and at the Endocrine Disruption Exchange. DRBC does propose a treatability study for waste fluids before a plant can accept it and acute toxicity testing for treatment systems, which is not required by the States, and they list some of the hazardous chemicals regulated by safe drinking water rules that they want wastewater tested for but they allow for waivers, weakening the rule, employ a minimal Total Dissolved Solids standard, and have left off key parameters such as radon, hydrogen sulfide and chemicals that are synergistically formed in the wastewater such as 4 Nitroquinoline 1-oxide (4NQO), one of the most powerful carcinogens known. How can the DRBC move ahead without comprehensive control of this toxic wastewater?
- ✓ The draft rules rely on weak State regulations in many areas:
 - ❖ Due to a federal exemption under the Clean Water Act, stormwater management that's required for all other earth disturbance greater than an acre is not required for gas development and PA goes even further and exempts gas and oil activities from many key areas of stormwater, erosion and nonpoint source pollution control requirements. DRBC acquiesces entirely to the lack of requirements by deferring to state standards; this will ruin streams, smother habitats, kill fish and degrade water quality and drinking water. This gross oversight alone could violate the "no measureable change in water quality" standard that the DRBC is required to maintain in Special Protection Waters.
 - ❖ Drilling, cementing and casing construction and safety is totally sidestepped by the DRBC by deferring to state standards, despite Pennsylvania's substandard Chapter 78 requirements. The lack of adequate construction safety standards, in some cases even below industry standard, is causing pollution incidents, well blowouts, stray gas migration and more throughout Pennsylvania. How can the DRBC bury its head in the sand when it comes to safety? Isn't that what led to the BP Oil well disaster in the Gulf last year?
 - ❖ Air pollution from gas wells and wastewater impoundments is not addressed at all by the DRBC, despite PA's exemption of gas wells from air standards. NY's Draft Supplemental Generic Environmental Impact Statement identifies large amounts of hazardous air pollution (methanol)

and other pollutants that will violate NY's air emission standards. In Texas [http://www.edf.org/documents/9235 Barnett Shale Report.pdf](http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf) and other areas, gas extraction and production is degrading air and human health. Yet DRBC leaves this matter to the States, despite the fact that air pollution deposits on land and water, causing both air and water pollution far from the source.

- ❖ The States have totally inadequate setbacks between gas well activities and water bodies, water wells, homes and other vulnerable features. Setbacks from homes, public buildings, public roads, public water supply wells and domestic water supply wells are all left out of DRBC oversight and relegated to inadequate state setbacks that have resulted in pollution incidents from gas drilling throughout Pennsylvania (most notably, US Environmental Protection Agency is investigating water well pollution in Dimock and Bradford County, PA). DRBC proposes a 500 foot setback of gas well pads from water bodies, wetlands, surface water supply intakes and water supply reservoirs and prohibits well pads in the DRBC's defined "floodway" and advises none in the "flood hazard area" (a variance may be granted), which is stricter than PA or NY requirements. Nonetheless, more protective requirements are needed.

All setbacks should be measured from the end of the horizontal well bore, as well as from the vertical well bore, since hydraulic fracturing will introduce contaminants and cause fracturing throughout the horizontal bore zone. Setbacks should be based on a minimum 300 foot buffer beyond the floodplain/flood hazard area as defined by riparian soils (when that distance is greater than 500 feet) to assure adequate protection for streams and to prevent flood damages. Water supply intakes and reservoirs need protection based on drainage patterns and the condition of the setback area (such as slope and vegetation) in order to provide needed buffering so distances need to be calculated on a site by site basis, not a cookie cutter 500 foot radius.

- ❖ DRBC expressly allows centralized wastewater storage facilities and defers to State standards for them. In NY's Draft Supplemental Generic Environmental Impact Statement, impoundments as large as 40 acres are anticipated and operators are building huge impoundments in Pennsylvania now. One of the major sources of air pollution is from these wastewater impoundments, from which toxic contaminants volatilize to the air, then are breathed in or deposited on soil and water, causing highly mobile pollution. Further, DRBC proposes no setback requirements for impoundments, deferring to the states. For on-site pits up to 250,000 gallons, PA's setbacks are the same as for gas wells, which is only 100 feet from a water body, as close as 20 inches above the seasonal high water table and no mention of a setback from a water supply well. How can the DRBC allow centralized pits to hold gas drilling wastewater when they don't allow open pits for wastewater on well sites?
- ✓ The rules would allow for fast track approvals (Approval by Rule) with streamlined Executive Director review and without public input for much gas drilling and some water withdrawals. This loophole will lead to the "death by a thousand cuts". Speeding up gas development has led to communities and the environment suffering huge numbers of violations on well sites. 2,755 natural gas wells were drilled in PA in 2010; in the same timeframe, 2,486 violations were noted by PADEP. How can DRBC allow this breakneck speed when charged to maintain the River's exceptional quality?
- ✓ In the absence of a cumulative impact study, all stream data for all parameters including water chemistry (real time and grab samples), benthics, fish, mussels, must be commenced at least one full year before drilling can begin and the cost of this work must be borne by the drillers. Stream

sampling must be established around the entire drilling zone beyond the vertical well pad and must also include reference site monitoring.

Further, significant omissions in the regulations are a fatal flaw. For instance, the DRBC has the power, in our opinion, to outlaw hydraulic fracturing within the Basin based on the ample evidence at hand of the pollution risks. The obvious water quality concerns related to the injection into the ground of hazardous materials is one thing but the water resource implications due to depletion of fresh water and the total removal of water from the hydrologic cycle and the dewatering and disruption of natural flows in streams, harming fish and aquatic life as well as downstream water supplies (4.5 million gallons on average to hydraulically fracture a well x tens of thousands of wells); the production of toxic wastewater that is being discharged to ground and surface waters without removal of many of the toxic constituents; and the abysmal record of how gas drilling is destroying the environment and communities everywhere it is occurring (Pennsylvania Department of Environmental Protection reported 2486 gas well violations in PA in 2010 alone), all argue for the outlawing of hydraulic fracturing until it can be proven to be safe. But the DRBC fails to meet this challenge, an essential task if the goal of nondegradation is to be maintained.

I am attaching copies for your consideration of two comment letters Delaware Riverkeeper Network submitted to the Environmental Protection Agency regarding the Scope of its hydraulic fracturing study. We believe that scope must be widened to accurately analyze the potential impacts on drinking water and human health and in order for this study to provide needed data and missing links of information about hydraulic fracturing impacts. I also attach for your consideration copies of letters filed by the New Jersey and Pennsylvania legislators to the DRBC over the past two weeks, calling for expanding public input in this rulemaking process and doing the necessary scientific studies before allowing any drilling in the Watershed.

The Draft Natural Gas Development Regulations do not meet the DRBC legal mandate to "Do No Harm" that is necessary to protect the exceptional water quality of the Wild and Scenic Delaware River and the water supply of 15 million people.

DRBC MUST maintain the exceptional water quality that now exists in the River and improve it where it needs help. The draft rules simply do not overcome the handicap caused by rushing

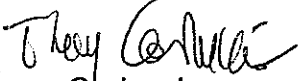
the rules forward without needed scientific studies. The rules do not protect from the risk of catastrophic harm from individual wells nor do they address the cumulative impacts of water withdrawal and well development; there is no method proposed to control the accumulated environmental toll that natural gas drilling, land transformation, and water depletion and pollution will take on habitats, streams, communities and the River.

We ask for two things today.

Our first request is the Council asks the DRBC for an extension of public comment. We request at least a **120-180 day** extension. The Commission usually has a robust public participation process and has held certain rulemakings open for public comment for many months. The shortest in recent years was 105 days and the most recent rulemaking for a flow management plan was open for many months. The Commission has rarely had a comment period as short as 90 days and yet this issue has elicited more public comments over the last year than any other issue the Commission has addressed and has only been granted a minimal 90 days. We also ask that the Council request a Public Hearing in New York City that will be officially submitted into the record. Nine million New Yorkers should have a Hearing conveniently located to their faucet.

Our second request is the Council asks the DRBC to vote to **hold the draft rules in abeyance** until the EPA completes its hydraulic fracturing study, the Commission conducts an environmental impact analysis of gas drilling on the water resources of the Delaware River Basin, and New York completes its environmental analysis and rulemaking. We believe getting the science correct is the essential first step.

Thank you for the opportunity to comment before New York City Council.


Tracy Carluccio

Deputy Director

Delaware Riverkeeper Network

March 1, 2011



Edward Hanlon, Designated Federal Officer
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February 25, 2011

Re: Hydraulic Fracturing Study Plan Review Panel

Dear Mr. Hanlon,

I represent the Delaware Riverkeeper Network and the Delaware Riverkeeper, Maya van Rossum. DRN has taken a lead role in protecting the waters of the Delaware River, which supplies drinking water for more than 15 million people. We have taken a keen interest in the issue of hydraulic fracturing for natural gas in shale formations such as the Marcellus Shale because of the potential for severe, if not catastrophic, harm to the Basin's irreplaceable drinking water resources.

Although the EPA Hydraulic Fracturing Study Plan is a good start, its scope has been unduly narrowed to focus only on the deliberate and intentional use of water in the hydraulic fracturing process itself. This study design excludes consideration of impacts to drinking water from critical steps in the natural gas extraction process such as surface level construction, vertical well installation, road and pipeline installation and use, and more. It is simply not the case that the only impacts to drinking water resources will occur from the deliberate use of water in the hydraulic fracturing process itself. The EPA study should not limit consideration only to the intentional use of water in the hydraulic fracturing process alone, but encompass the larger water quality impacts caused by the shale gas well installation and extraction process as a whole.

We intend to submit additional comments on the Environmental Protection Agency's Hydraulic Fracturing Study Plan via fax and email on Monday, February 28, 2011, in time for the Scientific Advisory Board's consideration at the meeting scheduled for March 7-8, 2011. As an initial submission, however, I enclose for the SAB's consideration a number of expert reports that were prepared for the Delaware Riverkeeper Network and the Delaware River Basin

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Commission for a hearing on the impacts to water quality from vertical wells drilled for shale gas exploration in the Delaware River Basin.¹

Among other issues, these reports specifically address adverse impacts to water quality that are likely to occur specifically because of well pad construction and vertical well installation. Adverse impacts to drinking water quality may occur at many points in the gas development and exploitation process and are not limited to impacts from horizontal drilling and/or hydraulic fracturing.

Actual and potential water quality impacts from vertical well construction and installation identified in these expert reports include:

- Impacts to water quality from sedimentation and erosion as well as stormwater runoff resulting from land disturbance from pad site, entrance road, and pipeline facility construction as well as widening or paving of existing roads and increased road traffic (Adams, O'Dell, Sildorff)
- Chemical and biological contamination to ground water resulting from the chemical products used in both drilling muds and air drilling as well as naturally occurring chemical, biological, and/or radioactive substances mobilized by drilling. Contamination of water may occur either below ground (e.g., through casing or grouting failure or annular channels) or above ground (e.g., from drill cutting pits and waste disposal) (Bishop, Demicco, Harvey, Rubin, O'Dell, Sildorff)
- The water quality impacts of a well blowout, not only from the produced fluids and naturally occurring fluids ejected during the blowout but also from the chemical suppressants and water withdrawals used to cap wells and contain blowouts (Harvey)
- Adverse water quality impacts resulting from stray gas migration when vertical wells are not properly cased and cemented, thus allowing natural gas in subsurface formations to migrate from the wellbore through bedrock and soil, contaminating aquifers and drinking water wells (Harvey, Rubin)
- Adverse water quality impacts resulting from the penetration by vertical wells of bedrock joints that may result in hydrological connections between saline and freshwater horizons by opening inter-formational pathways. (Rubin)
- Clearing and fragmentation of forested areas and degradation of riparian zones related to well pad construction result in adverse impacts to drinking water. Intact forest ecosystems and riparian buffers are critically important to protecting stream water quality from non-point source pollution and nutrient loading, particularly in the headwaters of the Delaware River Basin (Owens, Jackson & Sweeney)

Because surface level construction, site use, and vertical well installation are prerequisites to any horizontal drilling and hydraulic fracturing processes, EPA should address the impacts of these activities in its study design to fulfill Congress' mandate and ensure a complete picture of the impacts to drinking water.

¹ Five of the reports (Anderson & Kreeger, O'Dell, Sildorff, Jackson & Sweeney, Volz) were produced at the request of the Delaware River Basin Commission, which has no affiliation with the Delaware Riverkeeper Network. These reports are publicly available documents.

More generally, these expert reports highlight some of the shortcomings of the current scope of the proposed EPA study and illustrate how the study, as proposed, will not fulfill Congress' mandate to study the cumulative effects of shale gas extraction on drinking water quality. Many additional elements of the shale gas extraction process need to be studied for their potential impacts to drinking water quality. For example:

- It is inappropriate to exclude consideration of air quality impacts resulting from natural gas production wells from the EPA study, because air quality impacts can cause water quality impacts, as air pollutants precipitate and deposit both on ground surfaces and water surfaces (Harvey).
- Seismic activity in areas of vertical well installation and hydraulic fracturing has significant implications for impacts to drinking water quality. Seismically active regions such as the Marcellus Shale have a high likelihood over time of significant ground motion that may instantly shear multiple well casings, opening connections between formerly separated freshwater and saline horizons and permitting natural gas migration as well as contamination from produced waters. (Rubin)
- Multiple pathways of water quality degradation from surface and subsurface activities relating to well pad construction and shale gas extraction may result in impacts to aquatic biota such as freshwater mussels. In the Delaware River, large assemblages of these filter feeders play a critical role in maintaining the drinking water quality of the River. Yet these species are highly susceptible to the impacts that natural gas well construction and hydraulic fracturing may inflict, such as increased sedimentation, increases in suspended sediments, water quality degradation from brines and other contaminants, inadequate flows and dewatering, invasive species, and forest fragmentation. (Anderson & Kreeger, Sildorff)
- It is also incumbent on the EPA not merely to identify possible contaminants (whether natural or manmade) that may affect drinking water quality but also to examine the potential health impacts of drinking water contamination on human populations. I draw your attention to the Teitelbaum paper and its appendices on this issue.
- EPA should examine the interactions between naturally occurring and manmade chemicals introduced through the drilling and fracturing processes. Biochemist Ron Bishop, whose report is attached, has identified 4 Nitroquinoline 1-oxide (4NQO), a powerful carcinogen, in the wastewater produced by natural gas drilling. He has informed DRN that this chemical compound is not a drilling or hydraulic fracturing additive and it is also not found naturally in the geologic formations that produce flowback water during the stimulation process. Apparently, it is formed through interaction of the chemicals that are present in these fluids.
- The presence of this extremely powerful carcinogenic compound is a serious health concern and immediately requires further investigation since it is being found in currently produced gas drilling wastewater in New York State and perhaps in Pennsylvania as well. 4NQO is used in cancer research to induce cancerous tumors in animals for study. It is one of the most potent of all cancer causing chemical compounds. (See, e.g., <http://bit.ly/gdzwIP>).

Thank you for the opportunity to comment on EPA's draft study. For your convenience, I enclose a binder with one paper copy of each of these expert reports (without appendices) as well as twenty-four duplicate copies of all reports plus appendices on CD for the use of the members of the SAB.

Very truly yours,

Jane P.

Davenport

Digitally signed by Jane P. Davenport
DN: cn=Jane P. Davenport, o=Delaware
Riverkeeper Network, ou=Senior Attorney,
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Jane P. Davenport

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Feb. 28, 2011

Re: Additional Comments on Hydraulic Fracturing Study Plan Review Panel

Dear Mr. Hanlon:

I represent the Delaware Riverkeeper Network and the Delaware Riverkeeper, Maya van Rossum. We submitted a comment letter dated February 25, 2011, as well as eleven expert reports addressing various impacts to water resources implicated by the construction and installation of vertical wells intended for natural gas exploration and production in the Marcellus Shale contained within the Delaware River Basin.

Please accept these additional comments on the Environmental Protection Agency's Hydraulic Fracturing Study for consideration by the Plan Review Panel. In drafting these comments, we have relied heavily on input from Mr. Richard A. Raiders, a law student in our clinical program who has B.S. and M.S. degrees in petroleum engineering and more than twenty-two years of experience working in the field of environmental engineering and compliance.

The Environmental Protection Agency (EPA) Science Advisory Board (SAB) has proposed a draft work plan to study the effect of hydraulic fracturing of gas bearing formations on surface- and groundwater resources through various retrospective, prospective, and research studies. The proposed EPA work plan addresses many important issues. However, EPA must improve the proposed work plan to include and address critical issues related to natural gas development through hydraulic fracturing that have potentially significant deleterious effects on drinking water and the communities that rely on sources of safe drinking water. These effects may stem not only from the deliberate, intentional use of water in the hydraulic fracturing process, as the current study plan focuses on, but also the various impacts on drinking water from well construction and associated infrastructure development and non-intentional contamination through accidents or failure to adhere to appropriate environmental standards.

Radioactive Contamination from Wastewater and Other Drilling-Related Sources

According to the reporting by Ian Urbina in the New York Times dated February 27, 2011, titled Regulation Lax as Gas Wells' Tainted Water Hits Rivers, EPA already has studies or evidence in its possession that demonstrate that wastewater from hydraulic fracturing operations may be highly contaminated with NORM and is being sent to treatment plants that are not equipped to treat such waters to drinking water quality standards. The article also cites information obtained from industry sources concluding that the radioactivity in fracking waste cannot be fully diluted in rivers and other waterways. Moreover, as the article reported, these plants are not being required by the States or by the EPA to test for the presence of such radioactive materials.

See <http://www.nytimes.com/2011/02/27/us/27gas.html>

and documents cited therein.

The potential for contamination of drinking water with radioactive substances via hydraulic fracturing wastewater is obviously extremely significant. As such, the EPA must expand the focus of the study's section on the treatment and disposal of fracking wastewater to analyze this issue in detail. It is incumbent on the EPA to include, as part of this study, testing of wastewater before and after treatment at water treatment facilities for contamination by radioactive materials.

Radioactive materials present in wastewater also pose the risk of contamination to drinking water sources via accidental spills, leakage from in-ground pits, and injection into underground disposal wells. EPA should ensure that all stages of its analysis take into account the risks that NORM-contaminated wastewater and other materials produced during the natural gas development and extraction processes pose to drinking water quality.

Well Data

EPA appropriately proposed to study production well failures, suspected contamination, and coalbed methane issues. However, well construction and fracture design may affect the impact of the fracturing process on nearby water quality. If an oilfield service company overstimulates a well, either accidentally or by design, the fractures created during the hydraulic fracturing project could propagate beyond the target formation. If the service company fractures the cap formation, and possibly other formations preventing fracturing or production fluids from entering potable water supplies, these oilfield activities could cause indirect long-term water supply problems.

Likewise, EPA should collect any available recompletion data for any shale gas wells. Second attempts to fracture a well rely on the original fractures to provide avenues for produced gas to be captured by a production well. Because the formation is already fractured, the service company performing the fracture may have less control over

where a refracture may spread. Recompletion procedures could also weaken wellbore cement, potentially causing unwanted fluids to travel through the well annular space and possibly into potable water formations. EPA should understand, using actual well data or simulation models, how contemporary refracture and/or recompletion practices may breach either cap rock formations or the wellbore.

EPA should also collect any historic or contemporary cement bond log information, especially for surface casing intended to protect potable water supplies. EPA should inquire if cement bond log data is available for shale gas wells, especially wells known or suspected to have failed and wells in the vicinity of known or anticipated potable water supply problems. In addition, EPA should collect data concerning the use (or lack of use) of centralizers in surface casing. If operators are not collecting cement bond log data from current wells, EPA should request that operators begin to log shale gas wells right after the operator sets the surface casing. Centralizer use and application data would allow EPA to evaluate the relationship between casing position, cement integrity, and well failure in the fate of potable groundwater supplies. Such data would allow EPA to understand if and how casing, cement, or centralizing problems affect sources of drinking water either at the surface or below ground.

Water Acquisition

The proposed water acquisition research studies would provide valuable knowledge for decision-makers in upcoming hydraulic fracturing related regulations. EPA's focus on drinking water supply, including cumulative impacts concerning multiple fracturing projects on a single waterway, appropriately captures one of the critical issues in this area. However, EPA should include goals to evaluate not only drinking water quality impacts, but also impacts on the various ecosystems in the affected watersheds. Seemingly insignificant changes in water quality can have a dramatic impact on several sensitive plant and animal species. Specifically, withdrawal of millions of gallons of water per well could cause increases in suspended solids, salinity, color, or temperature that could impact downstream ecosystems.

EPA's water acquisition studies should evaluate the impact of water withdrawals on downstream water quality. A trace constituent in a waterway that may not pose significant risk at current river flows could become a health hazard for downstream users at slightly higher concentrations.

The quality of streams and their ecosystems is directly related to the quality of surface water, affecting drinking water supplies drawn from the waterway. Therefore, EPA should also analyze the impact of water withdrawals from a surface water body on habitat for species dependent on the existing natural flow regime of the stream. As evidenced in the "Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its Sources" adopted by New York City for the protection of its source waters in the Delaware River watershed that flows to the City's reservoirs, one of three main causes of degradation and contamination to the City's source waters is "Urban, suburban, rural, mining,

silvicultural and agricultural land use practices that result in nonpoint source runoff of pollution and/or in adverse changes in the natural rate at which water flows into and through a delineated drainage basin". (Final Regulations, page 2)

Therefore, water flows must be analyzed as part of EPA's study. Changes in volume of flow as well as the natural variation and seasonal changes to a stream's regime directly impacts aquatic life - biota, fish, insects, etc. - as well as wildlife and flora and fauna populations that have adapted to natural stream conditions. Additionally, stream morphology is impacted by changes in flow, impacting stream life, downstream volume and rate of flow, and water quality. Withdrawals can also impact groundwater and aquifer recharge and base flow quality conditions of hydrologically connected surface waters and water-dependent features such as wetlands and verbal pools. Streamside shallow groundwater conditions can also be impacted. These hydrologically based and flow regime changes need to be evaluated and considered in water acquisition studies by EPA.

Impacts of Well Construction

As detailed in our letter of February 25, 2011, the impacts of vertical well construction as well as associated infrastructure cannot be discounted as a significant cause of drinking water quality degradation, particularly given the scale on which intensive gas development will alter the natural landscape, causing erosion, sedimentation, and stormwater issues on a large scale.

Best Management Practices for erosion and sedimentation control for pad development should also be reviewed by the EPA, since sediment pollution can severely affect benthic macroinvertebrates living in the stream and eliminate the habitat they need to survive by consolidating riffle habitats. Macroinvertebrates help filter out nutrients and other pollutants that directly affect the drinking water quality downstream. As richness and diversity of EPT (Ephemeroptera-Plecoptera-trichoptera species) are lost within the benthic community, so are the benefits they provide to drinking water downstream. As Dr. David Velinsky of the Academy of Natural Sciences has pointed out, this could create the need for more treatment procedures for drinking water downstream.

In the Delaware River Watershed, drilling is proposed for the most diverse headwater streams that remain in our Watershed and therefore, is a great potential threat to the diversity that sustains our clean drinking water downstream where benthic life may already be less diverse due to historic development and impacts from stormwater and other land use changes.

The EPA should consider and track waivers and exemptions records and the frequency of these exemptions with the state permitting process for Oil & Gas. For example, state regulations may be put in place to include floodplain protections or setbacks from wetlands, but in reality, waivers may be applied for by the industry that would put these industrial activities in sensitive and unstable habitats that could affect drinking water.

Chemical Mixing

EPA appropriately proposes to study the hazards of various materials used, or potentially used, in hydraulic fracturing projects. EPA should expand this study to evaluate the full life cycle of water used at a well: drilling fluids, completion and fracturing fluids, and produced waters. Water used in each step of the process typically contains different added and naturally occurring water pollutants. EPA should attempt to understand the nature of how each fluid changes composition in use. This study would allow EPA to develop or optimize test methods to detect trace concentrations of potentially toxic or other pollutants in these streams. Current SW-846 analytical data may not provide the requisite sensitivity to detect materials known or suspected to be in fracturing or produced water. Matrix interferences from the clays typically found in drilling mud may complicate evaluate of toxic materials in drilling muds.

EPA should consider both acute and chronic risks in each class of aqueous streams generated during well drilling and production. Some of the materials identified in various water studies, including n-hexane, tetrachloroethylene, and naturally occurring radioactive materials (NORM) can exhibit toxic effects at very dilute concentrations. EPA should perform comprehensive analytical evaluations in several samples of produced and generated fluids, using the most sensitive analytical methods available, to determine what trace constituents may cause human health or other pollution harms.

EPA should then take this data and evaluate treatability of all constituents known or suspected to be contained in these fluids. Where current data exists, EPA could rely on such data. However, in some cases trade secret or other trace compounds could cause substantial potable water supply risks should they reach drinking water or surface water supplies.

In this proposed study area, EPA is missing a major opportunity to evaluate the actual need to use many very toxic materials in fracturing water. Some constituents are not expressly needed in this service. Operators, if requested, should be able to identify a variety of less toxic alternatives to the current additives practices.

EPA appropriately proposes to study spills that potentially impact drinking water quality. EPA should also collect data on well construction issues that negatively affect drinking water supplies. EPA should also identify and track best management practices (BMPs) used by drillers and fracturing contractors to determine if truly best practices are routinely being followed. Following existing state law may or may not adequately protect water supplies.

EPA should further evaluate flowback and produced water chemistry to determine if the dissolved materials in such water significantly change based on when the water is produced. Similarly, EPA should consider how to discern what constituents in produced water occur from surface activities, and which constituents naturally occur in-situ. EPA should also integrate information from wellbore and fracturing failure into this study. The

fate and transport of produced water, especially relating to wellbore or formation failure, will provide EPA with critical insight concerning future regulation of this industry.

As stated in our letter of February 25, 2011, EPA's study must also take into account chemicals that are neither naturally occurring nor used in the drilling or fracturing processes but that are created via interactions with these two classes of substances. We point to the example of 4 Nitroquinoline 1-oxide (4NQO), a powerful carcinogen that has been identified in wastewater produced by natural gas drilling. This chemical compound is not a drilling or hydraulic fracturing additive and it is also not found naturally in the geologic formations that produce flowback water during the stimulation process. Apparently, it is formed through interaction of the chemicals that are present in these fluids. This is one example, but there are potentially more such compounds that should be identified and addressed through EPA's study.

Injection

The proposed work plan will identify critical issues associated with fluid injection during fracturing operations. The proposed well failure analysis for known well failures will assist EPA in future rulemaking efforts. However, EPA should also study a control group of wells not believed to have failed to establish both if these wells exhibit adequate structural integrity and to provide as a control basis for the failed well study. The differences between a failed cement job and a successful well job can be subtle, which may only be determined by conducting cement bond logs on failed and control wells. For example, if the surface casing is offset in the wellbore by an inch or less, the cement fastening the surface casing into the wellbore may not adequately isolate potable water supply from fracturing fluids used during well completion. EPA should use statistical control methods to inform this analysis.

EPA should also review other pathways that may cause groundwater contamination. For instance, if a service company overpressures a formation during the fracturing process, the fracture may propagate beyond the design fracture location. EPA should study overfracturing and determine if overfracturing may affect overburden formations, up to and including potable water bearing formations. EPA should also review any relationship between high fracturing pressure and cement stability. EPA should review the cement strength used for surface casing cementing and final production casing cement projects, to determine if the junction between the surface casing and the production casing may be a cause of potential well failure. If fracture injection pressures exceed the maximum compression pressure that the cement may withstand, the cement, properly placed into a well, could still fail.

EPA should also review the presence or absence of coal seams or other soft formations that may occur near potable water formations and/or near the bottom of the surface casing. Soft formations like coal seams may be more difficult to seal during cementing operations than typical sandstones, limestones, and shales. EPA should also review other potential causes of formation breach, such as abandoned or plugged wells or other wells within one to two miles of locations where potable water supplies may have

been compromised. By conducting a comprehensive review of causes of potential drinking water contamination, EPA can advance the understanding of how shale gas drilling relates to groundwater contamination.

In reviewing mechanical integrity, EPA should review all downhole equipment, including casing materials of construction, any plugs used during drilling and casing installation, and any other downhole equipment. EPA should also review how various permitting authorities authorizing drilling determine the lowest potable water bearing formation to validate that current surface casing practices are designed to protect all potable groundwater resources.

EPA appropriately identifies degradation products of fracturing fluid components as a study goal. EPA also appropriately proposes to study the water contaminants carried out of the fractured formation during fracturing. EPA also proposes to begin the study of trace water contaminants in fracture water. However, EPA should review the ability of the current wastewater analytical methods to detect trace amounts of potentially toxic fracturing additives and in-situ contributors to fracturing water contamination. Method development takes significant planning and design time, and EPA should identify method development needs as soon as possible. The sooner EPA evaluates the toxicity of naturally occurring and fracturing additive water contaminants, the more valuable EPA's work will become.

Flowback

EPA appropriately proposes to review spill and pit leakage contributions to water contamination issues associated with hydraulic fracturing. EPA should review all available hydraulic fracturing models, well logs, and seismic data to determine where conduits between well fluids and groundwater resources may exist.

EPA should also evaluate water quality data from direct discharges and from indirect dischargers who route flowback to wastewater treatment facilities. The existence of treatment facilities may not indicate adequate wastewater treatment. Treatability is a critical element of mitigating pollution from flowback waters, especially in areas where operators rely on wastewater treatment plants not necessarily designed to manage these industrial wastewater streams. To better understand this issue, EPA should collect and analyze information concerning how flowback waters may be treated, and how much of the many pollutants are actually removed by wastewater treatment plants currently used to treat flowback water.

EPA has also conducted research that shows that aquatic invertebrates such as mayflies, for example, appear very susceptible to increased total dissolved solids. If gas drilling flowback water reaches streams through accidents and spills, large die offs of benthic macroinvertebrates could occur (US EPA Region 3 Freshwater Biology Team). Even in the absence of other stressors (pH, organic enrichment, habitat quality, metals) TDS/conductivity significantly explains impairment of aquatic life use. As stated above, the impairment of healthy ecosystems with flourishing aquatic invertebrate communities

may degrade drinking water quality and create the need for additional water treatment to bring waters back up to drinking quality standards.

Wastewater Treatment and Disposal

EPA proposes to use a chloride balance to evaluate salinity in produced and flowback waters. EPA should further study related salts, such as bromides, sulfates, fluorides, and other salts that may exhibit effluent toxicity upon discharge. EPA should also propose a study of less toxic alternative materials that operators may use to accomplish well completion goals while minimizing environmental risks. Less toxic drilling fluids, completion fluids, and fracturing fluids are likely available for use in drilling and hydraulic fracturing. EPA should take this opportunity to study the need for toxic additives such as perchloroethylene, n-hexane, and benzene in fracturing fluid systems. Further study will likely identify less toxic suitable additives. By delaying requiring less toxic alternatives in drilling and well completion, EPA unduly risks contaminating groundwater supplies with materials not needed to conduct drilling operations.

EPA also should study the fate of drilling cuttings on water quality. Drilling cuttings may be contaminated with a wide variety of added or naturally occurring wastewater contaminants that may leach out from Subtitle D landfills and onsite burial disposal facilities. EPA should study contamination levels in drilling cuttings and disposed drilling fluids, and evaluate what steps may be needed to isolate potential contaminants from groundwater and surface water supplies.

Finally, as stated at the beginning of this letter, it is critically important that the EPA's study conduct a detailed analysis of all waters produced by drilling and hydraulic fracturing for contamination with NORM and a detailed analysis of the fate of such contaminated waters and their impacts on sources of drinking water.

Thank you for the further opportunity to comment on EPA's draft study.

Very truly yours,

**Jane P.
Davenport**

Digitally signed by Jane P. Davenport
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February 24, 2011

Ms. Carol Collier, Executive Director
Commission Members
Delaware River Basin Commission
P.O. Box 7360
West Trenton, NJ 08628

Re: Natural Gas Development Regulations

Dear Director Collier and Commission Members,

We, the undersigned members of the New Jersey Legislature, ask you to delay the adoption of regulations on natural gas development in the Delaware River Basin until the scientific studies being compiled by the US Environmental Protection Agency (EPA) and the Delaware River Basin Commission (DRBC) are completed, and until strong, comprehensive federal rules on natural gas development are in place. The Delaware River Basin provides clean drinking water to approximately 3 million people and key industries in New Jersey, and hasty action to approve natural gas development in the Delaware River Basin would put this precious natural resource at risk of serious contamination.

Preventing degradation of the Delaware River Basin by natural gas development is essential to protecting New Jersey's water supply. The exceptional quality of the Upper Delaware River's headwaters sustains the drinking water for 15 million people across four states.

The drilling technique to be used in the Delaware River Basin, a practice known as hydraulic fracturing, has been found to use a variety of contaminating chemicals and materials that can suddenly and in an uncontrolled manner be introduced into the surface waters and ground water of the State. The companies engaging in the use of this drilling technique have been less than forthcoming in revealing the "cocktail" of chemicals, and we are concerned that they can be introduced into these waters. In June 2010, there occurred an incident of an uncontrolled release of many gallons of contaminated water and natural gas from a hydraulic fracturing drill site in Clearfield County, Pennsylvania, and we fear that other such accidents are likely to occur.

The regulations that the DRBC adopts regarding natural gas development will indelibly impact New Jersey's water resources, public health, and the environment. It is essential that the

DRBC delay the adoption of natural gas development regulations in the Basin until the environmental studies currently being developed by the EPA and DRBC are completed and the potential primary, secondary, and cumulative impacts of hydraulic fracturing on the watershed are assessed. Taking action to adopt natural gas development rules now, before the scientific studies are completed and impacts are known, is premature and may jeopardize New Jersey's water supply.

Our representatives on the DRBC need to protect New Jersey's interests and ensure that the state's drinking water and its economy are not placed at risk by adopting natural gas rules without sound science.

Sincerely,

Senator Bob Gordon
Assemblywoman Connie Wagner
Senate President Stephen M. Sweeney
Senate Majority Leader Barbara Buono
Senator Diane B. Allen, Deputy Minority Leader
Senator Bob Smith, Chair of the Senate Environment and Energy Committee
Senator Loretta Weinberg
Senator Joseph F. Vitale
Senator Donald Norcross
Senator Christopher Bateman, Deputy Conference Leader
Senator Paul Sarlo, Deputy Majority Leader
Senator Linda Greenstein
Senator Sandra B. Cunningham, Majority Whip
Senator Fred H. Madden Jr.
Senator Nia Gill, Senate President Pro Tempore

Assemblyman Reed Gusciora, Deputy Majority Leader
Assemblywoman Joan M. Voss, Deputy Majority Leader
Assemblywoman Celeste Riley
Assemblyman John J. Burzichelli, Deputy Speaker
Assemblyman John McKeon, Chair of the Assembly Environment and Solid Waste Committee
Assemblyman Peter J. Barnes III, Majority Whip
Assemblywoman Linda Stender
Assemblywoman Joan Quigley, Majority Conference Leader
Assemblyman Charles S. Mainor
Assemblywoman Valerie Vainieri Huttle
Assemblyman Upendra Chivukula, Deputy Speaker
Assemblyman Craig J. Coughlin
Assemblywoman Pamela R. Lampitt
Assemblywoman Caridad Rodriguez
Assemblyman Gordon M. Johnson, Deputy Conference Leader
Assemblywoman Bonnie Watson-Coleman
Assemblyman Angel Fuentes

Assemblyman Gilbert L. Wilson
Assemblyman Daniel R. Benson
Assemblyman Herb Conaway Jr.
Assemblyman Jack Connors, Deputy Speaker
Assemblyman Ralph R. Caputo
Assemblywoman Annette Quijano
Assemblyman Vincent Prieto, Deputy Majority Whip

FOR THE RECORD

Date: March 1, 2011

Testimony submitted by: Hilary Baum 5454 Palisade Ave, Bronx 10471
hilarybaum@baumforum.org

I would like to thank the Environmental Protection Committee, especially Council Member Oliver Koppell who represents my district, for the opportunity to present this testimony.

My name is Hilary Baum. I am a resident of the Bronx, a founding board member of Food Systems Network NYC, a member of the Bronx Food and Sustainability Coalition, and director of Baum Forum, a not-for-profit producer of public programs on critical food and farming issues including an upcoming collaborative conference on food, the green economy and fracking May 16th.

I have been involved nationally and locally in the development of farmers' and public markets, agricultural marketing programs, food businesses and community supported agriculture. I see my life's work in part as building the urban rural connection around preserving healthy food systems and protecting the environment.

In my own North West Bronx neighborhood of Riverdale, Marble Hill and Kingsbridge Heights, Council Member Koppell's neighborhood, we work collaboratively with Community Board 8 and several local non-profits to facilitate the distribution by youth and seniors of fresh seasonal produce from farms within New York's regional foodshed. At each of 3 GrowNYC Youth Markets, low income shoppers can use EBT benefits and coupons in addition to cash to purchase what we all regard as healthy, beautiful food. In addition, 16 years ago I helped to establish the Riverdale Hawthorne Valley csa that 4 years ago became year round and consists of a network of close to 2 dozen NYS farm families practicing sustainable agriculture and 100 local households.

Around the same time, my organization operated farmers' markets in the Bronx and East Harlem, bringing fresh produce from regional farmers to communities that were seriously underserved, providing not only healthy fresh ingredients but a celebration of the seasons and sense of security that we know where this food is coming from, who produced it and how. Many of the tremendous gains in bringing regionally produced food to neighborhoods of all incomes could be at risk right now with the probable pollution by the hydrofracking process as documented in Sunday's New York Times.

There has never been a more urgent time to recognize and safeguard the interdependence of New York's urban and rural communities and to collaborate with the regional and national campaigns to ban hydrofracking. It is known that the hydro-fracking process creates huge pools of toxic waste that has killed animals and vegetation, and that wastewater with toxins is being dumped in rivers and streams where Holstein dairy cows with names, where the Catskills beloved trout and other wild animals take nourishment.

How can we expect to continue to nourish ourselves and our children in urban and rural communities with healthy food, clean air and safe drinking water if we don't stop hydrofracking right now??

I urge the City Council as a body and Council members as caring parents and good citizens to take whatever steps they can to insist that protecting everyone's health and the integrity of our entire ecosystem be our collective priority. We all have to care that if New York and Pennsylvania don't stop this madness now the drinking water of more than 15 million people will be at risk.

The momentum is building for our elected officials to join us in this fight. Please take action now. We need an immediate ~~regional~~ moratorium.

No more hydrofracking now!



The City of New York

Manhattan Community Board 1

Julie Menin CHAIRPERSON | Noah Pfefferblit DISTRICT MANAGER

The New York City Council Committee on Environmental Protection
Oversight Hearing on

The Continued Examination of Hydraulic Fracturing including
The New York State Department of Environmental Conservation (NYSDEC)
And Delaware River Basin Commission (DRBC)

Testimony by Jeff Galloway,
Planning & Community Infrastructure Committee Chair,
Manhattan Community Board 1

Tuesday, March 1, 2011 at 1 p.m.
49-51 Chambers Street

Good morning. I am Jeff Galloway, Chair of Manhattan Community Board 1's Planning & Community Infrastructure Committee. Thank you, Chair James F. Gennaro and Committee Members for the opportunity to testify on behalf of the Community Board regarding the use of hydraulic fracturing to drill for natural gas in New York State.

Our Community Board has passed numerous resolutions regarding this issue. On May 26, 2009, we first passed a resolution calling on the New York State Department of Environmental Conservation (NYSDEC) to prohibit the use of hydraulic fracturing in the New York City watershed. Our concern then and now was that hydraulic fracturing involves the injection of carcinogenic chemicals into the earth at extreme pressures. The composition of these chemicals is not publically disclosed, and there has not yet been sufficient public review of the effects these chemicals can have on public drinking water. Without more information, we are greatly concerned that hydraulic fracturing in the New York watershed poses a serious risk of contamination to drinking water of millions of residents in the greater New York City area.

A New York State legislature bill (A08748 and S6244 in the Assembly and Senate, respectively) co-sponsored by State Senator Daniel Squadron was introduced with the aim of amending Environmental Conservation Law to protect the New York City watershed by prohibiting drilling for natural gas within five miles of the watershed boundaries and in the Delaware River watershed, and by increasing regulation of hydraulic fracturing in general. Community Board 1 passed a resolution strongly in support of the passage of this bill on November 24, 2009. At the time, we recommended broadening the legislation to include (*italics denote suggested amendments*): "Natural gas drillers, *gas aggregators and gas companies* are responsible for *any and all damages, including, but not limited to property and environmental damage* which occurs in the process of drilling *and transporting* natural gas. DEC *shall* require financial security to ensure that landowners are protected from any contingent liability." We still strongly believe the passage of such a law is essential to the protection of one of New York State's most vital natural resources, its clean, gravity-fed, drinking water.

The U.S. Environmental Protection Agency (EPA) Region 2 submitted comments the day before the comment period ended on December 30, 2009. The comments stated the need for the dSGEIS report to include a broader consideration of the impacts of hydraulic fracturing projects significantly proximal to the New York City watershed. At the time, the EPA also suggested that the New York State Public Service Commission (PSC) and the New York State Department of Health (DOH) needed to become more involved in evaluating the public safety implications of hydraulic fracturing. The EPA expressed strong reservations about the potential impacts the natural gas extraction process could have on human health and the environment.

In response to the EPA's comments we passed resolutions on February 23, 2010 and on April 27, 2010 calling for the Governor and the DEC to withdraw the dSGEIS. We feel the DEC still has yet to adequately address the safety issues associated with hydraulic fracturing, and we are strongly disappointed that hydraulic fracturing is being considered without properly addressing the safety of hydraulic fracturing.

One of the main concerns has been that hydraulic fracturing can generate millions of gallons of carcinogenic wastewater. This past weekend, the *New York Times* reported ("Regulation Lax as Gas Wells' Tainted Water Hits Rivers," *New York Times*, February 26, 2011) that internal EPA documents now show that the dangers associated with contamination are real, and perhaps even greater than previously thought. The reporting shows that many critical issues were excluded from the scope of the SGEIS, most notably how to manage the massive quantities of contaminated gas drilling wastewater.

According to the documents, studies (some previously confidential) by both the EPA and by the drilling industry conclude that wastewater from hydrofracking in Pennsylvania may be more radioactive than the treatment plants can handle and that the drilling waste now threatens Pennsylvania's public drinking water. And because drilling in Pennsylvania has been generating more waste than Pennsylvania's water treatment plants have the capacity to treat, some of the waste has been trucked to New York State, including to plants that discharge into Southern Cayuga Lake near Ithaca and into Owasco Outlet near Auburn.

Manhattan Community Board 1 has strongly advocated for green energy solutions, environmentally friendly construction and living, and for decreased reliance on fuels in our own district that most significantly contribute to pollution. At the same time, we recognize that the long-run interests of the economy require extensive fossil-fuel extraction. And it is true that in the coming decades, the country and the city will need diverse sources of energy. However, our pursuit of energy must not come at the cost of public health and safety. There is so much more that must be established about (1) the likelihood of fluid spills (2) the difficulty of protecting against and compensating for spills, and (3) the emphasis on a high level of driller self-regulation before we can possibly accept the risk of horizontal drilling in protected areas. For now, it is clear that government regulations have not kept pace with the development of hydrofracking and that the scope of the dSGEIS should be expanded to include waste water concerns, as well as other fracking hazards that only recently came to light.

Community participation is an important part of reviewing hydrofracking. We ask you, members of the Council, Governor Andrew Cuomo, EPA Regional Administrator Judith Enck

and DEC Commissioner Nominee Joseph Martens to support the establishment of a Citizens and Technical Advisory Committee to assist DEC to revise the dSGEIS. As a community that has been rebuilding after the terrorist attacks of September 11, we have known the impacts of toxic contamination firsthand for the past decade, and we do not want it to happen again.

One of the other lessons learned from the contamination due to 9/11 was the need to consider the cumulative impacts of toxic exposure on public health. Therefore, we ask you to consider updating DEC's 1992 GEIS to require individual EIS reviews for horizontal hydrofracturing permits for hydrofracturing, deepwell injection and wastewater treatment. .

In addition, to make sure that public concerns are addressed, we ask that there be at least a 30 days public comment period to identify additional issues to be included in the dSGEIS scope.

Water that is clean, safe and affordable is in the interest of every New Yorker. New York City is one of the few world-class cities that does not get its water from the nearest river; the city water system is one of mankind's great achievements in civil engineering, turning rainwater and gravity into the very lifeblood of our metropolis. Hydrofracking in the NYC watershed is an unnecessary, unconscionable risk.

Thank you for the opportunity to testify today.



**TESTIMONY OF
THE NEW YORK PUBLIC INTEREST RESEARCH GROUP FUND (NYPIRG)
BEFORE THE ENVIRONMENTAL PROTECTION COMMITTEE
OF THE NEW YORK CITY COUNCIL ON
THE CONTINUED EXAMINATION OF HYDRAULIC FRACTURING INCLUDING THE
NYSDEC AND DRBC PROCESSES
NEW YORK, NEW YORK
MARCH 1, 2011**

Good afternoon, my name is Patrick Krug. I am the Chairperson of NYPIRG's Board of Directors, and I'm here today to deliver testimony prepared by Cathleen Breen, who is our Watershed Protection Coordinator. The New York Public Interest Research Group (NYPIRG) has long been active in protecting New York City's drinking water supply and we commend the City Council for holding this hearing on an issue that poses a grave threat to the continued protection of New York City's prize-winning drinking water: natural gas drilling in the New York City Watershed.

New York City's unfiltered water supply provides more than 1 billion gallons of clean drinking water daily to more than 9 million New Yorkers—half the state's population. While we are fortunate to possess what is arguably the greatest metropolitan water supply system in the world, keeping it safe requires constant vigilance.

The federal Safe Drinking Water Act (SDWA) requires that all drinking water taken from surface water sources, such as lakes, streams and reservoirs, be filtered to remove microbial contaminants. However, if the water supplier can demonstrate it meets strict water quality, operational and watershed control criteria, the SDWA allows the Environmental Protection Agency (EPA) to grant a filtration waiver—a Filtration Avoidance Determination (FAD).

In 1997, New York State, New York City, EPA, upstate communities and environmental organizations, including NYPIRG, joined together to sign the 1997 Watershed Memorandum of Agreement (MOA) to protect New York City's unfiltered Catskill/Delaware drinking water supply. The MOA represented a comprehensive effort to protect and preserve New York City's high-quality water supply while preserving and enhancing the economic vitality and social character of the communities within the watershed. Through comprehensive watershed protection efforts, the City's \$1.5 billion investment to date in watershed protection has paid

off: New York City's drinking water has remained clean and the city has been able to avoid filtration thus far.

If the City fails to demonstrate that it can successfully protect the system from pollution, federal regulators will likely order City officials to build the filtration plant. The practical consequences of that decision will be that water rates will rise threatening tens of thousands of housing units in the City's poorest neighborhoods; and, funds will be drained from police, infrastructure, health care, culture, transportation, fire, sewage and other City services. Worst of all, there is no guarantee that a filtration plant will preserve public health.

The MOA and the FAD did not guarantee that our water would remain safe. Rather, it began years of hard work and vigilance that, we believe, have been essential to protecting our drinking water. Granted there have been threats over the years that have challenged the City's ability to continue to meet filtration waiver requirements; however, never before has there been such a threat to the integrity of our water supply as the threat of natural gas drilling in the NYC Watershed. To allow such an intense industrial activity poses significant threats to public health and continued filtration waivers.

The interest in natural gas drilling in the Marcellus Shale formation is a cause for concern, especially in the Catskill and Delaware watersheds within the Catskill Mountains. The method to extract the gas is high-volume horizontal hydrofracturing, or "hydrofracking," carries a potentially huge environmental price tag. The process involves the high-pressure injection of millions of gallons of water, sand and toxic chemicals into horizontal wells to fracture the shale layer so trapped gas can escape. Where that water comes from and what the drilling companies do with it after it is recovered, now loaded with chemicals and other contaminants, is a serious concern.

New York State Response

Unfortunately, the draft Supplemental Generic Environmental Impact Statement (dSGEIS) released by the New York State Department of Environmental Conservation (DEC) did not provide the needed assurances that our water supply will be safe. Through Executive Order, the public will have another opportunity to comment; however, before the dSGEIS is sent back to the public, the state must:

- broaden the scope of study;
- make regulations rather than permit conditions;
- address cumulative impacts;
- ensure the protection of groundwater and surface water;
- address where the enormous amount of water will come from;
- fully disclose all chemicals;

- ensure proper disposal of wastewater now laden with toxic chemicals and radioactive material, and
- have adequate staffing and resources at DEC.

Once the dSGEIS is updated and re-released, we urge the state to hold new public hearings and give the public sufficient time to comment.

Delaware River Basin Commission

The Delaware River Basin Commission (DRBC) was formed in 1961 by the signatory parties to the Delaware River Basin Compact to share the responsibility of managing the water resources of the Basin. The members of the DRBC are the four basin state governors, including New York, and a federal representative; they are charged with protecting the water supply for 15 million people who rely on the Delaware River for drinking water, including New York City.

Water withdrawals in the NY City Delaware watershed are subject to review and approval processes established by the DRBC. Despite objections from many, including New York State and New York City as well as numerous environmental and citizen groups, the DRBC has decided to issue draft regulations for hydrofracking without first the benefit of a comprehensive study of the potential impacts. Even former Governor David Paterson sent a letter to the DRBC asking that the commission halt its efforts to regulate gas drilling and water withdrawals from the Delaware River watershed until New York produces its draft environmental impact statement on gas drilling on the Marcellus Shale. He pointed out that the DRBC would not have the advantage of the full investigations and public deliberations taking place in New York.

Unfortunately, the DRBC opted to fast track the process instead of undertaking a true environmental review that included sound scientific analysis. The draft regulations, if adopted, would impose different rules for identical natural gas development in different watersheds, including different watersheds within the same state.

Among the problems is the DRBC's draft regulations do not address cumulative impacts, do not restrict chemical usage, do not restrict diesel fuel, and do not provide wastewater standards. Simply put, the draft regulations do not protect water quality and instead rely on industry self-regulation.

In conclusion, this is the one of the most important issues facing New York and we must make sure all New Yorkers are protected from the dangers of horizontal hydrofracking. Thank you for providing me the opportunity to testify before you today.

For The Record

Delaware River Basin Commission Gas Drilling Hearings March 1st, 2011

Gusti Bogok

130 W16th Street #41

New York, NY 10011

The recent New York Times article by Ian Urbina, published on Saturday, February 26th, 2011 provides compelling testimony as to the reckless and irresponsible behavior on the part of the gas industry and public officials with respect to the disposal and treatment of gas drilling wastewater in Pennsylvania. Mr. Urbina based his article on previously unpublished EPA studies, a confidential industry study, and other official sources, combing through 30, 000 pages over several months. His findings include:

“More than 1.3 billion gallons of wastewater was produced by Pennsylvania wells over the past three years, far more than has been previously disclosed. Most of this water < enough to cover Manhattan in three inches < was sent to treatment plants not equipped to remove many of the toxic materials in drilling waste.

At least 12 sewage treatment plants in three states accepted gas industry wastewater and discharged waste that was only partly treated into rivers, lakes and streams.

Of more than 179 wells producing wastewater with high levels of radiation, at least 116 reported levels of radium or other radioactive materials 100 times as high as the levels set by federal drinking-water standards. At least 15 wells produced wastewater carrying more than 1,000 times the amount of radioactive elements considered acceptable.

Results came from field surveys conducted by state and federal regulators, year-end reports filed by drilling companies and state-ordered tests of some public treatment plants. Most of the tests measured drilling wastewater for radium or for ³gross alpha² radiation, which typically comes from radium, uranium and other elements.

Industry officials say they are not concerned.”

Given the New York Time’s shocking expose, it is imperative that the DRBC suspend its current rulemaking process and impose a moratorium on all gas drilling projects in the Delaware River Basin until exhaustive studies are complete, including the current EPA study, the NYSDEC SGEIS, and a DRBC’s assessment of cumulative impacts of gas drilling. The burden of proof should be on the natural gas industry to demonstrate that the

process is safe and will not harm water quality and public health. The DRBC has a statutory obligation to protect the water quality for the 15 million citizens that rely upon the Delaware River, its tributaries, and its groundwater for drinking water. The Commission should impose a strict burden on the drilling companies to demonstrate that these activities will not cause harm. Finally, the DRBC has failed to address key issues: the fact that gas drilling waste has dramatically increased radioactivity levels far beyond so-called safe levels for drinking water and that drinking water treatment facilities have not even been asked to test for radioactivity since 2006. This level of irresponsibility endangers not only our health, but our very lives, the ecosystems we depend upon to sustain us and the survival of generations to come.

Statement for New York City Council Hearing on DRBC Proposed Regulations of
Hydraulic Fracturing

March 1, 2011

Mary Ellen Cronly

I AM TESTIFYING TO URGE THAT THE DRBC PRESERVE OUR
WATER FOR OUR CHILDREN AND THOSE WHO COME AFTER US.

PURE, SAFE WATER IS A TREASURE WHICH IS NOT AVAILABLE
TO BILLIONS OF PEOPLE AROUND THE WORLD. EVERY DAY 1000
CHILDREN WORLDWIDE DIE BECAUSE OF UNSAFE DRINKING
WATER. IN THE UNITED STATES OUR PURE SAFE WATER IS THE
ENVY OF THE WORLD.

THE DRBC'S JOB IS TO PROTECT WATER QUALITY, NOT TO
INDUSTRIALIZE THE WATER BASIN. THIS RUSH TO PROMULGATE
REGULATION IS PANDERING TO THE GAS INDUSTRY.
INDUSTRYS GOAL IS TO REAP HUGE PROFITS WITHOUT ANY
REGARD TO OUR PRECIOUS WATER AND ENVIRONMENT. AFTER
THEY HAVE RUINED OUR WATER SUPPLY, THEY WILL MAKE
MORE BILLIONS SELLING US "PURIFIED" WATER.

THE PROPOSED REGULATIONS DO NOT REGULATE THE TONS OF
TOXIC CHEMICALS THAT GAS COMPANIES WILL PUMP INTO THE
GROUND. THE REGULATIONS HAVE NOT CONSIDERED THE

CUMULATIVE IMPACT OF THOUSANDS OF HYDROFRACKING
WELLS, SPILLS, INDUSTRIALIZATION, ETC.

DRBC SHOULD NOT ISSUE REGULATIONS UNTIL IT IS PROVEN
THAT GAS DRILLING CAN BE DONE WITHOUT DAMAGING OUR
WATER SUPPLY AND ENVIRONMENT. THAT WON'T HAPPEN FOR
A VERY LONG TIME, IF EVER.

THE CORPORATIONS SAID DRILLING IN THE GULF WAS SAFE.
REGULATIONS THAT WERE SUPPOSED TO PROTECT THE GULF
WERE NOT ENFORCED. HOW ARE THE DRBC'S REGULATIONS
GOING TO BE ENFORCED? OUR GOVERNMENTS KEEP CUTTING
BACK ON ENFORCEMENT AGENCIES TO THE POINT WHERE THEY
ARE SO INEFFECTIVE AS TO BE A JOKE.

HYDROFRACKING MUST BE BANNED BEFORE IT CAUSES A GULF
DISASTER, ONLY MAGNIFIED ON AN EXPONENTIAL SCALE.

Steven Blumenfeld
steven.blumenfeld@yale.edu; steven.e.blumenfeld@gmail.com

Testimony before the New York City Council
Committee on Environmental Protection

Oversight – The Continued Examination of Hydraulic Fracturing
Including the NYSDEC and DRBC Processes

March 1, 2011

Thank you for the opportunity to testify. My name is Steven Blumenfeld, and while I am not testifying on behalf of anyone other than myself, my background on these issues stems from previous work experience with the U.S. Department of State and the United Nations Convention on Biological Diversity, respectively. While working for the Convention on Biological Diversity, I authored a Technical Series document published last year by the UN on the linkages between water, wetlands, and forests (which highlighted the success of the New York City Watershed). This past summer, I initiated efforts by the State Department's Office of Environmental Policy to explore the environmental considerations of hydraulic fracturing for shale gas after the announcement of the Global Shale Gas Initiative. I am currently completing my studies in Political Science at Yale University, but after watching the issues of hydraulic fracturing and watershed management converge here in the city I was born in, I felt compelled to come down here today and testify about these issues that I have approached professionally, academically, and now personally.

I would like to outline three main points in my testimony today: **(1) The gaps in federal regulation of the hydraulic fracturing process place a tremendous burden on state and local officials who have not yet taken the steps necessary to adequately protect the public from harm; (2) the current management scheme for the New York City Watershed leaves this vital resource dangerously vulnerable to unanticipated economic competitors (such as natural gas); and (3) popularized claims about the historical safety and climate benefits of shale gas are categorically false.** I hope these points can help guide regulators at the city, state, and regional levels to adapt the policies necessary to sustain a safe and healthy living environment for all New Yorkers.

The Energy Policy Act passed by Congress in 2005 exempted the process of hydraulic fracturing from the Safe Drinking Water Act, which allowed drilling companies to popularize processes that involve the underground injection of toxic and carcinogenic substances used in the hydraulic fracturing process. This greatly increases the stakes of the already vital job of state and local regulators in ensuring that drilling practices do not pose a risk to human health or to the environment. **Adequate regulation must cover the full lifecycle of the hydraulic fracturing process—from water withdrawals to waste disposal—based on peer-reviewed scientific studies. Given the lack of such a comprehensive study, the current moratorium on high-volume hydraulic fracturing combined with horizontal drilling put into force by Executive Order No. 41 must be extended in both scope and time-frame to effectively prevent any form of hydraulic fracturing until the risks can be properly understood and managed.**

The actions that New York City has taken to protect its water at its source through innovative public-private partnerships has made it an internationally recognized exemplar of watershed management and a textbook example of payment for ecosystem services schemes. While New York City and New York State own a combined 35% of the watershed land, private landowners have been incentivized to work with the Watershed Agricultural Council and can voluntarily enter into conservation easements and other management plans to preserve the New York City Watershed—economically benefiting both upstream and downstream participants. Such a plan, however, neglects the potential of a new and powerful economic driver to incentivize action that may harm the watershed. Natural gas from shale bedrock is currently playing this dangerous role as drilling companies are offering landowners much larger financial incentives to stop protecting the watershed and explore their shale gas potential instead. **While we must respect the rights of upstate landowners to manage their property as they choose, regulations must be in place to ensure that any actions taken on private land do not cause harm beyond the property boundary, including potential harm to the watershed.**

Finally, I feel the need to address two popularized claims about hydraulic fracturing for shale gas that are gross misrepresentations of the truth. First of all, despite industry claims that hydraulic fracturing is a decades-old process that has been proven time and time again, **the current drilling techniques and chemicals used are relatively new and demand further study as a result of concerns about the processes' potential impact on drinking water, human health, and the environment.** Making claims to the contrary is akin to stating that a new experimental surgery should be deemed safe since medical surgeries have been performed for centuries. Natural gas is also falsely touted as a cleaner “bridge fuel” that will address climate concerns and lead us into an era of renewable energy. While natural gas burns with half the carbon-intensity of coal, **higher energy use resulting from cheap and abundant natural gas would likely offset any carbon benefits (in the absence of a carbon price). Additionally, a rush of natural gas will only reinforce our path-dependency on conventional fossil fuels and will push back the economic viability of renewable energy for many years to come.**

I would like to thank the members of this Committee for your continued oversight of this crucial issue. The challenge of balancing environmental, energy, and economic considerations is not an easy one—especially in our current economic climate—but we must not exacerbate our problems by jeopardizing one the largest and most important unfiltered water supplies in the world. In the midst of much debate and uncertainty, I urge regulators at all levels to act with prudence and refrain from approving activity that could cause irreversible harm to our state. I hope that my points can help shed some light on the regulatory needs with regards to hydraulic fracturing, the potential for competing incentives with regards to our watershed, and the false claims that have been popularized about hydraulic fracturing for shale gas.

Thank you for your time, and I would be happy to answer any and all questions you may have. You can contact me via email at steven.blumenfeld@yale.edu or steven.e.blumenfeld@gmail.com.

Testimony of Lou Wright, given on March 1st at the Public Hearing regarding Hydraulic Fracture Drilling in the Delaware River Basin. Given on behalf of ReNew School, a student organization at The New School in New York City, New York.

I believe it was E.B. White, in "Sootfall and Fallout", who said that the only acceptable level of heavy metals in our country's soil is none at all. He was right - and while we sit here and quibble about the likelihood of contamination, or the level of contamination from hydrofracking, the fact remains - there HAS been contamination, and as an American citizen I would propose that we all have a right to no contamination whatsoever. Not unlikely contamination. Not low levels of contamination. No contamination.

But it's been happening all over the country. There have been sick families. There have been deaths and there have been blights. And now that the federal government has a chance to say "No" to these things, it can and must do so. If the Delaware River is protected from fracking, any river can be protected, and the government that we've elected can proudly say that it lived up to its promises - to protect the American people from harm and to help them prosper.

Many people who support fracking say to me "Your politics are all well and good, but you live in big-city New York. It's you people driving demand - you don't like the dirty drilling, but you won't let go of your hot water." Well I'm here today to say, on behalf of my colleagues and fellow students, that we don't need the gas. We're ready for a new energy economy, we're ready for lower energy demands, and we're living that change every day. We're not just here to say no to fracking - we're here to say no to more of the same old resource extraction story we've heard all along. We want new solutions and we're ready to help build them.

For the Record

Alison Dalton Smith

The lack of comprehensive hydrofracking regulation has forced impoverished citizens to make purely economic decisions that sacrifice their and others' health. The bowing to profit has brought an impending health crisis. Let's work together to make NYC the first city to stop it.

Statement for the NYC Council Environmental Protection Committee

March 1, 2011

I am Bonnie Loewenstein and I am a longtime Brooklyn resident. I am absolutely opposed to hydraulic fracking. It is up to the people who live in this watershed to demand that our state and federal government^m prevent this drilling technology from devastating our region as it has large areas of thirty-four states. This industry's motto is "profit, foreign sales, and the public be damned," so I applaud the Environmental Protection Committee's efforts to keep this evil scenario from playing out in our region.

As a key New York Times article revealed on Sunday, since 2005, when Mr. Cheney ensured that Halliburton's hydrofracking technology gained exemption from all of our landmark environmental laws, the gas wells have metastasized into the hundreds of thousands. Each one produces huge amounts of wastewater, most of which remains underground, where it flows far and unpredictably, horizontally and vertically. It is laden with chemicals that cause illness at dilutions measured in parts per trillion. The waste water that returns to the surface is dumped in rivers, and its carcinogenic compounds, otherwise deadly chemicals, radium, and uranium are filtered little or not at all by sewage plants downstream. Ground-level fracking wastes include natural gas itself or methane--a potent greenhouse gas. All told, fracking is not much more climate friendly than the worst climate villain, coal. It ~~also~~^{and permanently poisons} uses a colossal amount of fresh water during an era when potable water is ever more scarce. Fracking infrastructure and transportation pollute and destroy land and health in many ways. Only in the frackers' new reality is ~~also~~ natural gas a "bridge" fuel for

this century.

The federal and state governments have handed the industry the freedom to rape the public interest. The would-be regulators and their pals in the industry assault this nation's real economic, environmental and public health interests. The world reached Peak Oil around 2006. Instead of understanding that event as the start of an era in which the economics of dirty energy are entirely unsustainable, our government chose to subsidize extreme, new fossil fuel drilling technologies both at sea and on land. This choice gives gas developers a competitive advantage at public expense--even as they poison the public. I recently witnessed the tragedy and folly of Pennsylvania property owners vehemently asserting their right to earn income through fracking leases. Until it is too late, they ignore what they destroy in the bargain: their health, their water, their land, and the health of millions of people downstream. Destroying our country is not the way to free ourselves from dependence on foreign oil. Let us all demand sane energy policy: conservation and sound alternative energy technology.

March 1, 2011

To :Members of the New York City Council Environmental Protection Committee and
Fellow New Yorkers

From: Jean Gardner, Co- Organizer of the First City-Wide Coalition of 250 groups advocating
an Environmental Sound New York City (endorsed by Mayor David Dinkins);
Associate Professor of Social-Ecological History and Design, Parsons School of Design, The
New School University, 66 Fifth Avenue, New York, New York 10011

Re: Hydro-Fracking

Let me introduce myself. I co-organized the **First City-Wide Coalition of over 250 groups advocating an Environmental Sound New York City. It was endorsed by Mayor David Dinkins.**

I am calling your attention today to the fact that hydro-fracking is confronting us with fundamental threats to the very basis of our lives: threats to water, soil, air, and energy. And I am not exaggerating for effect!

Yes, we need energy. But our need for energy is not greater than our need for clean waters, fresh airs, living soils, nutritious foods, healthy bodies, and the vibrant earth.

How did we reach a time when we are faced with such a choice between life and death? The road is long and often hidden and the roadblocks many that brought us to this day, among them the energy bill contrived in secret by Vice-President Dick Cheney in 2005 that exempted energy companies from laws protecting the fundamental rights of all peoples to clean water, soil, air, and energy.

The source of this threat to our fundamental rights is the process of hydro-fracking for natural gas being used by energy companies throughout the United States and now spreading to Europe and beyond. The evidence mounts daily of the infractions to life that these companies practice with impunity.

New York City's moratorium on hydro-fracking is the first push-back against these threats to water, soil, air, and energy. Now other cities are joining us. We cannot stop with a ban on never drilling in our watershed. Water, soil, air, and energy do not recognize political boundaries. Degrading of these primary conditions for life anywhere affects all of us. Science has shown that we are one complex entity.

Say no to HYDRO-FRACKING NOW!


March 1, 2011

FOR THE RECORD

Testimony to the New York City Council on Hydraulic Fracturing

March 1st, 2011

Ann C. Seligman

acseligman@msas.net

First, thank you for holding these hearings, and for all you do to protect our water.

One of my biggest concerns about the idea of fracking in the NYC watershed (or anywhere) is the lack of regulation. Though the industry touts a change in technology as the reason for its huge recent expansion, equally important were the exemptions granted in the 2005 Energy Act: to the Clean Water Act, the Clean Air Act, the Clean Drinking Water Act and the Emergency Planning & Community Right-to-know Act. But even if these loopholes are closed, how will regulations be enforced? With funding for the DEC slashed, they just don't have the capacity. In Pennsylvania, 31 inspectors are responsible for more than 125,000 oil and gas wells.

Also, the draft regulations are written vaguely. For example, "final site restoration" is mandated, but loosely defined: site restoration must be to as nearly as practicable to its condition prior to the commencement of gas drilling operations. (*italics added*). Similarly, "The water conservation program must include the reuse and recycling of flowback and production waters to the greatest extent possible." But there are no penalties for not doing so, and no definition of the "greatest extent possible," or even any kind of standard such as "using best available technology."

Next, as someone who is unemployed myself, I certainly recognize the appeal to landowners of getting the most value from your most valuable asset by selling drilling rights. Or the promise of a job in extractive industries. But these are short-term benefits, unlike the environmental destruction common to areas where fracking has already happened. And when those jobs dry up with the natural gas, the tourist industry that depended on our lovely Catskill landscape will be gone too.

The basic economics are just bad policy: the drilling companies will accrue the benefits; the taxpayers end up footing the bill for cleanup, starting with billions of dollars for a water filtration plant. A classic case of privatizing the profits, socializing the expenses.

Not to mention losing our extraordinary water – one of the reasons I choose to stay in New York City and serve as a member of my Community Board. I'm a lifelong New Yorker, though I have lived other places and traveled extensively around the world. But my longevity here doesn't reflect passivity; it's an active choice to stay here. When I defend that choice to people who question it – and there are people who don't love NYC – one of the reasons I often give is that we have some of the best drinking water in the world. Believe it or not, there are places I wouldn't even consider living because of their water quality. When we talk about the watershed being polluted by drilling, it's not "if", it's "when."

Thank you for your time.



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau

Regional Census Center
NEW YORK, NY 10001-2406

May 2010

Dear Sir or Madam:

The United States Constitution mandates that a census of the United States be taken every ten years. In March 2010, census takers began going to addresses across the country to count the population and to collect information for the 2010 Census. In buildings or communities like yours, it may be difficult for them to gain access to the addresses they must visit. We are asking your cooperation in allowing them access to your building(s) or community.

All census employees are sworn federal government employees. They have identification badges that will be fully displayed when they are working on official census business. In addition, please feel free to contact the Local Census Office for your area at **646-827-1440** if you wish to verify the census taker's employment with the Census Bureau or have any other questions.

Because the 2010 Census is a complex operation that is conducted through most of 2010, more than one census taker may request access to your building(s) or community over the several months it takes for us to complete the various steps of the census.

The information our census takers collect from your residents is of vital importance to our country. All information collected by them is confidential by law. Only authorized, sworn Census Bureau employees have access to reported information. Census data are used for statistical purposes only and, consequently, no person or household can be identified from published census results.

Please allow our Census Bureau employees to enter your building(s) or community to perform their official duties, including verifying vacant units. Your cooperation in granting access to them assists us in obtaining a complete count for your community. This, in turn, makes quality data available for local government and business decision-making during the next decade.

Thank you, in advance, for your cooperation and understanding.

Sincerely,

A handwritten signature in black ink, appearing to read "Lester A. Farthing", is written over a horizontal line.

Lester A. Farthing
Regional Director

**Testimony of Caswell F. Holloway
Commissioner, New York City Department of Environmental Protection (DEP)**

**New York City Council Committee on Environmental Protection
FY 2012 Preliminary Budget
March 21, 2011**

Good afternoon Chairman Gennaro and Members. I am Cas Holloway, Commissioner of the New York City Department of Environmental Protection. Thank you for the opportunity to testify on the Fiscal Year 2012 Preliminary Budget.

When I testified before this committee a year ago, I talked about DEP's four core functions:

Customer Service. First and foremost, DEP is a customer service organization. 9 million people—nearly half the population of New York State—rely on the water and wastewater services we provide every day.

835,000 of those customers pay the water bills that make it possible to run and maintain our ingenious and tremendously complicated system; we have a special obligation to them to provide accurate, fast and efficient service, and to run DEP as transparently as possible—so you know how we're spending those resources.

DEP also counts among our customers thousands of home and business owners who need our approval to hook into the water and sewer system. We have a responsibility to make their jobs easier by making permitting processes simple, fast, and efficient so they can focus on helping New York City to grow and thrive.

Water Supply and Wastewater Treatment. Our second core function—and the heart of our day-to-day operations—is to supply and distribute more than 1 billion gallons of water each day to 9 million New Yorkers, and to treat the 1.3 billion gallons of wastewater residents, businesses and visitors send to our 14 wastewater treatment plants daily.

Capital Projects. DEP runs on of the largest construction operations in the region, with \$14 billion of projects currently in some phase of design or construction. Our third core function is to maintain and build the City's water and wastewater system—through well managed projects that are on time and on budget.

Sustainability. Our fourth core function is to maintain the quality of the water New Yorkers drink, the air we breathe, the harbor waters that surround us, and to protect residents and businesses alike from environmental hazards like asbestos and excessive noise, that can impact public health, and generally lower New Yorkers' quality of life.

I committed last year to develop a strategic plan to accomplish all of this at the lowest possible cost: by cutting our expenses; spending capital dollars only where they will achieve the greatest public health and environmental benefits; using DEP's vast asset base to attract private investment; and working with our regulators—primarily the Federal EPA and the State Departments of Health and Environmental Conservation—to end the cycle of unfunded

mandates in favor of a partnership-based approach that will continue environmental improvement at a sustainable pace, and for a price New Yorkers can afford.

Last month we delivered on that promise when Mayor Bloomberg and I released *Strategy 2011-2014*, a strategic plan that lays out 100 distinct initiatives to make DEP the safest, most efficient, cost-effective, and transparent water utility in the nation. Each initiative advances a key goal connected to the four core functions I just described. The plan will guide DEP's investments and operations over the next four years, and we will keep you and the public up-to-date about our progress with an annual report card. If you haven't already, I hope you will take a few minutes to review that plan, and I'd welcome the opportunity to meet with you to discuss specific initiatives, capital investments or other activity in your respective districts, or on any other issue.

What does all of this have to do with the budget? Keeping water and sewer service affordable is at the core of our plan, and cost was an explicit consideration for each of the 100 initiatives we are committed to achieving. Some, like the Green Infrastructure Plan that I will discuss at greater length shortly, were developed for the express purpose of reducing the costs of improving water quality in New York Harbor; others, like repairing the leaks in the Delaware Aqueduct, are significant new capital commitments—but we're paying for it by re-prioritizing our entire 10-year capital investment plan, not by increasing it. As the Mayor said when we released the plan last month, "DEP's strategic plan is a blueprint for making sure that our growing city continues to have a sound environmental infrastructure and a great quality of life . . . Many of its 100 goals and initiatives can be accomplished over the next four years. And they're all affordable, even in this era of budget constraints."

FY 2012 Preliminary Expense Budget

DEP's projected expense budget for fiscal year 2012 is \$987 million; our four-year capital budget—from fiscal years 2012—2015—is \$6.6 billion. On the expense side, we've worked aggressively since last year to cut costs, and we achieved an 8% across-the-board expense budget reduction that included a headcount reduction of 214 positions, and nearly \$20 million in savings on sludge removal. We're going through another round of cuts to take effect in 2012, and we expect to achieve significant reductions. The Agency expects significant combined savings from this year and for next year on a recurring basis, though we have some new needs—principally in connection with the new facilities we'll be bringing on line, including the Croton Water Filtration Plant and Ultraviolet Disinfection Plant—that will offset those savings.

The single largest expense in the FY 2012 budget is \$452 million in personnel services to pay the salaries for our nearly 6,000 employees. Outside of personnel costs, taxes on upstate watershed lands accounts for more than 10% of all expenses, and will come in at over \$140 million in 2012. This is a sizeable amount, but our upstate land holdings are critical to protecting our drinking water quality, and the alternative—a multi-multi-billion dollar filtration plant—would be much more costly. We work closely with our upstate partners to ensure that the taxes we pay are fair, and to promote responsible economic activity—like agriculture supported through the Watershed Agricultural Council, known as WAC—that protects the City's Catskill, Delaware, and Croton watersheds.

Heat, light and power—DEP's energy costs—account for over \$90 million of the FY 12 expense budget, and our power bill—and greenhouse gas emissions—will increase substantially as we bring new facilities online, unless we start taking aggressive steps now to become more efficient. Our strategic plan includes 6 energy-related initiatives to increase efficiency, reduce overall demand, and generate revenue through public-private partnerships that take advantage of DEP's energy-rich asset base. We recently received 12 submissions in response to a request for expressions of interest in developing a co-generation facility at our Ward's Island plant. Our four-year capital plan includes almost \$300 million for investments to make our treatment plants more energy efficient, including \$60 million in FY 2011 for digester gas system upgrades at five of our treatment plants.

Sludge management is another significant expense. The wastewater treatment process generates approximately 1200 tons of sludge each day, and last year we generated nearly \$20 million of recurring expense savings by diverting a portion of our sludge to landfills. Over the long term, however, we want to find a beneficial use for as much of the City's sludge as possible, and we recently received 17 submissions in response to an RFP released last fall. The evaluation process is under way, and cost will certainly be a factor in our decision-making. Although it is a byproduct of the sewage treatment process, sludge has many potential applications, including energy extraction and as a component for building materials; we're hopeful that the firms interested in working with us have made viable, cost effective proposals.

FY 2012 Preliminary Capital Budget

On the capital side, the Preliminary Capital Budget includes \$1.7 billion for FY 2012, as compared with a forecast of \$2.5 billion for FY 2011. The Preliminary Ten-Year Capital Plan projects \$12.1 billion for water and wastewater infrastructure. Of the FY12 total, \$764.6 million is projected for drinking-water system investments, which have been a signature priority for the Bloomberg Administration. As the members of this committee know, three of the largest capital projects currently in construction will significantly transform the way drinking water is supplied and distributed in the City:

- Croton Water Filtration Plant. Nearly a thousand construction workers a day clock in at the Croton Water Filtration Plant site in the Bronx. The plant will be operational in 2013, and will enable us to supply nearly 300-million gallons of filtered water per day from the Croton watershed. The total cost of the project is estimated at \$3 billion, including approximately \$242 million, that is being used for parks and other community improvements;
- Ultraviolet Disinfection Facility for the Catskill-Delaware Water system. The UV plant will provide an additional disinfection barrier for Cat-Del water, which is currently treated with chlorine before entering the in-City distribution system. We expect the plant to be operational in 2012, and the construction cost is \$1.6 billion.
- City Water Tunnel No. 3. Completion of City Water Tunnel No. 3 in Manhattan is scheduled for 2013. Activation of the tunnel will enable DEP to provide much-needed redundancy to City Water Tunnel No. 1 in which has been in service since 1917. Tunnel No. 3 has a total construction cost of about \$5 billion, and Mayor Bloomberg has committed more funding to complete it than the five previous administrations combined.

In addition to these ongoing projects, the Capital Plan addresses one of the most complicated challenges to the long-term reliability of the City's water supply: the leaks in the section of the Delaware Aqueduct known as the Rondout-West Branch Tunnel. Last November we unveiled a plan to build a three-mile bypass tunnel around a portion of the aqueduct that is leaking in Roseton in Orange County, and repair other leaks in Wawarsing, in Ulster County, from within the existing tunnel. We are on track to break ground on the bypass tunnel in 2013, and to complete the connection to the Delaware Aqueduct in 2019. We project that the bypass tunnel and internal repairs will cost approximately \$1.2 billion, and the water projects necessary to supplement the city's supply during the part of the construction period when the Delaware Aqueduct will be offline will cost approximately \$900 million.

The bypass and repairs at Wawarsing will restore the long-term reliability of the Delaware Aqueduct. To ensure the quality of the water coming from the west-of-Hudson watersheds, our capital plan also continues the highly successful and extensive watershed protection program, including land acquisition that has already protected more than 116,000 acres through outright purchase and easements. Thanks to the hard work of our partners at State DEC and the many watershed stakeholders, DEP received a new 15-year permit from DEC that extends the land acquisition program for another 15 years.

Our Capital Plan includes many more projects, including water and sewer work throughout the five boroughs, and work on our wastewater treatment plants to increase capacity and the level of treatment.

Queens

In Queens, the Preliminary Budget includes \$2.3 billion of spending from FY2012-21, including \$417 million for sewers, of which \$190 million is for high-level storm sewers in Southeast Queens.

Bronx

In the Bronx, the Preliminary Budget includes \$326 million of capital spending in FY2012-21, including \$56 million to continue the on-going construction work at the Croton Filtration Plant. The Preliminary Budget also provides \$39 million for the reconstruction of the Throgs Neck Pumping Station. DEP will also be funding a \$59 million upgrade of various water main projects.

Brooklyn

In Brooklyn, the Preliminary Budget includes \$601 million of commitments in FY2012-21, of which \$137 million is for sewer and water main work in the Coney Island Area. In addition, \$110 million is budgeted for the 26th Ward Primary Settling Tank and Solids Handling work, required by the Jamaica Bay Consent Order, and \$53 million for the sludge loading dock at Newtown Creek.

Manhattan

In Manhattan, the Preliminary Budget projects \$969 million in capital spending, including \$568 million to complete ten shaft connections to City Water Tunnel No. 3, as well as the water mains that will connect those shafts to the existing Manhattan water distribution system. This work is critical to turning on the Manhattan leg of City Water Tunnel No. 3 by 2013. In addition, \$65 million is provided for the Reconstruction of Boilers at the Wards Island Wastewater Treatment Plant.

Staten Island

In Staten Island, the Preliminary Budget projects \$400 million in capital spending; including \$276 million in FY2012-21 for sewers. In the coming months, we will begin construction of a \$250 million project for construction of a new water tunnel (or, "siphon") to provide critical redundancy for Staten Island's water supply. DEP is funding \$125 million, and the U.S. Army Corps of Engineers is funding the remaining amount because the project is being done in connection with the Army Corps's deepening of New York Harbor. We are also in the middle of a \$248 million remediation of the closed Brookfield Avenue landfill, a joint City and State-funded project.

We are continuing to build-out the Staten Island Bluebelt, the award winning, ecologically sound and cost-effective stormwater management system for approximately one-third of Staten Island. Bluebelts are natural drainage corridors; the program preserves these areas, so that they can perform their natural functions of conveying, storing, and filtering stormwater. In addition, the Bluebelts provide important community open spaces and diverse wildlife habitats. For FY2012-21, DEP plans to spend more than \$75 million on developing and maintaining the Bluebelts we already own, as well as obtaining more lands to work into the Bluebelt system.

We are also investing heavily to improve customer service. To provide more timely billing information to our customers, DEP continues to install wireless meter reading devices, also known as AMR, at all properties citywide. AMR will allow DEP to eliminate estimated bills and provide more accurate billing and consumption information on a near real-time basis. Customers can take advantage of this information with our new online tool, which allows them to manage their water use more effectively. As of last week, we have installed more than 625,000 AMR devices—75% of the City—and we are on track to complete the citywide installations by January 2012.

DEP's \$252 million investment in wireless meter reading has enabled us to expand customer service in ways not formerly possible. Just this month, Mayor Bloomberg and I launched an automated leak notification program that proactively alerts owners of one-, two- and three-family homes to spikes in water consumption so that they can quickly respond to potential leaks and fix them before they become a costly problem. The initiative is part of the City's broader effort, called NYC Simplicity, to make government more customer-focused, innovative, and efficient. Spearheaded by Deputy Mayor Goldsmith, NYC Simplicity seeks to use technology and data to improve the customer experience, streamline operations and save taxpayer dollars. During the pilot phase of this program we alerted roughly 1,300 customers about potential leaks, which we estimate collectively saved several hundred thousand dollars.

For businesses and contractors who need a DEP permit to do their job, we recently began to allow plumbers to apply for and receive permits online for water and sewer line repairs and replacements. You can learn more about these and other customer service initiatives in our strategic plan; they're part of our effort to help homeowners and businesses save time and money.

I noted earlier that as part of our efforts to keep water and sewer service affordable, we did not increase the size of our capital plan to fund projects like the Delaware Aqueduct repair, but prioritized, with the help of the Asset Management program DEP launched in 2009. We evaluated over 27,000 assets across many parameters, including physical condition, performance, and the consequence of failure, and used that data to generate business cases for capital projects that would address specific groups of assets. This new process standardizes the prioritization of our limited capital dollars across the spectrum of assets the agency is responsible for, to ensure we're making the right investments at the right time.

I hope this short summary of projects under way and in the pipeline is helpful. Just as important is the question of what future investments we may be required to fund, and how soon, depending on actions taken by our federal and state regulators.

I don't need to tell the members of this committee that the size and pace of recent water rate increases cannot continue; you already know it. Mayor Bloomberg has committed more than \$20 billion to water and wastewater infrastructure between 2002 and 2010—more capital funding than went to any other social need, including education and public safety. Water rates have increased by 117% during the same period—from an average bill of \$375 for a family of four in 2002 to \$816 today—to fund these investments.

Of that \$20 billion, approximately \$14 billion—more than 70%—was for projects that are mandated by federal or State regulations and whose schedules and scopes are established and enforced by consent or court orders. Less than 1% of our capital funding during this period came through federal grants, and even if you add ARRA Stimulus funding, grants account for just 1.3% of New York City's capital funding for water and wastewater infrastructure between 2002 and 2010. The fact that a project is mandated by the State or Federal government does not mean that it's a bad investment for the water system. To the contrary, in many cases, the City would likely make the same or a similar investment at some point. But consent orders dictate when and how a project will be done, and they are focused on a specific compliance issue—so they don't take into account the water systems' overall needs and priorities.

Combine this with the “one-size-fits-all” enforcement approach favored by EPA and other authorities, and the result is massive, simultaneous investments that require billions of dollars of debt-funded cash-on-hand to build. As a direct result of the compressed construction windows for the vast majority of DEP's consent order work, water rates have increased by double digits in each of the last 4 years—11.5% in 2008, 14.5% in 2009, 12.9% in 2010 and 12.9% for 2011—timing that couldn't be worse for New Yorkers—many of whom are seniors on a fixed income—hard hit by the recession. And more increases are projected into the future, to complete mandated work that is peaking now, and new projects that the water and sewer system needs to achieve and maintain a state of good repair.

Unless something changes in the federal government's approach—a new enforcement paradigm, or a massive infusion of funds for local governments and water utilities—we're going to see more of the same from Washington, and the State regulators who follow Washington's lead or risk losing jurisdiction over their water and wastewater infrastructure. As much as I—and the 835,000 property owners who pay New York City's water bills—would like a cash infusion, I think that's unlikely in the current fiscal environment. But a change in the enforcement paradigm is possible if EPA and State regulators are committed to it, with local governments like New York City as willing partners together with environmental groups and other stakeholders.

EPA Administrator Jackson and her staff—with initiatives like the Green Infrastructure Task force—have signaled a strong willingness to move in a new direction. But without acknowledging that these quantum leaps on the so-called “program” side of EPA must be accompanied by a change in EPA's enforcement approach, I believe that bold, cost-effective sustainability initiatives like green infrastructure cannot succeed.

The stakes are high. Thanks to the hard work of DEP's first-ever Deputy Commissioner for Sustainability Carter Strickland and his team, Mayor Bloomberg and I launched the Green Infrastructure Plan last September. As the members of this committee know, one of the most significant remaining water quality challenges we face is combined sewer overflows—CSOs—that happen when stormwater overwhelms portions of the City's sewer network that carry both storm and sanitary flows. Under a consent order currently in place with State DEC, the City would be required to build massive tanks and tunnels—what we call “grey” infrastructure—to capture CSOs and pump them to a treatment plant after a storm.

The Green Infrastructure Plan proposes making cost effective grey investments, and using green infrastructure—tree pits, green roofs, bio-swales and other installations—to capture stormwater at the source, before it can enter and potentially overwhelm the sewer system. We have already appointed an Assistant Commissioner for Green Infrastructure to oversee installations, and we project that the plan could reduce the cost of addressing CSOs by more than \$2 billion that would otherwise have to be paid for through water rates. And cost savings are not the only, or even the primary benefit of the Green Infrastructure approach. In addition to reducing CSOs and improving water quality, green infrastructure improves air quality, lowers energy costs, increases open space and raises property values. Grey infrastructure foregoes all these benefits, and would increase energy consumption and greenhouse gas emissions.

We are in active negotiations with DEC about the plan, and to succeed they, and EPA must be willing to discard the current adversarial approach to enforcement in favor of a collaborative approach that includes the flexibility needed—in the form of the trial and error that will inevitably be necessary—for green infrastructure to work. Changing this adversarial dynamic will not be easy, but it is certainly possible. A first step could be embracing the idea that consent-order driven enforcement—and the litigation and the penalties that too-often come with it—should be used to compel the unwilling, not as “standard operating procedure.” For localities like New York City that are putting billions into water and wastewater infrastructure; that are funding a Green Infrastructure plan to confront the CSO problem head on; and that have laid out a clear strategy to run a safe and compliant water and sewer system EPA should be willing to give us the benefit of the doubt. Not every initiative needs to be—or should be—written into a consent order and overseen by a judge.

Giving localities the benefit of the doubt means developing flexible remedies that incorporate investments that are planned or are already under way; it means providing the opportunity to understand what EPA's enforcement priorities are, and how we propose to achieve them—without the threat of a judicial order, or rigid, inflexible milestones that require increased water rates, or major diversions of existing resources. Fundamentally, this requires treating utilities (and cities) as partners in a common effort rather than adversaries, and to the maximum extent possible, deferring to a local jurisdiction's plan to tackle a problem, as long as we get to the right result.

DEP's Strategic Plan and PlaNYC demonstrate that the City is willing, and has committed massive resources to improve our environment and public health in ways consistent with the goals of national environmental regulation. If we could adapt federal enforcement strategies to complement and reinforce these efforts, it would go a long way towards bridging the gap between federal enforcement, scarce funding, and local goals. I have been to Washington three times in the past year to make the case for changes in federal enforcement policy. I would welcome and appreciate the Council's support as we continue to make that case.

A very promising development happened in the regulatory area in January, when President Obama issued Executive Order [#], initiating a comprehensive review of Federal rules and regulations. As part of the effort, federal agencies including EPA are required to submit a preliminary review plan by mid-May, and EPA is soliciting public comments on how they should go about it. Last Friday we submitted comments requesting changes to specific regulations—including the rule that requires New York City to cover the Hillview reservoir—as well as general comments proposing a framework for review that includes not only existing and future rules, but the way those rules are interpreted and enforced. We are hopeful that this process will result in meaningful changes that improve environmental protection, while at the same time eliminating unnecessary investments that analysis shows will not produce substantial public health and environmental benefits.

Before I close, I want to thank the Council for passing Intro 26-A, which allows the City to resume selling liens on properties on the basis of delinquent City charges. Persuading delinquent customers to pay is an important tool in helping to keep the rates low, and making sure that we don't unnecessarily burden the people who pay their water bills on time with the additional debt owed by the small number of customers who have chosen to be seriously delinquent. I'd like to continue to work with the Council to ensure that DEP has all the tools necessary to ensure that those who can afford to pay their bills actually pay.

Thank you for the opportunity to testify on DEP's FY 2012 preliminary budget; I'd be happy to answer any questions you may have.