

VILLAGE OF BARRINGTON HILLS

Board of Health NOTICE OF MEETING



Tuesday, December 9, 2014 ~ 7:30 pm
MacArthur Room - 112 Algonquin Road

AGENDA

1. Organizational
 - 1.1 Call to Order
 - 1.2 Roll Call
2. [Vote] Minutes
3. [Vote] Meeting Calendar 2015
4. [Discussion] Water Quality Study
 - 4.1 Level 2 Program
5. Public Comment
6. Adjournment

Chairman: Gwynne Johnston

Next Regular Meeting Tuesday, January 13, 2015

NOTICE AS POSTED

**VILLAGE OF BARRINGTON HILLS
BOARD OF HEALTH MEETING
November 12, 2014**

The regular meeting of the Village of Barrington Hills Board of Health was called to order at 7:46 p.m. by Chairman Johnston.

Board of Health Members Present: Gwynne Johnston, Chairman
Frank J. Konicek, M.D., Vice Chairman
Anne Majewski, M.D.

Board of Health Members Absent: Shirley Conibear, M.D.

Others Present: Robert Kosin, Director of Administration
Dan Strahan, Village Engineer
Kurt Thomsen, KOT Engineering
Janet Agnoletti, BACOG
Steve Prairie Land
Pamela Cools, Resident
Elaine Ramesh, Resident

APPROVAL OF MINUTES: Dr. Konicek made a motion to approve the minutes of the October 22, 2014 meeting of the Board of Health. The motion was seconded by Dr. Majewski and approved unanimously.

PUBLIC COMMENT RULES: Mr. Kosin presented a draft set of rules governing public participation and public comments during Board of Health meetings. Mr. Kosin noted that it was a requirement that public bodies must adopt requirements so that rules governing public comments are not developed and enforced solely as custom and practice, which can be perceived as arbitrary. Mr. Kosin noted that the policy was consistent with the policies of other boards and commissions.

After discussion, a motion was made by Dr. Majewski and seconded by Dr. Konicek to adopt the Public Comment Rules as presented to be consistent with other boards and commissions. The motion was approved by all members present.

WATER QUALITY STUDY: Chairman Johnston noted that the purpose of the discussion was to address the lack of data available pertaining to groundwater quality in the Village. Mr. Kosin introduced the discussion noting that it could be considered a scoping session to determine appropriate next steps to obtain baseline groundwater quality data in the Village. Dr. Thomsen discussed the BACOG water quality testing program that has been in place for multiple years, but noted that records were private. Dr. Thomsen noted that he was in the process of completing

a groundwater level study involving 15-18 wells throughout the BACOG area and that a separate water quality study is proposed to begin next year in Flint Creek and Spring Creek. The well locations utilized in the BACOG area could potentially be used in a water quality study as well.

Dr. Majewski requested information regarding the ability of the Village to utilize the private well testing data gathered by residents or potentially solicit residents to submit data. Mr. Kosin noted that the Village has not yet examined Exemption 9 of the federal FOIA Act which specifically provides a privilege of confidentiality for information pertaining to groundwater studies. A motion was made by Dr. Majewski and seconded by Dr. Konicek to direct the Village Attorney to review the privacy protection available for water testing information and review the best way to gather data regarding water quality. The motion was approved by all members present. Dr. Majewski also stated she would like to see such a review be made concurrently with a more concerted promotional effort by the Village for residents to have their water tested.

Chairman Johnston asked Dr. Thomsen what the source of funding was for the studies underway. Dr. Thomsen noted that He had received IEPA funding for the surface water quality testing program. Dr. Thomsen also reviewed the details of the various water quality tests offered by BACOG and noted the cost differences involved for the basic testing compared to more extensive testing.

Mr. Strahan noted that the Village has been conducting surface water quality testing for several years as part of the NPDES program, which can be looked at as an initial indicator of groundwater quality. Mr. Strahan also observed that the Village owns several properties as well as roadway right-of-way throughout the Village, which could provide a means to install monitoring wells as a way to gather data without having to overcome privacy and other issues associated with data from private wells.

A representative from Prairie Land Disposal noted that there are currently 135 customers within the Village that have contracted for weekly manure removal, with approximately 400 commercial manure containers. It was further noted that manure recycling had been taking place in the Village for 9-10 years.

Janet Agnoletti provided an overview of the BACOG testing program, noting that approximately 1600 tests of private wells had been completed in the BACOG area since 2010. Typically between 4-17% of tests come back positive for bacteria, which was usually caused by something in the well instead of the groundwater. There have been two cases of elevated E. Coli levels and two cases of elevated nitrate levels. Ms. Agnoletti stated that BACOG would be interested in aggregating the data, but there is no funding to do so.

The Board asked a number of questions regarding horse grazing data. After discussion the Board of Health requested that the Village Board provide more time to review the data prior to reaching a decision regarding the topic of horse boarding. Mr. Kosin noted that Chairman Johnston should communicate the request to Trustee Harrington as the Board of Health liason.

PUBLIC COMMENT: After discussion the Board agreed to move public comment to before the discussion of the Water Quality Study. Pamela Cools noted her submittal of several

documents to the Board, and summarized those documents. Ms. Cools noted that the documents pertained to horse density, manure management, potential water contamination from manure, etc. The documents are attached to the minutes. Ms. Cools noted her concern that the proposed zoning amendments regarding horse boarding were not considering scientific data and that each facility should have a dedicated groundwater monitoring program. Ms. Cools noted that she believed a Special Use permit would be the better way to regulate commercial horse boarding operations. Ms. Cools requested that the Board of Health take a more active role in the horse boarding discussion at the Zoning Board.

Following completion of the Water Quality Study discussion, Elaine Ramesh noted her suggestion to seek input from the public regarding the potential water quality monitoring program.

ADJOURNMENT: Dr. Majewski motioned to adjourn at 9:05 PM. Dr. Konicek seconded the motion. All present said aye.

President
MARTIN J. McLAUGHLIN

Trustees
FRITZ GOHL, Pro-Tem
JOSEPH S. MESSER
KAREN S. SELMAN
PATTY MERONI
COLLEEN KONICEK
MICHAEL HARRINGTON

DOLORES G. TRANDEL, Village Clerk



112 ALGONQUIN ROAD
BARRINGTON HILLS, ILLINOIS 60010-5199
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TELEPHONE
(847) 551-3000

FACSIMILE
(847) 551-3050

FIRST DRAFT

VILLAGE OF BARRINGTON HILLS 2015 MEETING SCHEDULE

MONTH	EQUESTRIAN COMMISSION	PLAN COMMISSION	BOARD OF HEALTH	ZONING BOARD OF APPEALS	VILLAGE** BOARD
	MONDAY 7:00 P.M.	MONDAY 7:30 P.M.	TUESDAY 7:30 P.M.	MONDAY 7:30 P.M.	MONDAY 6:30 P.M.
JANUARY		12	13	21 (Wed)	26
FEBRUARY		9	10	18 (Wed)	23
MARCH	2	9	10	16	30
APRIL		13	14	20	27
MAY		11	12	18	27 (Wed)
JUNE	1	8	9	15	22
JULY		13	14	20	27
AUGUST		10	11	17	24
SEPTEMBER	2 (Wed)	14	15	21	28
OCTOBER		14 (Wed)	13 (Thur)	19	26
NOVEMBER		9	10	16	19 (Thur)
DECEMBER	7	14	8	17 (Thur)	17 (Thur)

ALL MEETINGS ARE HELD IN THE VILLAGE HALL OF BARRINGTON HILLS

**** unless otherwise announced.**

APPROVED – December 18, 2014

A HOME RULE COMMUNITY

President
MARTIN J. McLAUGHLIN

Trustees
FRITZ GOHL, Pro-Tem
JOSEPH S. MESSER
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FIRST DRAFT

VILLAGE OF BARRINGTON HILLS 2015 MEETING SCHEDULE

	COMMUNICATIONS COMMITTEE	HERITAGE & ENVIRONS	ETSB E-911	POLICE ** PENSION
MONTH	WEDNESDAY 6:30 P.M.	TUESDAY 10:00 A.M.	MONDAY 6:00 P.M.	MONDAY 7:30 A.M.
JANUARY		20	—	26
FEBRUARY	18 (Wed)	17	--	--
MARCH		17	9	--
APRIL		21	—	27
MAY	20 (Wed)	19	—	--
JUNE		--	8	--
JULY		--	—	27
AUGUST	19 (Wed)	--	—	--
SEPTEMBER		15	14	--
OCTOBER		20	—	26
NOVEMBER	18 (Wed)	17	--	--
DECEMBER		15	14	--

ALL MEETINGS ARE HELD IN THE VILLAGE HALL OF BARRINGTON HILLS

**** unless otherwise announced.**

APPROVED – December 18, 2014

A HOME RULE COMMUNITY

Memo

To: Dr. Gwynne Johnston
From: Robert Kosin, Director of Administration
CC: Board of Health, Trustee Harrington
Date: December 4, 2014
Re: Ground Water Level 2 Program

A regular schedule of ground water quality testing has been an item of discussion by the Board of Health for which its proposed to incorporate the statutory required test schedule of public wells in the Village. Specifically wells that supply potable water to a population group of 25 or more unrelated individuals are required to undertake an annual inspection of water quality otherwise known as a level I test. It is therefore proposed to use this schedule to cooperatively add a level 2 test and thereby obtain a regularly reported table of values. The public wells, arranged oldest to newest, are as follows:

- St. John Nepomucene Chapel and Cemetery [McHenry County]
- Wesleyan Korean Church [Cook County]
- Barrington Hills Country Club [Lake County]
- Bellarmine Hall [Cook County]
- St. Marks Church [Lake County]
- Presbyterian Church [Cook County]
- Barrington Hills Village Hall [Cook County]
- Countryside School [Cook County]
- Barrington United Methodist Church [Cook County]

Details as to participation, testing availability and testing components including cost from BACOG will be pursued upon further consideration by the Board of Health.

Level I Well Water Testing

Cost \$16 - \$25

BACOG can often get a reduced rate when doing a larger event

Tests your Tap Water, softened or unsoftened

Tested by the Lake County Health Department, Libertyville, IL

Tests for

Coliform Bacteria

E. Coli

Nitrates

This test is recommended **annually**



Barrington Area Council of Governments
112 Algonquin Road
Barrington Hills, Illinois 60010

Level II Well Water Testing

Mostly Naturally Occurring Substances

Cost \$35 - \$65

A = Untreated Water Sample, \$35

A-B = Softened Water Sample, \$50

A-B-C = Untreated, Softened, and Reverse Osmosis, \$65

Tested by the Illinois State Water Survey - Champaign, IL

Tests for

Alkalinity	Fluoride	Sulfate
Aluminum	Hardness	Sulfur
Arsenic	Iron	Tin
Barium	Lithium	Titanium
Beryllium	Magnesium	Total
Boron	Manganese	Turbidity
Calcium	Molybdenum	Vanadium
Chloride	Nickel	Zinc
Chromium	Nitrate	
Cobalt	pH	
Color	Phosphorus	
Copper	Potassium	
Dissolved Solids	Silica	
	Sodium	
	Strontium	

It also tests the efficiency of your water softener and/or reverse osmosis filter at removing these parameters.

This test is recommended every ten years, with real estate change, or health issues

This test is by appointment only when done thru BACOG.



Barrington Area Council of Governments
112 Algonquin Road
Barrington Hills, Illinois 60010



UNDERSTANDING YOUR WATER QUALITY ANALYSIS

Having your well water tested is an important step to ensure safe drinking water. The U.S. Environmental Protection Agency establishes drinking water standards, such as maximum contaminant levels (MCL) and secondary maximum contaminant levels (SMCL), and public water supplies are required to test their water routinely for a list of regulated contaminants. For private well owners, however, water testing is their responsibility. The following guide is intended to help customers understand the results of their water quality analysis.

Analyte	Description	MCL (or SMCL, if noted)	Source	Websites (for more information)
Alkalinity	Measure of bicarbonate, carbonate, or hydroxide constituents; not detrimental to humans; IDPH recommends 30-400 mg/L for drinking water.		IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
Aluminum	Above the SMCL may result in colored water.	0.05 to 0.2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Arsenic	Naturally occurring in some groundwater throughout Illinois. EPA indicates some people who drink water containing arsenic in excess of the MCL for many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.	0.010 mg/L (=10 µg/L)	ISWS	http://www.isws.illinois.edu/gws/archive/arsenic/ilsources.asp
			US EPA	http://water.epa.gov/drink/contaminants/index.cfm
Barium	Naturally occurring, possible discharge of drilling wastes and metal refineries; erosion of natural deposits. Some people who drink water containing barium in excess of the maximum contaminant level (MCL) for many years could experience an increase in their blood pressure.	2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
				http://water.epa.gov/drink/contaminants/basicinformation/barium.cfm
Beryllium	Naturally enters water through the weathering of rocks and soils or from industrial wastewater discharges. Some people who drink water containing beryllium in excess of the maximum contaminant level (MCL) for many years could develop intestinal lesions.	0.004 mg/L (=4 µg/L)	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
				http://water.epa.gov/drink/contaminants/basicinformation/beryllium.cfm
Calcium	(See hardness)			
Chloride	Naturally occurring; runoff from road deicing; pollution from brine or industrial or domestic wastes; high levels can cause salty taste and be corrosive to iron pipe.	SMCL = 250 mg/L	IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
			US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Chromium	Found naturally in rocks, plants; most common forms of chromium that occur in natural waters are trivalent chromium (chromium-3), and hexavalent chromium (chromium-6). Chromium-3 is a nutritionally essential element in humans and is often added to vitamins as a dietary supplement. Chromium-3 has relatively low toxicity and would be a concern in drinking water only at very high levels of contamination; Chromium-6 is more toxic and poses potential health risks (allergic dermatitis, possibly carcinogenic).	0.1 mg/L	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
Color	Visible tint in the water (yellow/tan/brown); can be caused by decaying vegetation.	SMCL = 15 units	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Copper	Short-term = gastrointestinal distress, and with long-term exposure may experience liver or kidney damage. Treatment technique regulation-action level 1.3 mg/L; SMCL = 1.0 mg/L (above SMCL = metallic taste; blue-green staining)	1.3 mg/L; 1.0 mg/L	US EPA	http://water.epa.gov/drink/contaminants/basicinformation/copper.cfm
Fluoride	Commonly added to community supplies (to 1 mg/L) to promote dental health. Excessive consumption over a lifetime may lead to increased likelihood of bone fractures in adults, and may result in effects on bone leading to pain and tenderness. Children may have an increased chance of developing pits in the tooth enamel, along with a range of cosmetic effects to teeth. EPA has both an MCL and a SMCL.	4 mg/L	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
		SMCL = 2 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm

Analyte	Description	EPA MCL or SMCL	Source	Websites (for more information)
Hardness	Generally caused by calcium and magnesium minerals. Affects consumption of soap; causes scale. Generally removed using a water softener. Calcium can form scale when heated. IDPH: The following is a measure of hardness (expressed in mg/L as calcium carbonate): 0 - 100 Soft 100 - 200 Moderate 200 - 300 Hard 300 - 500 Very hard 500 - 1,000 Extremely hard May also be expressed in grains per gallon. The conversion formula is: 1 gpg = 17.1 mg/L.		ISWS	http://www.isws.uiuc.edu/pubdoc/C/ISWSC-118.pdf
			IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
Iron	Naturally occurring as soluble Iron (II), but oxidizes to Iron(III); rusty color; sediment; metallic taste; reddish or orange staining; removed by physical filtration, iron filter, water softener	SMCL = 0.3 mg/L	IDPH	http://www.idph.state.il.us/envhealth/factsheets/ironFS.htm
			IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
			US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Magnesium	(See hardness)			
Manganese	Naturally occurring; black to brown color; black staining; bitter metallic taste	SMCL = 0.05 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
Nickel	No current EPA limit; has potential to cause the following health effects from long-term exposure at levels above the MCL: decreased body weight; heart and liver damage; dermatitis.	Old MCL = 0.1 mg/L	US EPA	http://www.epa.gov/ogwdw/pdfs/factsheets/ioc/tech/nickel.pdf
Nitrate	Often used in fertilizer. Infants below six months who drink water containing nitrate in excess of the maximum contaminant level (MCL) could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome (methemoglobinemia).	10 mg/L as N	US EPA	http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm
pH	Low pH: bitter metallic taste; corrosion high pH: slippery feel; soda taste; deposits desirable range = 6.5-8.5	SMCL = 6.5-8.5	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
			IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
Sodium	No current federal drinking water standard; high levels may be associated with hypertension in some individuals, but typically the majority of sodium ingestion is from food rather than drinking water. Water softening will increase sodium.		US EPA	http://water.epa.gov/scitech/drinkingwater/dws/ccl/sodium.cfm
Sulfate	Naturally occurring; high levels can cause laxative effect, especially if changing from water supply with low sulfates. Coal mining can contribute. IDPH states: 0-250 mg/L=acceptable; 250-500 mg/L=can be tolerated; 500-1000 mg/L=undesirable; over 1000 mg/L=unsatisfactory	SMCL = 250 mg/L	ISWS	http://www.isws.uiuc.edu/pubdoc/C/ISWSC-118.pdf
			IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
			US EPA	http://water.epa.gov/drink/contaminants/unregulated/sulfate.cfm
Total Dissolved Solids	Measure of the total amount of dissolved minerals/substances in water; high levels may cause salty taste IDPH states: less than 500 mg/L= satisfactory; 500 - 1000 mg/L= less than desirable; 1000-1500 mg/L= undesirable; over 1500 mg/L= unsatisfactory	SMCL = 500 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm
			IDPH	http://www.idph.state.il.us/envhealth/pdf/DrinkingWater.pdf
Turbidity	Turbidity refers to cloudiness of water. Often due to sand, silt, clay, or precipitated iron (see also iron). Turbidity has no health effects, but can be an indication of the presence of disease-causing organisms.	n/a. See EPA website for info	US EPA	http://water.epa.gov/drink/contaminants/index.cfm
Zinc	Metallic taste	SMCL = 5 mg/L	US EPA	http://water.epa.gov/drink/contaminants/secondarystandards.cfm

Notes:

MCL = Maximum Contaminant Level (Set by US EPA and is generally the maximum level allowed for public water systems)

SMCL = Secondary Maximum Contaminant Level (non-mandatory guidelines for aesthetic considerations; generally analyte is not considered a risk to human health)

US EPA = United States Environmental Protection Agency

IDPH = Illinois Department of Public Health

mg/L = milligrams per liter; this is the same as parts per million (ppm)

µg/L = micrograms per liter; this is the same as parts per billion (ppb)

List of all EPA drinking water contaminants: <http://water.epa.gov/drink/contaminants/index.cfm>

Level III Well Water Testing

Tests harmful human-introduced contaminants

Approximate Cost \$120

Tested by McHenry County Analytical Laboratory

Tests For

Total Organic Carbons (indicator for VOCs)

Gasoline

Cleaning solvents

Pesticides

Fertilizers

Herbicides

Industrial Chemicals

Insecticides

Decaying natural organic matter

Detergents

Oxidation Reduction Potential

Specific Conductivity

Orthophosphate

Potassium

Aluminum

This test is recommended every ten years, with real estate change or health issues.

This test is by appointment only when done thru BACOG.



Barrington Area Council of Governments
112 Algonquin Road
Barrington Hills, Illinois 60010

MEMORANDUM

To: Robert Kosin, Village of Barrington Hills
Board of Health Members

625 Forest Edge Drive, Vernon Hills, IL 60061

TEL 847.478.9700 ■ FAX 847.478.9701

From: Daniel J. Strahan, P.E., CFM
Gewalt Hamilton Associates

www.gha-engineers.com

Date: December 5, 2014

Re: Proposed Groundwater Testing Program




At the November meeting of the Board of Health there was discussion regarding various options to develop a data set of groundwater quality in the Village. Based on that meeting and follow-up discussion with Village staff, we would recommend that as an initial step water samples be taken at a number of institutional facilities located within the Village and tested through the BACOG water testing program.

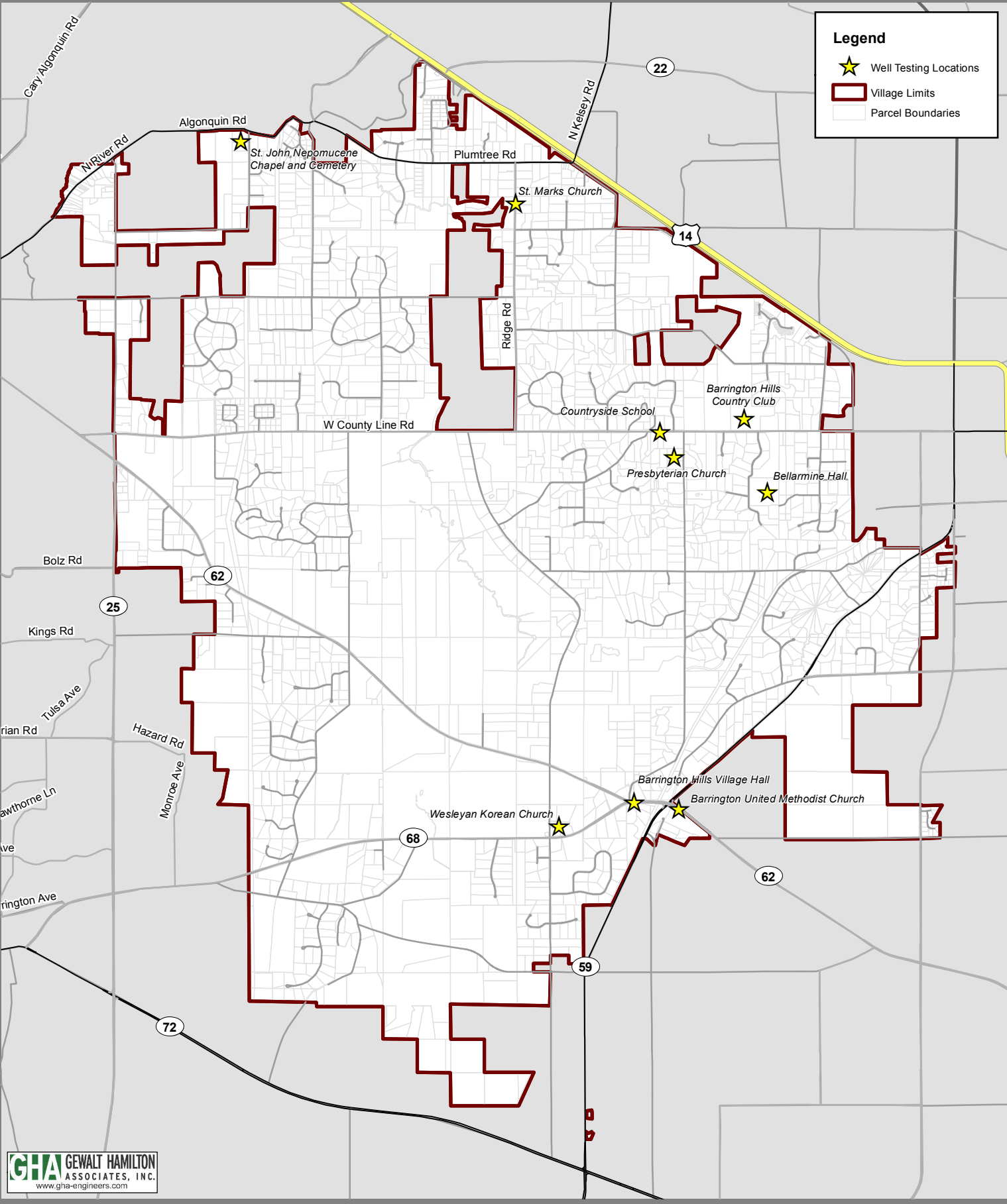
The details of this program, if approved by the Board of Health, would be as follows:

- Nine locations have been identified as community water supplies within the Village of Barrington Hills. These facilities are shown on the exhibit attached and are as follows:
 - Barrington Hills Village Hall
 - St. John Nepomucene Chapel & Cemetery (located at Church Rd. & Algonquin Rd.)
 - Wesleyan Korean Church (Old Sutton & IL 68)
 - Barrington Hills Country Club
 - Bellarmine Jesuit Retreat House (420 W. County Line Road)
 - St. Mark's Episcopal Church (337 Ridge Road)
 - Presbyterian Church of Barrington (6 Brinker Road)
 - Countryside School
 - Barrington United Methodist Church
- GHA will contact each location and obtain a sample of water in the vicinity of the well tank for the facility. Where a water softener is present two samples will be taken (if feasible), both before and after the softener.
- In coordination with BACOG, each sample will be submitted for Level 2 Testing which includes the following parameters (cost is \$65/sample):

○ Iron	○ Boron	○ Tin	○ Sulfur
○ Potassium	○ Chromium	○ Titanium	○ Turbidity
○ Calcium	○ Cobalt	○ Vanadium	○ Color
○ Magnesium	○ Copper	○ Zinc	○ pH
○ Sodium	○ Lithium	○ Fluoride	○ Alkalinity
○ Aluminum	○ Manganese	○ Chloride	○ Hardness
○ Arsenic	○ Molybdenum	○ Nitrate	○ Silica
○ Barium	○ Nickel	○ Phosphorous	○ Total Dissolved Solids
○ Beryllium	○ Strontium	○ Sulfate	

Legend

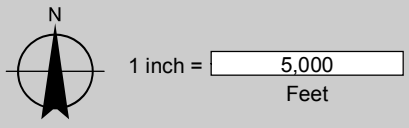
-  Well Testing Locations
-  Village Limits
-  Parcel Boundaries



Sources: ESRI World Imagery



File: G:\1993\9355\9355_401 Misc\Well Testing\Well Testing Locations.mxd
 Drawn By: gnewton



Well Testing Location Map

Barrington Hills, IL



For Immediate Release
11/21/2014

Contact:
Leslie Piotrowski
(847) 377-8055
Carolyn Waller (847) 377-8099

Water Sample Kits Now Available at 15 Local Jurisdictions

The Lake County Health Department/Community Health Center, working in partnership with townships and villages, is offering private well owners a convenient way to have their drinking water tested. Private well owners are encouraged to test their water on an annual basis.

Water sample kits are now available at 15 municipal and township locations where there are substantial populations that rely on private water wells. Making the kits available at these locations throughout the county saves residents a trip to the Lake County Central Permit Facility/Environmental Laboratory in Libertyville. The following locations are participating in the program and have a stock of water sample kits available for private water well owners:

Townships

Antioch (847) 395-3378
Freemont (847) 223-2847
Grant (847) 546-7623
Lake Villa (847) 356-2116
Warren Township (847) 244-1101 ext. 3

Villages

Fox Lake (847) 587-2151
Lindenhurst (847) 356-8252
Long Grove (847) 634-9440
Wadsworth (847) 336-7771
Barrington Hills (847) 551-3000
Beach Park (847) 746-1770
Kildeer (847) 438-6000
Lake Barrington (847) 681-6010
North Barrington (847) 381-6000
Village of Deer Park (847) 726-1648

Prior to picking up a kit, residents should call the municipal or township office as they may have varying hours of operation. After picking up a kit, residents should follow the instructions provided for water collection, and then drop off water samples between 7:30 a.m. and 3:30 p.m., Monday through Thursday at the Lake County Central Permit Facility/Environmental Laboratory, 500 W. Winchester Road in Libertyville. Water samples cannot be accepted on Friday, Saturday or Sunday. The analysis fee to test for safe drinking water standards (coliform bacteria and nitrates) is \$16. Results are normally available in 3 to 5 days.

This program is in alignment with the Health Department's strategic plan goal to protect and improve surface and ground water resources. Approximately 90,000 Lake County residents rely on private wells for their water supply. Most of these residents live in the western or northern parts of the county. For further information on water testing, contact the Health Department at: (847) 377-8030, or send an email to: HealthEHS@lakecountyil.gov.

###



BARRINGTON

2013 WATER QUALITY REPORT

Barrington Has Safe Drinking Water

The United States Environmental Protection Agency (USEPA) requires all communities to provide to their consumers a Consumer Confidence Report on the quality of their system's drinking water. This report summarizes the quality of water that we provided during the last year. Barrington meets the USEPA standards for water quality and now is only required to analyze lead and copper quantities once every three years, rather than twice a year.

Included are details about where your water comes from, what it contains and how it compares to standards set by regulatory agencies. Also included in this year's report is a Source Water Assessment Summary. Community water supplies are required to report a summary of their source water susceptibility determination, which were compiled by the IEPA.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

The Annual Water Quality Report for the period of January 1 to December 31, 2013 is intended to provide you with important information about your drinking water and the efforts made by the Barrington water system to provide safe drinking water. The source of drinking water used by Barrington is Ground Water.

Este informe contiene información muy importante sobre el agua que usted bebe. Tradúzcalo ó hable con alguien que lo entienda bien.

Regulations

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water; which must provide the same protection for public health. Some people may be more vulnerable to contaminated drinking water than the general population.

In addition to the informational section of the Water Quality Report, we have included for your review several tables. The tables will give you a better picture of the contaminants that were detected in your water and the contaminants that were tested for, but not detected.

Sources of Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it can dissolve naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Possible Contaminants:



Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas productions, mining or farming;



Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses;



Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.



Radioactive contaminants, which may be naturally occurring or be the result of oil and gas production and mining activities;



Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

If you have any questions about this report or if you have questions concerning your water system please contact David W. Schmidt, Assistant Director of Public Works at (847) 381-7903. If you would like to learn more, please feel free to attend any of our regularly scheduled Board Meetings, on the 2nd and 4th Mondays of each month at 8:00 p.m. at the Village Hall. Copies of the report are available online at www.barrington-il.gov; or at Village Hall, 200 S. Hough.

Safe Drinking Water Hotline

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800) 426-4791.



We are advised by the IEPA that some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/ CDC (Center for Disease Control) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (800) 426-4791.



2013 Water Facts

More than 6,000 separate tests were performed on water samples from our system.

For the twentieth (20th) consecutive year, the Village of Barrington has been recognized for achieving the highest standard of compliance for fluoride addition in accordance with the Fluoridation Act.

Population served.....	14,500
Metered customers.....	4,464
Miles of watermain.....	90
# of fire hydrants.....	999
Water production.....	1.429
(average million gallons/ day)	

Regulated Contaminants Detected in 2013

CONTAMINANT (units)	Typical Source of Contaminant
LEAD (ppb)	Corrosion of household plumbing systems; erosion of natural deposits
COPPER (ppm)	Corrosion of household plumbing systems; erosion of natural deposits; leaching from w preservatives
INORGANIC REGULATED CONTAMINANTS	
BARIUM (ppm)	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
FLUORIDE (ppm)	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
DISINFECTANTS & DISINFECTION BY-PRODUCTS	
TThm (ppb)	By-product of drinking water disinfection
HALOACETIC ACIDS (ppb)	By-product of drinking water disinfection
CHLORINE (ppm)	Water additive used to control microbes
STATE-REGULATED CONTAMINANTS	
IRON (ppm)	Erosion of naturally occurring deposits
SODIUM (ppm)	Erosion of naturally occurring deposits; Use water softener regeneration
MANGANESE (ppb)	Erosion of naturally occurring deposits
ZINC (ppm)	Naturally occurring; discharge from metal factories
RADIOACTIVE CONTAMINANTS	
COMBINED RADIUM (pCi/L)	Erosion of natural deposits

Note:

The state requires monitoring of certain contaminants less than once per year. Therefore, some of this data may be more than one year old.

Key:

Definitions of Terms

Maximum Contaminant Level Goal – MCLG:

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level – MCL:

The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

n/a:

Not applicable

Action Level - AL:

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow.

All residents are notified yearly of their water test results and the



About the Data

The Maximum Contaminant Level (MCL) for lead is 15 parts per billions (ppb) and 1.3 parts per million (ppm) for copper. When lead or copper exceeds their Action Levels (AL), some form of treatment is required, which the water system must follow. The Village of Barrington adds polyphosphates to the potable water system. This is to help prevent lead in your home's plumbing from leaching into the water. In the Regulated Contaminants Detected chart, the number 4.88 represents the 90th% level found in (ppb) for lead.

Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or www.epa.gov/safewater/lead.

Copper: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

Iron: The contaminant is not currently regulated by the USEPA. However, the state has set an MCL for this contaminant for supplies serving a population of 1,000 or more. Iron is not a health risk, but it does create aesthetic problems, such as giving water a metallic taste and causing stains on fixtures and clothing.

Sodium: There is not a state or federal MCL for sodium. Monitoring is required to provide information to consumers and health officials that are concerned about intake due to dietary precautions. If you are on a sodium-restricted diet, you should consult a physician about the level of sodium in the water.

Manganese: This contaminant is not currently regulated by USEPA. However, the state has set an MCL for manganese for supplies serving a population of 1,000 or more.

MCLG	MCL	90th Percentile	# Sites AL	Over Violation	Collection Date
0	AL=15	4.88	0	No	9/21/12
1.3	AL=1.3	0.477	0	No	9/21/12
MCLG	MCL	Highest Level Detected	Range of Levels Detected	Violation	Collection Date
2	2	0.08	.054 - .08	No	4/10/12
4	4	0.809	.801 - .809	No	4/10/12
n/a	80	2.825	0.9424 - 2.825	No	2013
n/a	60	1.1	0 - 1.1	No	2013
mrldg=4	mrld=4	2	1.77 - 2	No	12/31/13
n/a	1	0.38	.12 - .38	No	4/10/12
n/a	n/a	25	16 - 25	No	4/10/12
150	150	18	5.6 - 18	No	4/10/12
5	5	0.03	.006 - .03	No	4/10/12
0	5	1.84	0 - 1.84	No	4/7/11

because the concentrations of these contaminants do not change frequently.

mrld:

Maximum residual disinfectant level. The highest level of disinfectant allowed in drinking water.

mrldg:

Maximum residual disinfectant level goal. The level of disinfectant in drinking water below which there is no known or expected risk to health. Mrldg's allow for a margin of safety.

ppm:

Parts per million or milligrams per liter

ppb:

Parts per billion or micrograms per liter

pCi/L:

Picocuries per liter, used to measure radioactivity

Treatment Technique (TT):

A required process intended to reduce the level of a contaminant in drinking water.

2013 Water Report

Village of Barrington
200 S. Hough Street
Barrington, IL 60010
(847) 304-3400
www.barrington-il.gov

Karen Darch, Village President
Adam Frazier, Village Clerk
Trustees
Paul Hunt
Jim Daluga
Tim Roberts
Robert Windon
Sue Padula
Pete Douglas

Board Meetings Held 2nd & 4th Monday
of each month at 8:00 p.m.

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Permit 40

2013 Source Water Assessment

Importance of Source Water

The Village of Barrington utilizes groundwater from four wells, separated into two sets of two wells each. The first set of wells is drilled in a sand and gravel aquifer and the second set are drilled in a limestone aquifer. An aquifer is a geological formation that contains water. All of the wells are located within the Village limits. Water is pumped from all four wells and treated. Your home, normally receives a mixture of water from both sets of wells. Due to favorable history, aquifer characteristics and inventory of potential sources of contamination, our water supply was issued a vulnerability waiver renewal. No monitoring for Volatile Organic Chemicals (VOC's) or Synthetic Organic Chemicals (SOC's) is required between January 1, 2011 and December 31, 2013. The source water assessment for our supply was completed in 1992 by the Illinois EPA. If you would like a copy of this information, please stop by the Public Works facility or contact the Water Division by calling (847) 381-7903.

Susceptibility to Contamination

Based on information obtained in a well Site Survey, published in 1992 by the Illinois EPA, fourteen potential sources or possible problem sites were located within the survey area of Barrington's wells. Furthermore, information provided by the Leaking Underground Storage Tank and Remedial Project Management Sections of the Illinois EPA indicated several sites with ongoing remediation, which may be of concern.

The Illinois EPA has determined that the Barrington Community Water Supply's source water is not susceptible to contamination. This determination is based on a number of criteria including: monitoring conducted at the wells; monitoring conducted at the entry point to the distribution system; and the available hydro-geologic data on the wells.

Furthermore, in anticipation of the U.S. EPA's proposed Ground Water Rule, the Illinois EPA has determined that the Barrington Community Water Supply is not vulnerable to viral contamination. This determination is based upon the completed evaluation of the following criteria during the Vulnerability Waiver Process: the community's wells are properly constructed with sound in-

tegrity and proper site conditions; a hydro geologic barrier exists which should prevent pathogen movement; all potential routes and sanitary defects have been mitigated such that the source water is adequately protected; monitoring data did not indicate a history of disease outbreak; and the sanitary survey of the water supply did not indicate a viral contamination threat. Because the community's wells are constructed in a confined aquifer, which should prevent the movement of pathogens into the wells, well hydraulics were not considered to be a significant factor in the susceptibility determination. Hence, well hydraulics were not evaluated for this groundwater supply.

Source Water Protection Efforts

The Illinois Environmental Protection Act provides minimum protection zones of 200 feet for Barrington's wells. Minimum protection zones are regulated by the Illinois EPA. To further reduce the risk to source water, the facility has implemented a wellhead protection program, which includes the proper abandonment of potential routes of groundwater contamination and correction of sanitary defects at the water treatment facility. This effort resulted in the community water supply receiving a special exception permit from the Illinois EPA, which allows a reduction in monitoring. The outcome of this monitoring reduction has saved the facility considerable laboratory analysis costs. To further minimize the risk to Barrington's groundwater supply, the Illinois EPA recommends that three additional activities be assessed. First, the community may wish to enact a "maximum setback zone" ordinance to further protect their water supply. These ordinances are authorized by the Illinois Environmental Protection Act and allow county and municipal officials the opportunity to provide additional protection up to a fixed distance, normally 1,000 feet from their wells. Second, the water supply staff may wish to revisit their contingency planning documents, if available. Contingency planning documents are a primary means to ensure that, through emergency preparedness, a community will minimize their risk of being without safe and adequate water. Finally, the water supply staff is encouraged to review their cross connection control program to ensure that it remains current and viable. Cross connections to either the water treatment plant (for example, at bulk water loading stations) or in the distribution system may negate all source water protection initiatives provided by the community.

NPDES Permit No. IL0021598
Notice No. FRB:07050402.bah

Public Notice Beginning Date: **January 17, 2008**

Public Notice Ending Date: **February 19, 2008**

National Pollutant Discharge Elimination System (NPDES)
Permit Program

PUBLIC NOTICE/FACT SHEET
of
Draft Reissued NPDES Permit to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois EPA
Division of Water Pollution Control
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-0610

Name and Address of Discharger:

Village of Barrington
200 South Hough Street
Barrington, Illinois 60010

Name and Address of Facility:

Barrington Wastewater Treatment Facility
302 North Raymond Avenue
Barrington, Illinois 60010
(Lake County)

The Illinois Environmental Protection Agency (IEPA) has made a tentative determination to issue a NPDES Permit to discharge into the waters of the state and has prepared a draft Permit and associated fact sheet for the above named discharger. The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice/Fact Sheet. All comments on the draft Permit and requests for hearing must be received by the IEPA by U.S. Mail, carrier mail or hand delivered by the Public Notice Ending Date. Interested persons are invited to submit written comments on the draft Permit to the IEPA at the above address. Commentors shall provide his or her name and address and the nature of the issues proposed to be raised and the evidence proposed to be presented with regards to those issues. Commentors may include a request for public hearing. Persons submitting comments and/or requests for public hearing shall also send a copy of such comments or requests to the Permit applicant. The NPDES Permit and notice numbers must appear on each comment page.

The application, engineer's review notes including load limit calculations, Public Notice/Fact Sheet, draft Permit, comments received, and other documents are available for inspection and may be copied at the IEPA between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

If written comments or requests indicates a significant degree of public interest in the draft Permit, the permitting authority may, at its discretion, hold a public hearing. Public notice will be given 45 days before any public hearing. Response to comments will be provided when the final Permit is issued. For further information, please call Francis Burba at 217/782-0610.

The following water quality and effluent standards and limitations were applied to the discharge:

Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter I: Pollution Control Board and the Clean Water Act were applied in determining the applicable standards, limitations and conditions contained in the draft Permit.

The applicant is engaged in treating domestic wastewater for the Village of Barrington, Braemore (Inverness), & Paganica (Barrington Hills).

The length of the Permit is approximately 5 years.

The main discharge number is 002. The seven day once in ten year low flow (7Q10) of the receiving stream, unnamed tributary of Flint Creek, is 0 cfs.

The design average flow (DAF) for the facility is 3.68 million gallons per day (MGD) and the design maximum flow (DMF) for the facility is 10.2 MGD. Treatment consists of screening, grit removal, primary clarifiers, activated sludge, secondary clarifiers, rapid sand filters, excess flow treatment, chlorine disinfection, dechlorination, post aeration, aerobic sludge digestion, sludge thickening, belt filtration, and land application of sludge.

This reissued NPDES Permit does not increase the facility's DAF, DMF, concentration limits, and/or load limits.

Application is made for the existing discharge(s) which is (are) located in Lake County, Illinois. The following information identifies the discharge point, receiving stream and stream classifications:

Outfall	Receiving Stream	Latitude	Longitude	Stream Classification	Biological Stream Characterization
002	Unnamed Tributary of Flint Creek	42E 09' 30" North	88E 08' 43" West	General Use	Not Rated

To assist you further in identifying the location of the discharge(s) please see the attached map.

The stream segment(s) receiving the discharge from outfall(s) 002 and A02 is (are) not on the 303 (d) list of impaired waters.

The discharge(s) from the facility is (are) proposed to be monitored and limited at all times as follows:

Discharge Number(s) and Name(s): 002 STP Outfall

Load limits computed based on a design average flow (DAF) of 3.68 MGD (design maximum flow (DMF) of 10.2 MGD).

The effluent of the above discharge(s) shall be monitored and limited at all times as follows:

Parameter	LOAD LIMITS lbs/day*			CONCENTRATION LIMITS mg/L			Regulation
	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum	
CBOD ₅	307 (851)		614 (1701)	10		20	35 IAC 304.120 40 CFR 133.102
Suspended Solids	368 (1021)		737 (2042)	12		24	35 IAC 304.120 40 CFR 133.102
Dissolved Oxygen	Shall not be less than 6 mg/L						35 IAC 302.206
pH	Shall be in the range of 6 to 9 Standard Units						35 IAC 304.125
Fecal Coliform	Daily Maximum shall not exceed 400 per 100 mL (May through October)						35 IAC 304.121
Chlorine Residual						0.05	35 IAC 302.208
Ammonia Nitrogen:							
April-October	37 (102)	----	92 (255)	1.2	----	3.0	35 IAC 355 and
Nov.-Feb.	77 (213)	----	190 (527)	2.5	----	6.2	35 IAC 302
March	61 (170)	157 (434)	190 (527)	2.0	5.1	6.2	

*Load Limits are calculated by using the formula: 8.34 x (Design Average and/or Maximum Flow in MGD) x (Applicable Concentration in mg/L).

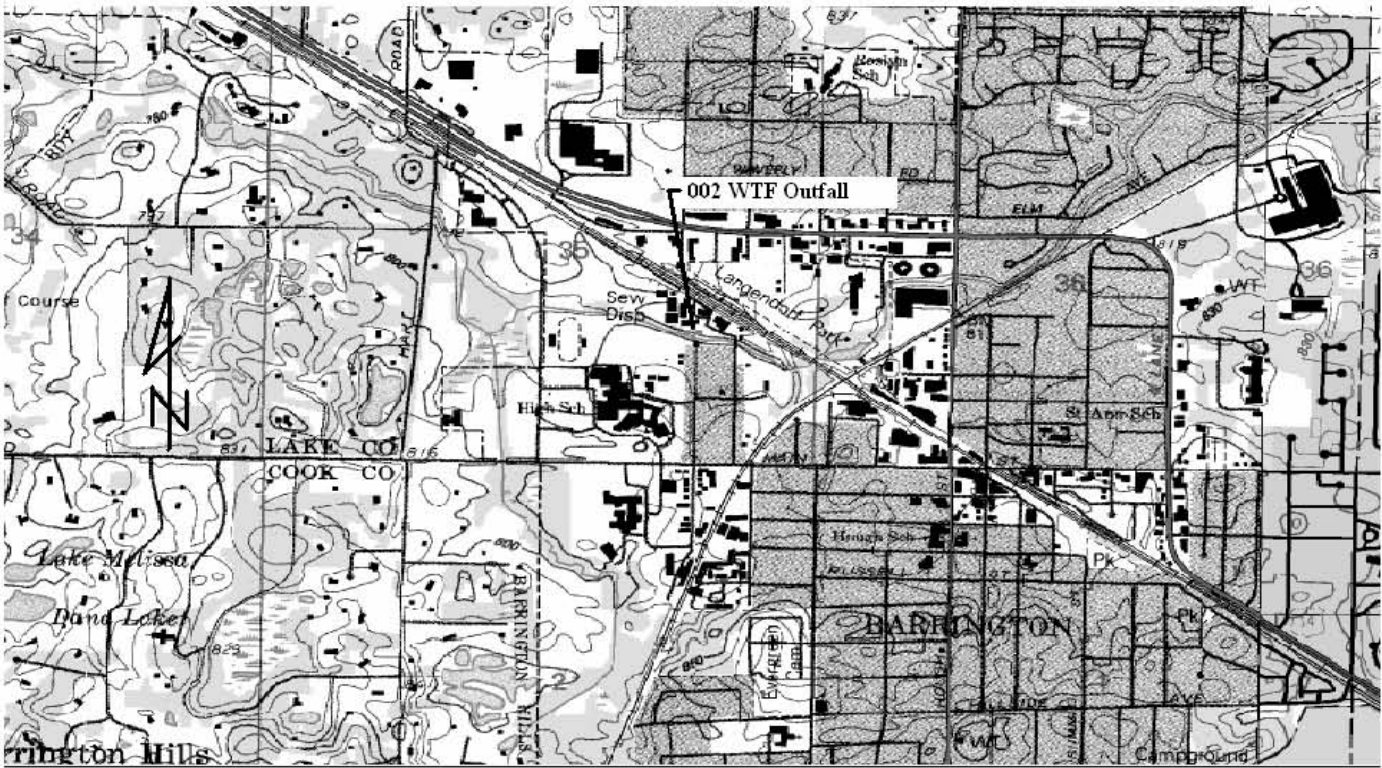
This Permit contains an authorization to treat and discharge excess flow as follows:

Discharge Number(s) and Name(s): A02 - Treated Excess Flow

Parameter	CONCENTRATION LIMITS mg/L		Regulation
		Monthly Average	
BOD ₅		30	40 CFR 133.102
Suspended Solids		30	40 CFR 133.102
Fecal Coliform	Daily Maximum Shall Not Exceed 400 per 100 mL		35 IAC 304.121
pH	Shall be in the range of 6 to 9 Standard Units		35 IAC 304.125
Chlorine Residual		0.75	35 IAC 302.208

This draft Permit also contains the following requirements as special conditions:

1. Reopening of this Permit to include different final effluent limitations.
2. Operation of the facility by or under the supervision of a certified operator.
3. Submission of the operational data in a specified form and at a required frequency at any time during the effective term of this Permit.
4. More frequent monitoring requirement without Public Notice in the event of operational, maintenance or other problems resulting in possible effluent deterioration.
5. Prohibition against causing or contributing to violations of water quality standards.
6. Effluent sampling point location.
7. Controlling the sources of infiltration and inflow into the sewer system.
8. Seasonal fecal coliform limits.
9. Monitoring for arsenic, barium, cadmium, hexavalent chromium, total chromium, copper, weak acid dissociable cyanide, total cyanide, fluoride, dissolved iron, total iron, lead, manganese, mercury, nickel, oil, phenols, selenium, silver and zinc is required eighteen (18) months prior to the expiration date and again at twelve (12) months prior to the expiration date and to submit the results of such tests with the NPDES renewal application prior to filing of the NPDES renewal application.
10. Submission of annual fiscal data.
11. The Permittee is required to perform biomonitoring tests in the 18th, 15th, 12th and 9th months prior to the expiration date of the Permit, and to submit the results of such tests to the IEPA within one week of receiving the results from the laboratory.
12. Submission of semi annual reports indicating the quantities of sludge generated and disposed.
13. Recording the monitoring results on Discharge Monitoring Report Forms using one such form for each outfall each month and submitting the forms to IEPA each month.
14. Schedule for compliance with the dissolved oxygen effluent limit.
15. The Permittee shall submit a Capacity, Management, Operations, and Maintenance Plan.



Barrington Wastewater Treatment Facility
NPDES Permit No. IL0021598
Lake County

NPDES Permit No. IL0021598

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date:

Issue Date:

Effective Date:

Name and Address of Permittee:

Village of Barrington
200 South Hough Street
Barrington, Illinois 60010

Facility Name and Address:

Barrington Wastewater Treatment Facility
302 North Raymond Avenue
Barrington, Illinois 60010
(Lake County)

Receiving Waters: Unnamed Tributary of Flint Creek

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of the Ill. Adm. Code, Subtitle C, Chapter I, and the Clean Water Act (CWA), the above-named Permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the Permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:FRB:07050402.bah

NPDES Permit No. IL0021598

Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): 002 STP Outfall

Load limits computed based on a design average flow (DAF) of 3.68 MGD (design maximum flow (DMF) of 10.2 MGD).

Excess flow facilities (if applicable) shall not be utilized until the main treatment facility is receiving its maximum practical flow.

From the effective date of this Permit until the expiration date, the effluent of the above discharge(s) shall be monitored and limited at all times as follows:

Parameter	LOAD LIMITS lbs/day DAF (DMF)*			CONCENTRATION LIMITS MG/L			Sample Frequency	Sample Type
	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum		
Flow (MGD)							Continuous	
CBOD ₅ **	307 (851)		614 (1701)	10		20	3 Days/Week	Composite
Suspended Solids	368 (1021)		737 (2042)	12		24	3 Days/Week	Composite
Dissolved Oxygen ¹	Shall not be less than 6 mg/L						3 Days/Week	Grab
pH	Shall be in the range of 6 to 9 Standard Units						3 Days/Week	Grab
Fecal Coliform***	Daily Maximum shall not exceed 400 per 100 mL (May through October)						3 Days/Week	Grab
Chlorine Residual***						0.05	3 Days/Week	Grab
Ammonia Nitrogen as (N)								
April-October	37 (102)	----	92 (255)	1.2	----	3.0	3 Days/Week	Composite
Nov.-Feb.	77 (213)	----	190 (527)	2.5	----	6.2	3 Days/Week	Composite
March	61 (170)	157 (434)	190 (527)	2.0	5.1	6.2	3 Days/Week	Composite

*Load limits based on design maximum flow shall apply only when flow exceeds design average flow.

**Carbonaceous BOD₅ (CBOD₅) testing shall be in accordance with 40 CFR 136.

***See Special Condition 8.

¹ See Special Condition 14.

Flow shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.

Fecal Coliform shall be reported on the DMR as a daily maximum.

pH shall be reported on the DMR as minimum and maximum.

Chlorine Residual shall be reported on DMR as daily maximum.

Dissolved oxygen shall be reported on the DMR as a minimum.

NPDES Permit No. IL0021598

Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): A02 - Treated Excess Flow

These flow facilities shall not be utilized until the main treatment facility is receiving its maximum practical flow.

From the effective date of this Permit until the expiration date, the effluent of the above discharge(s) shall be monitored and limited at all times as follows:

Parameter			CONCENTRATION	Sample Frequency	Sample Type
			LIMITS mg/L		
			Monthly Average		
Total Flow (MG)	See Below			Daily When Discharging	Continuous
BOD ₅			30	Daily When Discharging	Grab
Suspended Solids			30	Daily When Discharging	Grab
Fecal Coliform	Daily Maximum Shall Not Exceed 400 per 100 mL			Daily When Discharging	Grab
pH	Shall be in the range of 6 to 9 Standard Units			Daily When Discharging	Grab
Chlorine Residual			0.75	Daily When Discharging	Grab

Total flow in million gallons shall be reported on the Discharge Monitoring Report (DMR) in the quantity maximum column.

Report the number of days of discharge in the comments section of the DMR.

Fecal Coliform shall be reported on the DMR as daily maximum.

Chlorine Residual shall be reported on the DMR as a monthly average concentration.

pH shall be reported on the DMR as a minimum and a maximum.

BOD₅ and Suspended Solids shall be reported on the DMR as a monthly average concentration.

NPDES Permit No. IL0021598

Influent Monitoring, and Reporting

The influent to the plant shall be monitored as follows:

Parameter	Sample Frequency	Sample Type
Flow (MGD)	Continuous	
BOD ₅	3 Days/Week	Composite
Suspended Solids	3 Days/Week	Composite

Influent samples shall be taken at a point representative of the influent.

Flow (MGD) shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.

BOD₅ and Suspended Solids shall be reported on the DMR as a monthly average concentration.

NPDES Permit No. IL0021598

Special Conditions

SPECIAL CONDITION 1. This Permit may be modified to include different final effluent limitations or requirements which are consistent with applicable laws, regulations, or judicial orders. The IEPA will public notice the permit modification.

SPECIAL CONDITION 2. The use or operation of this facility shall be by or under the supervision of a Certified Class 1 operator.

SPECIAL CONDITION 3. The IEPA may request in writing submittal of operational information in a specified form and at a required frequency at any time during the effective period of this Permit.

SPECIAL CONDITION 4. The IEPA may request more frequent monitoring by permit modification pursuant to 40 CFR § 122.63 and Without Public Notice in the event of operational, maintenance or other problems resulting in possible effluent deterioration.

SPECIAL CONDITION 5. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 6. Samples taken in compliance with the effluent monitoring requirements shall be taken:

- A. For Discharge Number 002 - During dry weather flows (no excess flow discharge), samples shall be taken at a point representative of the flows but prior to entry into the receiving stream. During periods of excess flow discharge, CBOD₅, Suspended Solids, and Ammonia Nitrogen, if Ammonia Nitrogen monitoring and sampling is required on the Effluent Limitations, Monitoring, and Reporting Page of this Permit, shall be monitored at a point representative of the discharge but prior to admixture with the excess flow. If Fecal Coliform limits are different for Discharge Numbers 002 and A02, sampling shall occur at a point representative of the discharge and prior to admixture, if hardware allows. Other parameters may be sampled after admixture but prior to entry into the receiving stream.
- B. For Discharge Number A02 - Samples for all parameters shall be taken at a point representative of the discharge but prior to entry into the receiving stream. If Fecal Coliform limits are different for Discharge Numbers 002 and A02, sampling shall occur at a point representative of the discharge and prior to admixture, if hardware allows. The sampling point for other parameters may be at a point after admixture with the dry weather flows.

SPECIAL CONDITION 7. This Permit may be modified to include requirements for the Permittee on a continuing basis to evaluate and detail its efforts to effectively control sources of infiltration and inflow into the sewer system and to submit reports to the IEPA if necessary.

SPECIAL CONDITION 8. Fecal Coliform limits for Discharge Number 002 are effective May thru October. Sampling of Fecal Coliform is only required during this time period.

The total residual chlorine limit is applicable at all times. If the Permittee is chlorinating for any purpose during the months of November through April, sampling is required on a daily grab basis. Sampling frequency for the months of May through October shall be as indicated on effluent limitations, monitoring and reporting page of this Permit.

SPECIAL CONDITION 9. The Permittee shall monitor the effluent and report concentrations (in mg/L) of the following listed parameters eighteen (18) months prior to the expiration date and again at twelve (12) months prior to the expiration date. The sample shall be a 24-hour effluent composite except as otherwise specifically provided below and the results shall be submitted on Discharge Monitoring Report Forms to IEPA unless otherwise specified by the IEPA. The parameters to be sampled and the minimum reporting limits to be attained are as follows:

<u>STORET CODE</u>	<u>PARAMETER</u>	<u>Minimum reporting limit</u>
01002	Arsenic	0.05 mg/L
01007	Barium	0.5 mg/L
01027	Cadmium	0.001 mg/L
01032	Chromium (hexavalent) (grab)	0.01 mg/L
01034	Chromium (total)	0.05 mg/L
01042	Copper	0.005 mg/L
00718	Cyanide (grab) (weak acid dissociable)	5.0 ug/L
00720	Cyanide (grab not to exceed 24 hours) (total)	5.0 ug/L
00951	Fluoride	0.1 mg/L

NPDES Permit No. IL0021598

Special Conditions

<u>STORET CODE</u>	<u>PARAMETER</u>	<u>Minimum reporting limit</u>
01045	Iron (total)	0.5 mg/L
01046	Iron (Dissolved)	0.5 mg/L
01051	Lead	0.05 mg/L
01055	Manganese	0.5 mg/L
71900	Mercury (grab) (using USEPA Method 1631 or equivalent)	1.0 ng/L*
01067	Nickel	0.005 mg/L
00556	Oil (hexane soluble or equivalent) (Grab Sample only)	5.0 mg/L
32730	Phenols (grab)	0.005 mg/L
01147	Selenium	0.005 mg/L
01077	Silver (total)	0.003 mg/L
01092	Zinc	0.025 mg/L

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states.

*1.0 ng/L = 1 part per trillion.

SPECIAL CONDITION 10. During January of each year the Permittee shall submit annual fiscal data regarding sewerage system operations to the Illinois Environmental Protection Agency/Division of Water Pollution Control/Compliance Assurance Section. The Permittee may use any fiscal year period provided the period ends within twelve (12) months of the submission date.

Submission shall be on forms provided by IEPA titled "Fiscal Report Form For NPDES Permittees".

SPECIAL CONDITION 11. The Permittee shall conduct biomonitoring of the effluent from Discharge Number(s) 002.

Biomonitoring

1. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fifth Ed.) EPA/821-R-02-012. Unless substitute tests are pre-approved; the following tests are required:
 - a. Fish - 96 hour static LC₅₀ Bioassay using fathead minnows (*Pimephales promelas*).
 - b. Invertebrate 48-hour static LC₅₀ Bioassay using *Ceriodaphnia*.
2. Testing Frequency - The above tests shall be conducted using 24-hour composite samples unless otherwise authorized by the IEPA. Samples must be collected in the 18th, 15th, 12th, and 9th month prior to the expiration date of this Permit.
3. Reporting - Results shall be reported according to EPA/821-R-02-012, Section 12, Report Preparation, and shall be submitted to IEPA, Bureau of Water, Compliance Assurance Section within one week of receipt from the laboratory. Reports are due to the IEPA no later than the 16th, 13th, 10th, and 7th month prior to the expiration date of this Permit.
4. Toxicity Reduction Evaluation - Should the results of the biomonitoring program identify toxicity, the IEPA may require that the Permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall be developed in accordance with Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833B-99/002, and shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate. The Permittee shall submit to the IEPA its plan for toxicity reduction evaluation within ninety (90) days following notification by the IEPA. The Permittee shall implement the plan within ninety (90) days or other such date as contained in a notification letter received from the IEPA.

NPDES Permit No. IL0021598

Special Conditions

The IEPA may modify this Permit during its term to incorporate additional requirements or limitations based on the results of the biomonitoring. In addition, after review of the monitoring results, the IEPA may modify this Permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 12. For the duration of this Permit, the Permittee shall determine the quantity of sludge produced by the treatment facility in dry tons or gallons with average percent total solids analysis. The Permittee shall maintain adequate records of the quantities of sludge produced and have said records available for IEPA inspection. The Permittee shall submit to the IEPA, at a minimum, a semi-annual summary report of the quantities of sludge generated and disposed of, in units of dry tons or gallons (average total percent solids) by different disposal methods including but not limited to application on farmland, application on reclamation land, landfilling, public distribution, dedicated land disposal, sod farms, storage lagoons or any other specified disposal method. Said reports shall be submitted to the IEPA by January 31 and July 31 of each year reporting the preceding January thru June and July thru December interval of sludge disposal operations.

Duty to Mitigate. The Permittee shall take all reasonable steps to minimize any sludge use or disposal in violation of this Permit.

Sludge monitoring must be conducted according to test procedures approved under 40 CFR 136 unless otherwise specified in 40 CFR 503, unless other test procedures have been specified in this Permit.

Planned Changes. The Permittee shall give notice to the IEPA on the semi-annual report of any changes in sludge use and disposal.

The Permittee shall retain records of all sludge monitoring, and reports required by the Sludge Permit as referenced in Standard Condition 23 for a period of at least five (5) years from the date of this Permit.

If the Permittee monitors any pollutant more frequently than required by the Sludge Permit, the results of this monitoring shall be included in the reporting of data submitted to the IEPA.

Monitoring reports for sludge shall be reported on the form titled "Sludge Management Reports" to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Mail Code #19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 13. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, <http://www.epa.state.il.us/water/edmr/index.html>. The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 25th day of the following month, unless otherwise specified by the permitting authority.

NPDES Permit No. IL0021598

Special Conditions

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 14. A dissolved oxygen limit of a minimum of 6 mg/L shall become effective two (2) years from the effective date of this Permit. Reporting shall be submitted on the DMR's on a monthly basis.

The Permittee shall construct dissolved oxygen equipment in accordance with the following schedule:

- | | | |
|----|--|---|
| 1. | Progress Report | 6 months from effective date of permit |
| 2. | Plans and specifications submitted to IEPA | 12 months from effective date of permit |
| 3. | Progress Report | 18 months from effective date of permit |
| 4. | Obtain Operational Level | 24 months from effective date of permit |

Compliance dates set out in this Permit may be superseded or supplemented by compliance dates in judicial orders, Illinois Pollution Control Board orders. This Permit may be modified with Public Notice, to include such revised compliance dates.

The limitation of dissolved oxygen may be modified to reflect any change in the Dissolved Oxygen Standard by the Illinois Pollution Control Board under Docket No. R04-25

REPORTING

The Permittee shall submit progress reports for items 1, 3 and 4 of the compliance schedule indicating: a) the date the item was completed, or b) that the item was not completed, the reasons for non-completion and the anticipated completion date to the Agency Compliance Section.

SPECIAL CONDITION 15.

The Permittee shall work towards the goals of achieving no discharges from sanitary sewer overflows or basement backups and ensuring that overflows or backups, when they do occur do not cause or contribute to violations of applicable standards or cause impairment in any adjacent receiving water. In order to accomplish these goals, the Permittee shall develop and submit to the IEPA a Capacity, Management, Operations, and Maintenance (CMOM) plan within twelve (12) months of the effective date of this Permit. The Permittee may be required to construct additional sewage transport and/or treatment facilities in future permits or other enforceable documents.

The CMOM plan shall include the following elements:

- A. Measures and Activities:
1. A complete map of the collection system;
 2. Schedules, checklists, and mechanisms to ensure that preventative maintenance is performed on equipment;
 3. An assessment of the capacity of the collection and treatment system at critical junctions and immediately upstream of locations where overflows and backups occur or are likely to occur; and
 4. Identification and prioritization of structural deficiencies in the system.

NPDES Permit No. IL0021598

Special Conditions

- B. Design and Performance Provisions:
 - 1. Monitor the effectiveness of CMOM;
 - 2. Upgrade the elements of the CMOM plan as necessary; and,
 - 3. Maintain a summary of CMOM activities.
- C. Overflow Response Plan:
 - 1. Know where overflows and backups occur; and,
 - 2. Respond to each overflow or backup to determine additional actions such as clean up.
- D. System Evaluation Plan.
- E. Reporting and Monitoring Requirements.

The Permittee shall also comply with the following Wet Weather Project Schedule in order to eliminate overflows from sanitary sewers:

1. Progress Report	6 months from effective date of permit
2. Prioritize System Repairs/Replacement	12 months from effective date of permit
3. Progress Report	18 months from effective date of permit
4. Evaluate Improvements	24 months from effective date of permit
5. Progress Report	30 months from effective date of permit
6. Evaluate Improvements	36 months from effective date of permit
7. Complete detailed study on collection system	42 months from effective date of permit
8. Submit construction permit for wet weather treatment facility	48 months from effective date of permit
9. Progress Report	54 months from effective date of permit
10. Complete wet weather treatment facility	60 months from effective date of permit

Compliance dates set out in this Permit may be superseded or supplemented by compliance dates in judicial orders, Illinois Pollution Control Board orders. This Permit may be modified with Public Notice, to include such revised compliance dates.

REPORTING

The Permittee shall submit progress reports for items 1- 7, 9, and 10 of the compliance schedule indicating: a) the date the item was completed, or b) that the item was not completed, the reasons for non-completion and the anticipated completion date to the Agency Compliance Section.

Sanitary sewer overflows are expressly prohibited from the following discharge locations or any other sanitary sewer and the use of an overflow point is subject to the reporting requirements contained in Standard Condition 12(e) of this Permit:

NPDES Permit No. IL0021598

Special Conditions

Discharge Number(s)	Name
003	Manhole at 302 N. Raymond Ave., South lot line
004	Manhole at N. Side of Russell St. at intersection of Russell St. and Spring St.
005	Manhole at intersection of Russell St. and Summit Street
006	Manhole at Summit St. 100' N. of intersection of Russell St. and Summit St.

Memorandum

To: Robert Kosin, Village Administrator
Village of Barrington Hills

From: Dan Strahan
Gewalt Hamilton Associates, Inc.

Date: November 26, 2014

Re: Village Hall Groundwater Monitoring
2014 Data Review

In October 2009 the Solinst groundwater monitoring equipment installed at the Village Hall began collecting data. After a gap in the data due to replacement of equipment, the equipment has monitored the elevation of the aquifer continuously since August of 2013, providing just over one full year of data. Our office has reviewed the data as well as previous observations from 2010 and has prepared this memo to summarize our findings.

Background

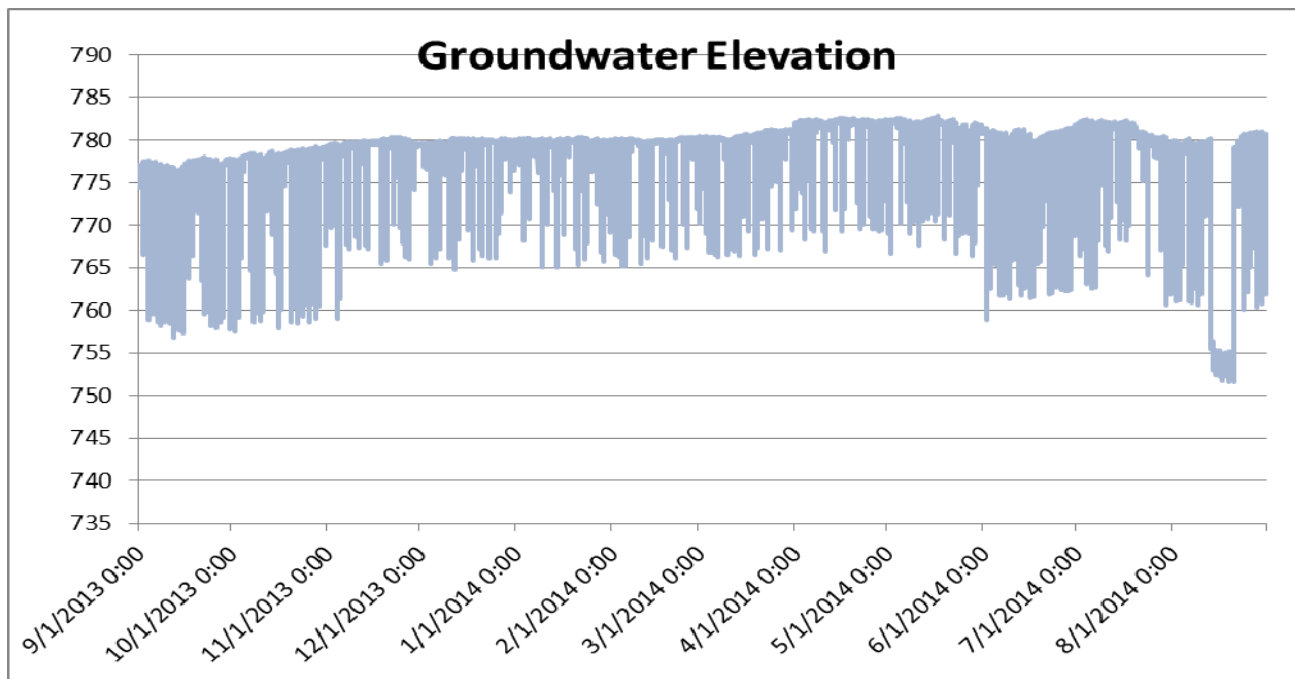
Monitoring equipment was initially installed in the existing domestic well at the Village Hall during the summer of 2009. The original equipment as well as cabling was replaced during the winter and spring of 2013. A stilling tube was added to minimize future damage to the equipment and allow for future maintenance without interrupting service to the building.

The new Solinst Levellogger Gold was installed at an elevation of 730.0, submerged well below the normal groundwater level. The Levellogger measures the depth of the water it is submerged in indirectly through a measurement of pressure. The second instrument is a Solinst Barologger Gold, and was installed above the normal groundwater elevation. The purpose of the Barologger is to measure the atmospheric pressure, which is then subtracted from the Levellogger pressure reading to provide a measure of hydrostatic pressure without any influence from atmospheric pressure; the water depth can then be calculated directly from the adjusted hydrostatic pressure. These readings are communicated by cable to a control panel installed on the south wall of the Village Hall, then transferred by radio to a work station inside the Village Hall. The downloaded data provides readings every ten minutes.

Variability in Groundwater Elevation- September 2013-August 2014

As observed previously, the elevation of groundwater varied throughout the year, and the variability in this groundwater elevation came from two sources. As the Village Hall well is active, serving both administrative staff and the police department, a drop in the groundwater elevation is observed each time the pump turns on to draw water. This is discussed further in the section below. The second source of variability is due more simply to the dynamics of the aquifer. Ignoring the effects of the draw down, the “normal” ground water level varied over the course of the year from a minimum of 776.37 in late August to a maximum of 782.72 in mid-May. In 2010, it was observed that the levels fluctuated between a minimum of 776.33 in early September to a maximum of 783.26 in early April.

While these similarities would initially suggest an annual cycle in the ground water elevation, elevations did not seem to fall back to similar minimum levels in August or September of 2014. In fact, the stable water elevation has continued to rise to 782.82 by November of 2014, approximately two feet higher than the same period a year earlier.



Between August 13, 2014 and August 21, 2014, water levels appear to drop more substantially. While both loggers were reporting values throughout this time period, it would appear more likely that this abnormality was the result of a momentary equipment issue as opposed to a momentary drop in the aquifer level. Nothing similar has been observed since this time period.

Well Drawdown

Throughout the year momentary elevation readings of 10-15' below the normal water level were observed, corresponding to the activation of the pump to draw water from the aquifer into the building. This momentary drawdown occurs as the pump draws water from the aquifer and water moves through the pores in the soil toward the pump, forming a cone of depression centered on the well. It is noted that the cone of depression disappears almost immediately after pumping stops, typically within 5-10 minutes. This momentary drawdown is more pronounced (15-20') and occurs more frequently during the summer months due to the Village's irrigation system, but this additional draw does not seem to affect the "normal" water level of the aquifer. This affect was discussed in detail in our 2010 memo.

Lessons Learned

After observing the data from the Solinst equipment since 2009, the following general observations are made:

- **Groundwater Levels:** The elevation of the Village's aquifer varies over time with an observed variance of 7-8 feet within a single year. The variation does not seem to follow a predictable seasonal pattern.
- **Recharge Rate:** The water source for the Village Hall well, like most homes in the Village is a shallow sand and gravel aquifer, recharged by precipitation percolating through the soil within a relatively small area. As the recharge time for the shallow aquifer system is unknown and can vary widely, from a few days to several years, the rate at which precipitation levels are impacting groundwater levels is difficult to determine from this data alone.
- **Irrigation System:** The recharge rate of the aquifer appears to be sufficient to absorb the additional demands of the Village's irrigation system without lasting impacts to the normal water level.

PUBLIC COMMENTS

Horse Pasture Management



Adapted from: Presentation by
Jim Morrison, UI Extension
Specialist, Crop Sciences





A Little Philosophy . . .

- Productive pastures just don't happen –

“Are you giving your pastures **as much** attention as you give your horse(s)?”

- *Pasture or dry lot?*
- Walk, observe, and be flexible

Pasture Management's Top 10

1. Do not over graze

- Starting point for stocking rate - 1 horse (1,000-1,200 lbs.) per 2 to 4 acres
- Plants become weakened
- Water runoff and soil temperature increase
- Yield and quality decrease
- Plants need rest to be most productive, this can be accomplished by adopting rotational grazing
- Know when to graze and when to rest pasture



2. Do not under graze

- Waste feed & invites undesirables



Top 10 (continued)

3. Check your soil's pH?

- When was the last soil test taken?
- For cool-season grass pastures
pH of 6.0 to 7.0
- For legume pastures
pH of 6.5 to 7.0
- For cool-season grass/legume mix
pH of at least 6.5 to 7.0
- Remember, pH scale is logarithmic
- Limestone raises the soil pH

Top 10 (continued)



4. Fertilize wisely - N

- To maximize production & plant health, N should be considered for a grass dominant pasture
- Grass responds quickly to N
- ~ 50 lbs. N per acre is used most efficiently by grass
- First 50 lbs. in early- to mid-June
- Second 50 lbs. in late July-early August
- Use dry N source - ammonium nitrate, ammonium sulfate, or urea. Do not apply UAN solutions (50/50 urea/ammonium nitrate - 32% Solution) to actively growing pasture



Top 10 (continued)

4. Fertilize wisely – P and K

- Optimal level will vary by soil type, area of state, and to certain extent by the forage species
- Optimal P_1 level = 40 lbs./acre in NW IL
- Optimal K level = 260 (CEC <12) to 300 (CEC >12) lbs./acre
- Removal rate per ton dm/acre:
 $P_2O_5 = \sim 12$ lbs. $K_2O = \sim 50$ lbs.
- On established pastures, apply P in spring and/or in fall. Preferred to apply K in the fall.
- Monitor status by soil testing every 4 years
- 60 to 80% of P and K removed by grazing is recycled in manure/urine
- P and K added above the optimal levels not economical and does not provide consistent yield response



Top 10 (continued)

4. Fertilize wisely – N, P, & K

- **Question:** Fertilizer bag says 18-46-24
What does this mean?
- **Answer:** 18% N, 46% P₂O₅, 24% K₂O
- A 50-pound bag of this fertilizer contains:
 - 50 x 0.18 = 9 lbs. N
 - 50 x 0.46 = 23 lbs. P₂O₅
 - 50 x 0.24 = 12 lbs. K₂O



Top 10 (continued)

4. Fertilize wisely – what about manure?

- Grass stands better suited for manure
- Consider:
 - analysis of manure, soil test, application equipment, environmental concerns
- Apply shortly after grazing period
- Some N loss due to volatilization
- Most of P and K will be available
- 1,000 lb. horse = 50 lbs. manure/day:
 - 0.30 lb. N, 0.11 lb. P_2O_5 , 0.23 lb. K_2O
(nutrient content per day)
 - 0.9 to 1.0 cubic feet per day



Top 10 (continued)

4. Fertilize wisely – how's your math?

- You want to apply 50 lbs. N/ac and urea (46-0-0) is the fertilizer to be used:

$$50 \div 0.46 = 109 \text{ lbs. urea to apply per acre}$$

- You want to apply 150 lbs. K_2O /ac and muriate of potash (0-0-60) is the fertilizer to be used:

$$150 \div 0.60 = 250 \text{ lbs. muriate of potash to apply per acre}$$



Top 10 (continued)

5. Encourage/sow legumes

- Legumes “fix” atmospheric nitrogen (N) and make it available for plant growth
- If legumes comprise 30-40% or more of the sward, no need to apply N
- Legume-grass mix yields > N-fertilized grass pasture
- Legumes increase the feed value of pasture

6. Control undesirable plants

- Weed control starts with proper ID



Top 10 (continued)

7. Match species w/ soil and pasture usage

- Forages have “personality” traits
- Can you ID forage species in your pasture?
- Select species with:
 - Ability to yield and persist
 - Ability to supply quality/palatability needed
 - Ability to meet seasonal needs of livestock
 - Resistance to significant disease problems
- Keep mixes simple, no “silver bullet”
- Know the variety; is the seed certified?



Top 10 (continued)

8. Where's the water, and how much?

- No more than 600-800 feet from grazing area
- 10 to 15 gallons per day per horse

9. What's the "lay of the land"?

- Are there slopes & which direction do they face?
- Are there trees, wooded areas?
- What is the soil type(s) of your pasture?
- How's the soil drainage (internal & external)?

Top 10 – last one!

10. Walk paddocks weekly

- Observe forage growth & grazing pattern
- See any shift in plant population
- ID pest problems
- Enables one to plan ahead
- Timely decisions improve pasture productivity





Reference

- **Illinois Agronomy Handbook**

C1383

<http://extension.cropsci.illinois.edu/handbook/>

Managing forage systems to meet horse needs



Kevin H. Kline, PhD, Professor of
Animal Sciences. University of Illinois

Access to water

- Should be available within about 800 ft of the maximum distance from which horses might have to travel in a grazing system.
- Missouri research suggests that pasture forage beyond this distance is generally not well utilized.

Access to water - continued

- Some horse owners use lanes to access a central watering site
- It is better to have water available within every paddock.
- This reduces the distance horse must travel to drink, discouraging horses from congregating around a central water source
- It also requires less fencing
- Pasture may be severely trampled and eroded near central watering sites, wasting forage and compacting the soil.
- Multiple waterers allows for better pasture recovery between grazings in rotational grazing.

Feed or exercise paddock?

- The first decision is whether the paddock is going to be used primarily for exercise or for forage production (and exercise).
- Paddocks for exercise only can be relatively small, well drained lots regardless of animal numbers.
- However it is important to remember that when the number of horses exceeds 3 per acre, even with pasture rotation, little forage production can be expected.
- Pasture managed for forage production can greatly reduce the need for purchased hay and grain. Protein and energy are the two largest costs items in horse nutrition.
- Good pasture management can provide adequate amounts of protein and energy for 6 to 9 months of the year.

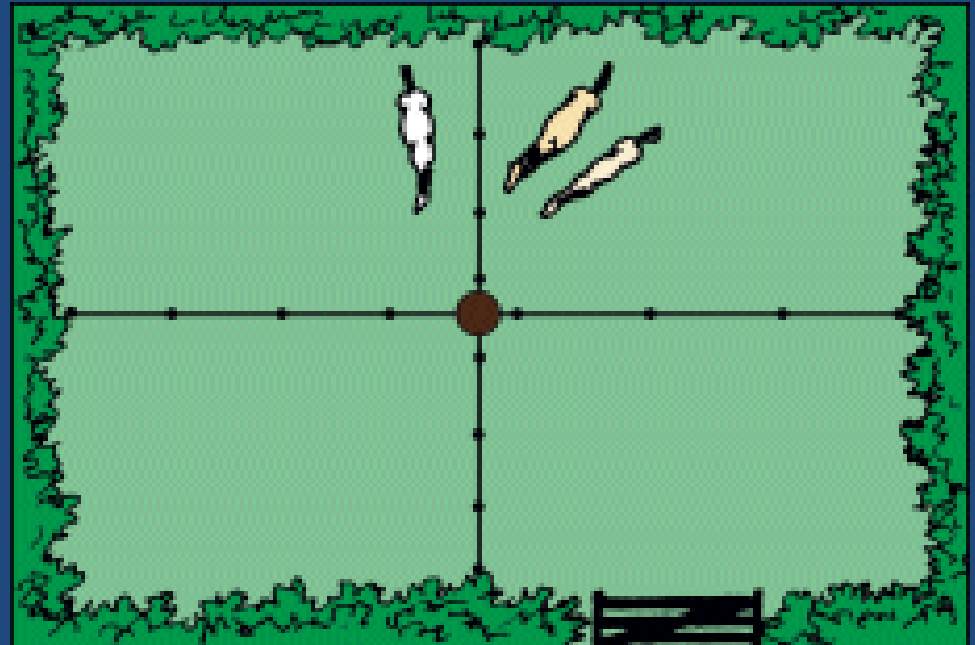
Rotation management of horse pastures

Why?

- One of the most important efficient ways to increase horse pasture productivity
- Rested pasture is flush with new grasses and legumes
- Providing your horses with nutrient-rich, high-protein forage.
- Giving forages an opportunity to regrow and compete with weedy plants that are trying to become part of your pasture.

Rotation Management vs. Unmanaged Horse Pastures

- Unmanaged pastures of Kentucky bluegrass will generally yield about one-half of a ton per acre annually.
- Managed pasture will often yield nearly 4 tons per acre each year.



Rotation Management (cont.)

- Encourages consumption of all forage in the paddock and to limit access to short grass once it has been grazed.
- Should usually limit grazing in a paddock to six days or less so horses don't eat the new shoots that are just emerging rather than taller forage.
- Prevent the grazed paddocks from being grazed to a height less than 4 inches for tall grass species and 2 inches for Kentucky bluegrass.

Basic Procedures for Rotational Grazing of Horse Pastures

- Basic principle of intensive grazing - move horses among paddocks at times determined by the forage growth rather than the calendar.
- In general, horses should be put on pastures with 4 to 6 inches of growth for Kentucky bluegrass and white clover
- Put horses on 8 to 10 inches of growth for all other cool-season grasses and legumes.
- Can graze Kentucky bluegrass down to 2 inches and all other species down to 4 inches.

Basic Procedures for Rotational Grazing of Horse Pastures (cont.)

- In a normal season, spring growth is lush and rapid
- Usually a nearly dormant period in summer and a burst of growth in the fall.
- The timing and extent of growth during these periods will vary from year to year depending on the weather.
- You may also be limited in the number of paddocks available, but keep in mind that grazing a paddock for more than 6 days greatly reduces the regrowth of forage on that paddock because the young regrowth is grazed.

Electric tape is good for interior rotational grazing fencing



Late Summer Horse Pasture Grazing/Supplemental Feed

- August is usually a very challenging month for horse pasture managers.
- With dry weather, it often looks like we will be out of grass any day.
- It is important not to move to new pastures until they are ready to be grazed
- However, we need to keep the horses from eating the pastures they are on into the ground.
- This is a time we need to consider some alternate strategies in our management system such as feeding supplemental hay/grain.

Late Summer Horse Pasture Grazing/Supplemental Feed (Cont.)

- One of the big mistakes many managers make when they are out of grass in late summer is to keep grazing.
- Doing this reduces the regrowth potential once the rains come and the temperature begins to get cooler.
- A much better option is to feed your horse hay as the forage source in periods of little grass.

Late Summer Horse Pasture Grazing/Supplemental Feed (Cont.)

- Feeding hay during a period of pasture shortage and resting your pastures encourages good fall regrowth (if you also fertilize the pasture with nitrogen fertilizer)
- Allows grazing of paddocks into September and October.
- Leaving the horses on the paddocks in August with little regrowth you will result in very little fall grazing and will weaken the root system of the plants for next year's production.
- By feeding hay in August you should gain an extra 30 days of fall grazing and have healthier pastures going into winter.

References

- **Illinois Agronomy Handbook**
C1383
<http://www.aces.uiuc.edu/iah/>
- **Pastures for Horses: A Guide to Rotational Grazing**
C1387-CD



Thank you – any questions?

