

Watershed Quality Protection in the Champlain River Basin

Queensbury Hotel

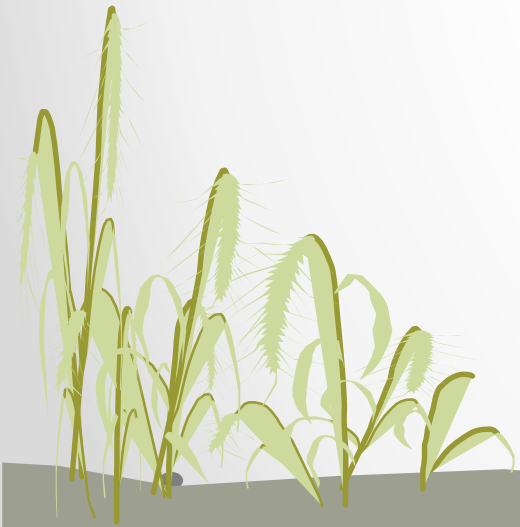
March 28th, 2017
Glens Falls, New York

8:30 - 9:00 AM	Welcome and Course Introduction Refreshments available Keynote Address: Beth Gilles, Assistant Director, Lake George-Lake Champlain Regional Planning Board
9:00 – 10:15 AM	Wetlands and Floodplains <ul style="list-style-type: none">- The functioning, importance and science of wetlands in reducing stormwater and watershed quality impacts and maintaining clean water systems as relevant to development/building in or around these sensitive areas- Regulatory entities (Army Corps of Engineers, NYS DEC, Adirondack Park Agency)- FEMA flood maps, insurance, state and local development regulations on or within wetlands and floodplains- Brief Q&A session Presenter: Barbara Beall, PWS, LEED AP, The Chazen Companies
10:15 – 10:30 AM	<i>Intersession Break – refreshments and pastries</i>
10:30 – 11:45 PM	Water Supply and Septic Systems <ul style="list-style-type: none">- Private and public systems- Well-head identification on maps- Land use, state and local regulations on well management- Lending agencies' policies for well-water sampling during property transfers- Brief Q&A session Presenters: Kevin Kenyon, P.E. & Diane Sheppard, P.E., NYS Department of Health
11:45 – 12:00 PM	Closing Remarks <ul style="list-style-type: none">- Closing Q&A session- Information to ensure you receive Continuing Education course credits- We'll email you a link to download today's presentations and supporting materials, <i>so don't fret taking notes!</i>

Notes and Questions

Wetlands and Floodplains Session

Water Supply and Septic Systems



Wetlands and Floodplains For Real Estate Professionals

Presented By:

Chazen Engineering, Land Surveying, and
Landscape Architecture Co., DPC

Barbara B. Beall, PWS, LEED® AP

March 28, 2017 – Queensbury, NY

THE *Chazen* COMPANIES[®]
Proud to be Employee Owned

Topics Covered

- **Basics of Identifying Aquatic Resources**
 - In the field
 - Desktop Mapping Resources
 - Jurisdictional Determinations
 - Where to Find Help!!!
 - **QUESTION AND ANSWERS**
- **Regulation of Aquatic Resources**
 - How/When Regulated
 - Corps of Engineers
 - NYSDEC Streams
 - NYSDEC Wetlands (outside of Adirondack Park)
 - Adirondack Park Agency
 - Associated Laws
 - General Overview of Permitting
 - Where to Find Help???
 - **QUESTIONS AND ANSWERS**
- **Floodplains/Floodplain Management**
 - Flood Hazard Mapping
 - FEMA and Flood Insurance
 - Local/State Floodplain Administration
- **Roles and Obligations as REALTORS®**
- **QUESTIONS AND ANSWERS**

Course Purpose/Goal

This course is not intended to make you an expert in these areas.

The purpose of this course is to

- Help you identify RED FLAGS
- Increase your awareness of aquatic resource regulatory programs
- Help you to be aware of your obligations as REALTORS[®]
- Enable you to speak to your clients about these resources
- Provide advice on where to obtain additional information



Why Are Aquatic Resources Protected?

- Damage and Storm Water Control
- Wildlife Habitat
- Water Quality Protection
- Recreation
- Open Space
- Scientific Values
- Biological Diversity
- Educational

Not all wetlands are created equal
Different wetlands do different things
Some of these things are important to humans



Why Are Aquatic Resources Protected?



Cumulative loss of wetlands
is like
a death by a thousand paper cuts

Basics of Identifying Aquatic Resources

Basics of Identifying Aquatic Resources

Close your eyes....

Imagine what an aquatic resource or wetland might look like....

What do you see?



Basics of Identifying Aquatic Resources



A Lake - Lake Champlain



A River - Au Sable River



A Stream - Headwater stream



Wetland - Cattail Marsh with Shrubs



Wetland – A Tamarack Bog



Wetland - Forested Wetland

Identifying Aquatic Resources - Waters



Lakes - Lake Champlain



Rivers - Au Sable River



Streams - Headwater stream



Ponds

Corps of Engineers – under Section 404 Clean Water Act:

- Navigable waters (also Section 10 Rivers Harbors Act)
- Intrastate/Intra-country Waters/Wetlands
- Waters such as intrastate lakes, streams (including intermittent streams) mudflats, sandflats, wetlands, or natural ponds that could impact interstate or foreign commerce (used by interstate travelers for recreation, interstate sale of fish, used for commerce)
- Impoundments/Tributaries to such waters
- No regulatory map typically

NYSDEC – Environmental Conservation Law Article 15 (6 NYCRR 608)

- Protected Streams (bed and banks)
Streams with (Standard/Class C(t/ts), B, A)
- Navigable waters of the State:
Water bodies that can be navigated by at least a single-person vessel; does not include waters surrounded by private lands.
- Regulatory mapping – NYSDEC Environmental Resource Mapper

Identifying Aquatic Resources - Wetlands



Forested Wetland



Cattail Marsh/Shrub Wetland



Bog/shrub wetland

What are three things these (and all) wetlands have in common?

Identifying Aquatic Resources - Wetlands

Corps of Engineers

"**Wetlands** are areas that are inundated or saturated by surface or ground **WATER** at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of **VEGETATION** typically adapted for life in saturated **SOIL** conditions.

- No regulatory map
- No minimum size
- No regulated buffer but....

Adirondack Park Agency (APA)

- Article 24 Definition NYSDEC Wetlands
- **Based, but not reliant on regulatory map**
- **>1 acre or associated with permanent waterbody**
- **Regulatory buffer case by case basis but adequate to protect functions**

NYS Department of Environmental Conservation (NYSDEC)

those lands and waters of the state which

- meet definition of Article 24 Freshwater Wetlands Act
- have an area of at least 12.4 acres... or if smaller, have unusual local importance as determined by the Commissioner of NYSDEC....

Article 24 Definition. Lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following.

- Lands and submerged **AQUATIC lands** called marshes, swamps, sloughs, bogs and flats supporting aquatic or semi-**AQUATIC VEGETATION** of the following types.
- Wetland trees, shrubs, emergent **VEGETATION**, rooted floating or free floating vegetation, wet meadow vegetation, bog mat vegetation, submerged vegetation, depending on seasonal or permanent **FLOODING** or sufficiently **WATERLOGGED SOILS** to give them a competitive advantage over other vegetation.
 - **Based on regulatory mapping**
 - **Can extend jurisdiction 500 feet beyond mapped wetland**
 - **>12.4 acres in size (or smaller if supports important resource)**
 - **Regulated 100 foot buffer**

Identifying Aquatic Resources - Wetlands

Corps of Engineers

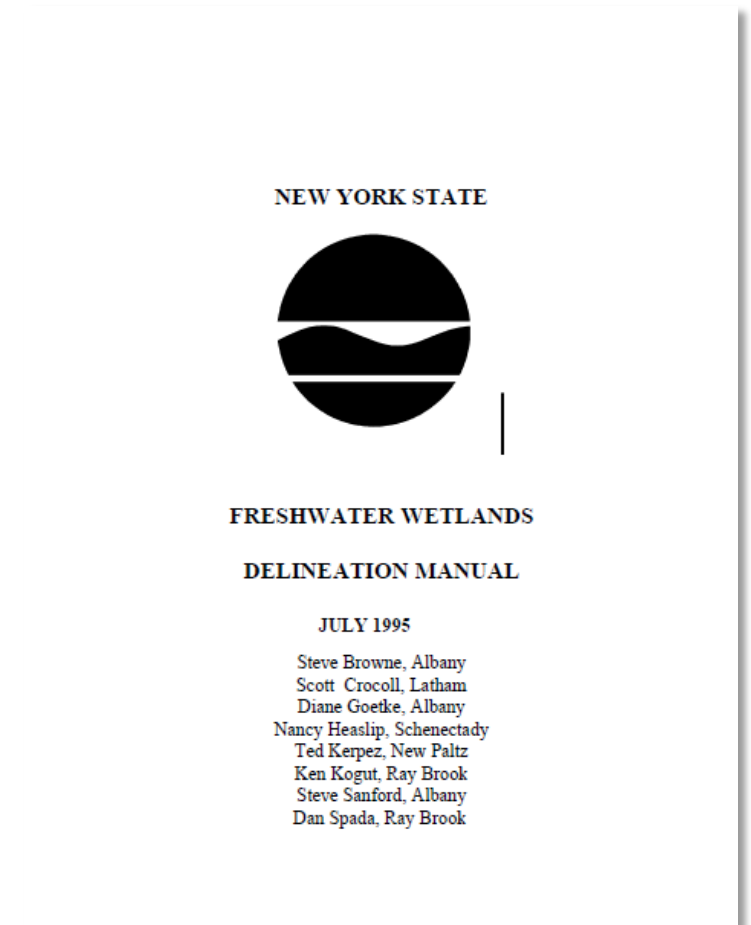
Wetland Delineation Manuals (Available on-line)

NYSDEC and APA



“Cookbooks”

Corps Regional Supplement
Numerous photos of:
Wetlands
Vegetation Indicators
Soils
Hydrology
Problem Areas
Typical of NYS



Identifying Aquatic Resources - Wetlands

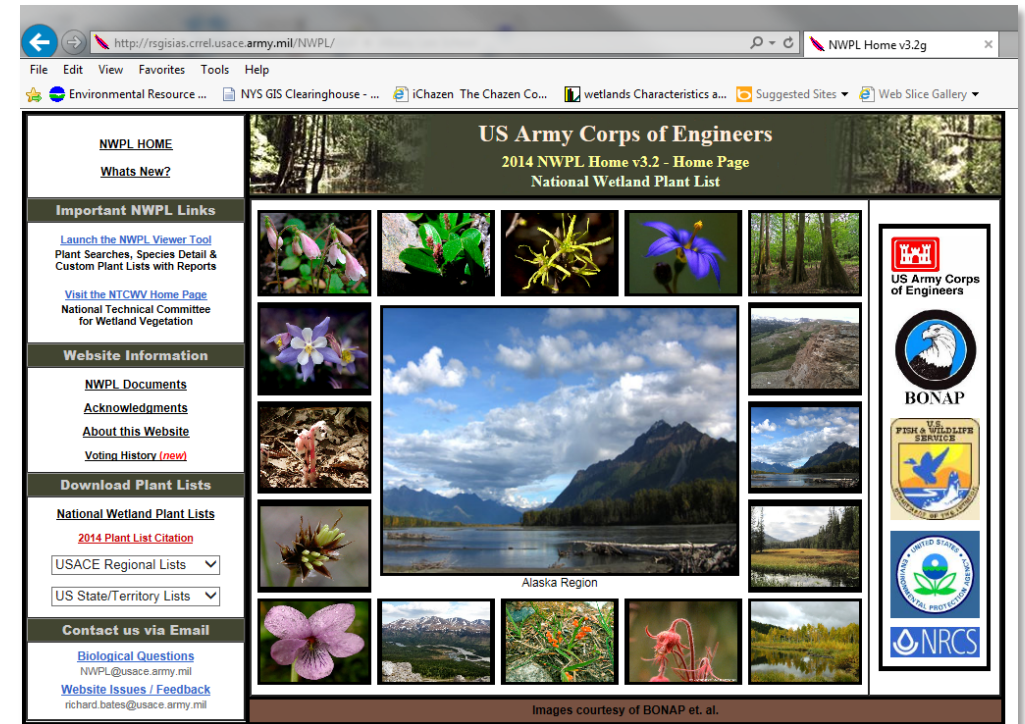
USDA United States
Department of
Agriculture

Natural Resources
Conservation
Service

In cooperation with
the National Technical
Committee for Hydric Soils

Field Indicators of Hydric Soils in the United States

A Guide for Identifying and Delineating
Hydric Soils, Version 8.0, 2016



List of Wetland Plants
Probably not useful for laypersons

Field Indicators of Hydric Soils
Good Photos of Wet Soils

Basics of Identifying Aquatic Resources



MANY DIFFERENT TYPES OF WETLANDS
NOT ALL HAVE WATER ALL THE TIME
STANDING WATER OR SATURATED SOILS
2-3 WEEKS
DURING GROWING SEASON



Basics of Identifying Aquatic Resources

SOME CAN BE DIFFICULT TO DETECT BY A LAYPERSON



Identifying Aquatic Resources - Soils



Peat layer



Thick muck layer



Heavy gray clay



Gray mineral soil with brighter orange spots



Gray sandy soil with orange spots



Upland
Adirondack
Soil
(Spodosol)

Identifying Aquatic Resources - Hydrology

Ask yourself: Do I see evidence that water is on this site some time during the year? May be subtle.



Figure 49. Drainage patterns in a slope wetland.

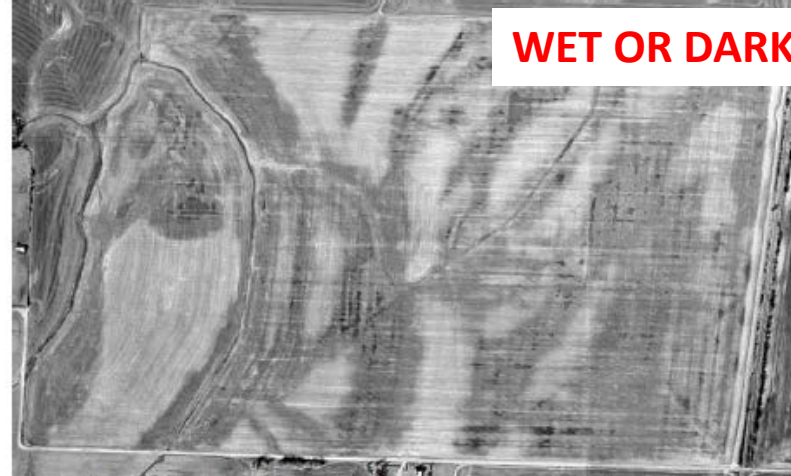


Figure 57. Aerial photograph of an agricultural field with saturated soils indicated by darker colors.



Figure 58. Stunted corn due to wet spots in an agricultural field in New Hampshire.

DRAINAGE PATTERNS, STANDING WATER, MOSS TRIM LINES, BUTTRESSED ROOTS, WATER STAINED LEAVES



Figure 48. Drainage patterns seen during typical early spring flows in a forested wetland. The patterns are also evident when the wetland is dry.



Figure 32. Wetland with surface water present.



Figure 35. Water marks (light-colored areas) on trees in a seasonally flooded wetland.

Aquatic Resources – State v. Fed

State Wetlands and Waters	Federal Wetlands and Waters
<ul style="list-style-type: none"> ▪ Jurisdiction based on regulatory maps and site conditions 	<ul style="list-style-type: none"> ▪ Jurisdiction based on site conditions
<ul style="list-style-type: none"> ▪ Waters / Wetlands regulated separately <ul style="list-style-type: none"> ▪ Waters (Article 15) (NYSDEC) ▪ Wetlands (Article 24) (NYSDEC with APA in Park) 	<ul style="list-style-type: none"> ▪ Wetlands and Waters regulated together ▪ Section 404 Clean Water Act Discharge dredged/fill material into Waters of the US including wetlands ▪ Section 10 Rivers Harbors Act - Structures or work
<ul style="list-style-type: none"> ▪ Mapped (NYSDEC) plus 500 foot “check zone” ▪ Mapped (APA) but can also regulate unmapped wetlands 	<ul style="list-style-type: none"> ▪ No regulatory mapping. ▪ Jurisdiction based on field mapping and on-site conditions, with positive indicators of soils, vegetation, hydrology
<ul style="list-style-type: none"> ▪ Generally ≥ 12.4 acres outside of Adirondack Park Smaller important wetlands can be regulated ▪ In Adirondack Park >1 acre or any size if w/permanent water 	<ul style="list-style-type: none"> ▪ No minimum size ▪ Must connect to interstate commerce
<ul style="list-style-type: none"> ▪ Outside of park, wetlands have 100 foot buffer ▪ Inside park – setback adequate to protect wetland functions ▪ Streams (Class C(t) or better) to top of bank 	<ul style="list-style-type: none"> ▪ Wetlands have no buffer, regulated to edge of wetland ▪ However, in review Corps likes to see enough room around wetland to avoid future impacts ▪ All waters typically regulated to OHWM
<ul style="list-style-type: none"> ▪ Wetlands classes (1-4) (highest to lowest) - functions 	<ul style="list-style-type: none"> ▪ Wetland classification - Cowardin cover type

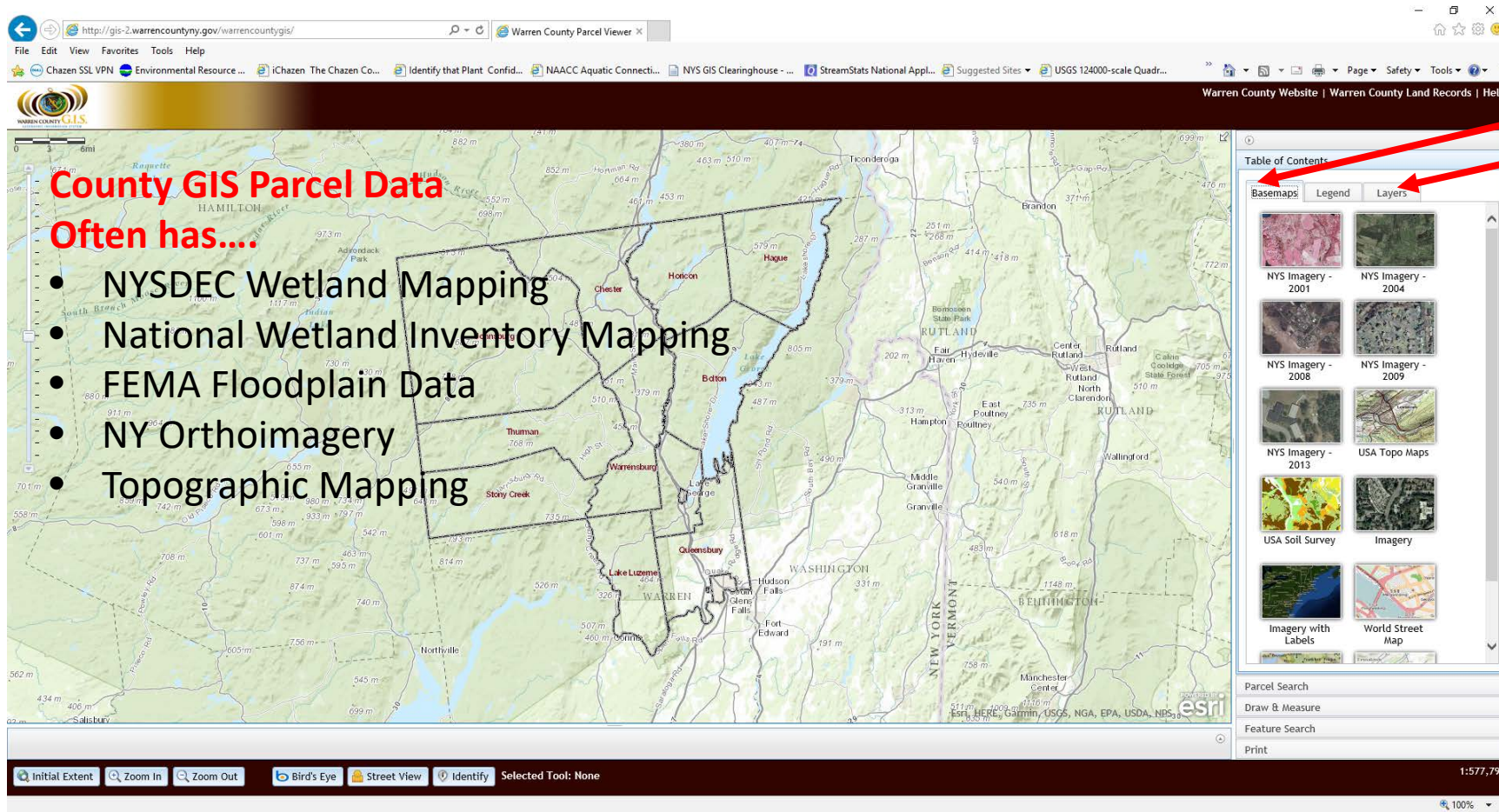
Identifying Aquatic Resources - Mapping



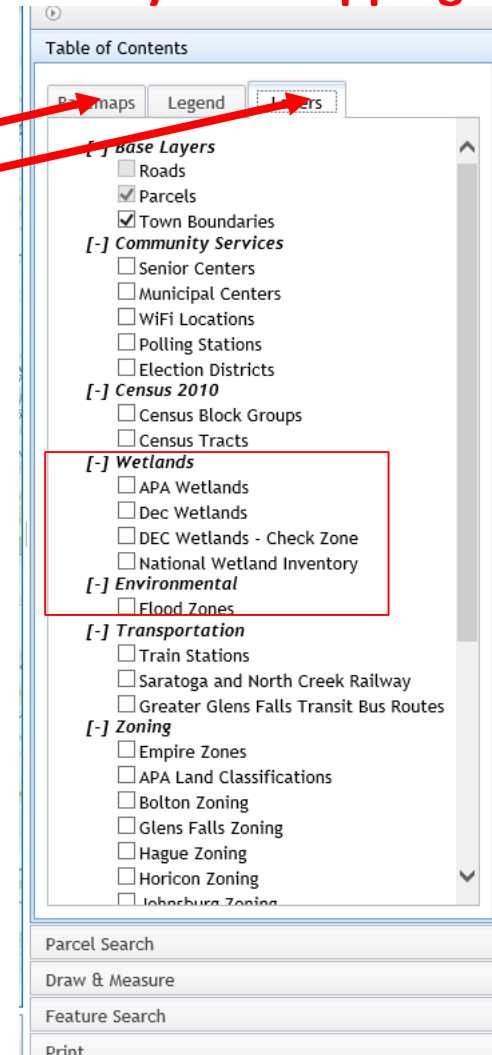
Land for sale...

Given what you have learned about red flags, what do you see in this photo?

Identifying Aquatic Resources - Mapping

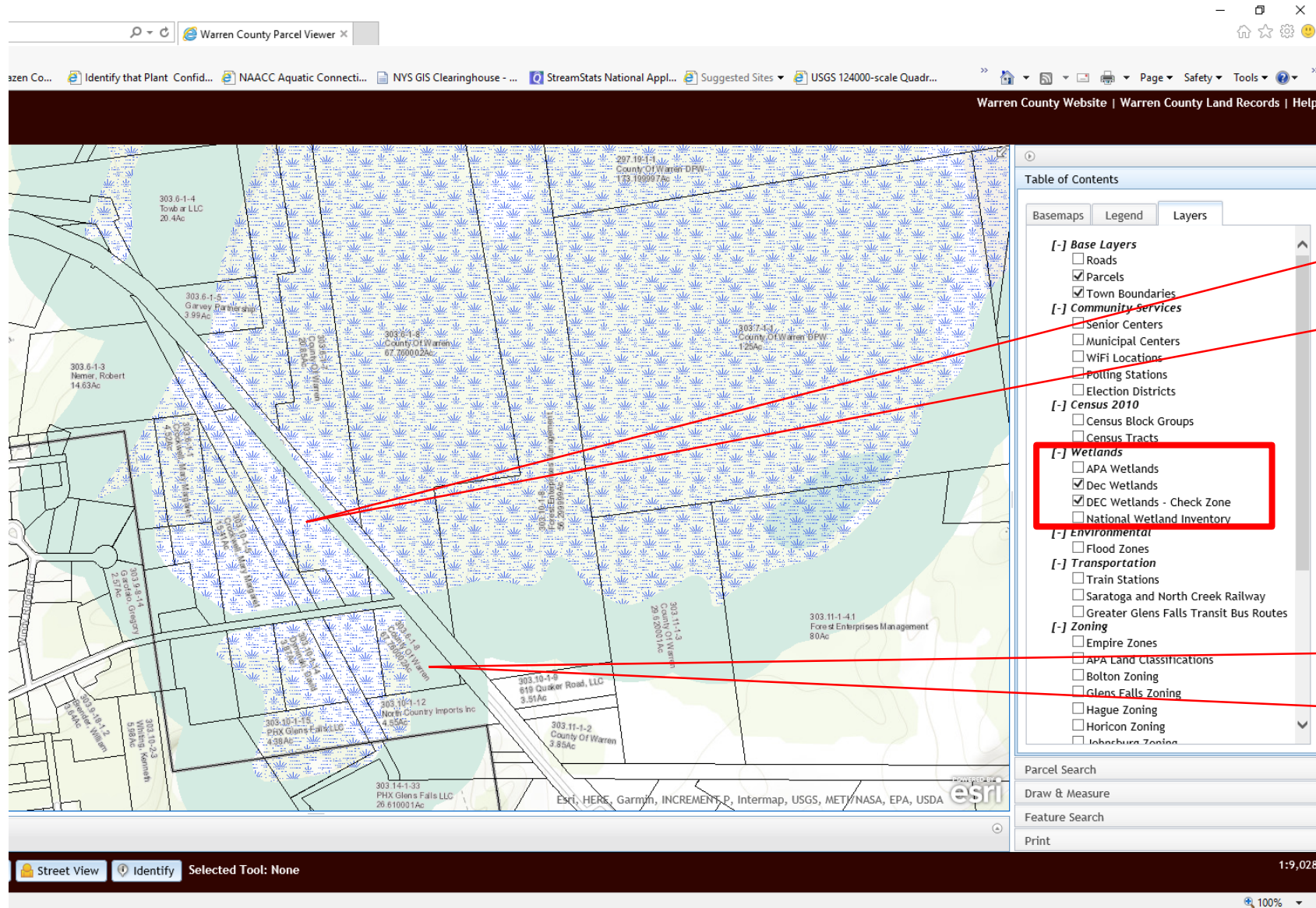


County GIS Mapping



Warren County GIS Parcel Data

Identifying Aquatic Resources - Mapping



NYSDEC Wetland Map

A regulatory Map illustrating approximate boundary of NYSDEC wetlands outside of Adirondack Park.

NYSDEC Check Zone

Jurisdictional wetlands can extend 500 feet from the mapped boundary.

Identifying Aquatic Resources - Mapping

The screenshot displays the NYSDEC Environmental Resource Mapper web application. The browser address bar shows the URL <http://www.dec.ny.gov/gis/erm/>. The page header includes the New York State Department of Environmental Conservation logo and navigation links for Services, News, Government, and Local. The main content area features a map titled "Environmental Resource Ma" with a "Base Map" dropdown set to "Topographical".

On the left side, the "Layers and Legend" panel is visible, showing several layers:

- ☐ All Layers
- ☐ Unique Geological Features
- ☒ Waterbody Classifications for Rivers/Streams
- ☒ Waterbody Classifications for Lakes
- ☒ State Regulated Freshwater Wetlands
- ☐ State Regulated Wetland Checkzone
- ☐ Significant Natural Communities
- ☐ Natural Communities Near This

Two red circles highlight the "Waterbody Classifications for Rivers/Streams" and "State Regulated Freshwater Wetlands" layers. Red arrows point from these circles to information popups on the map.

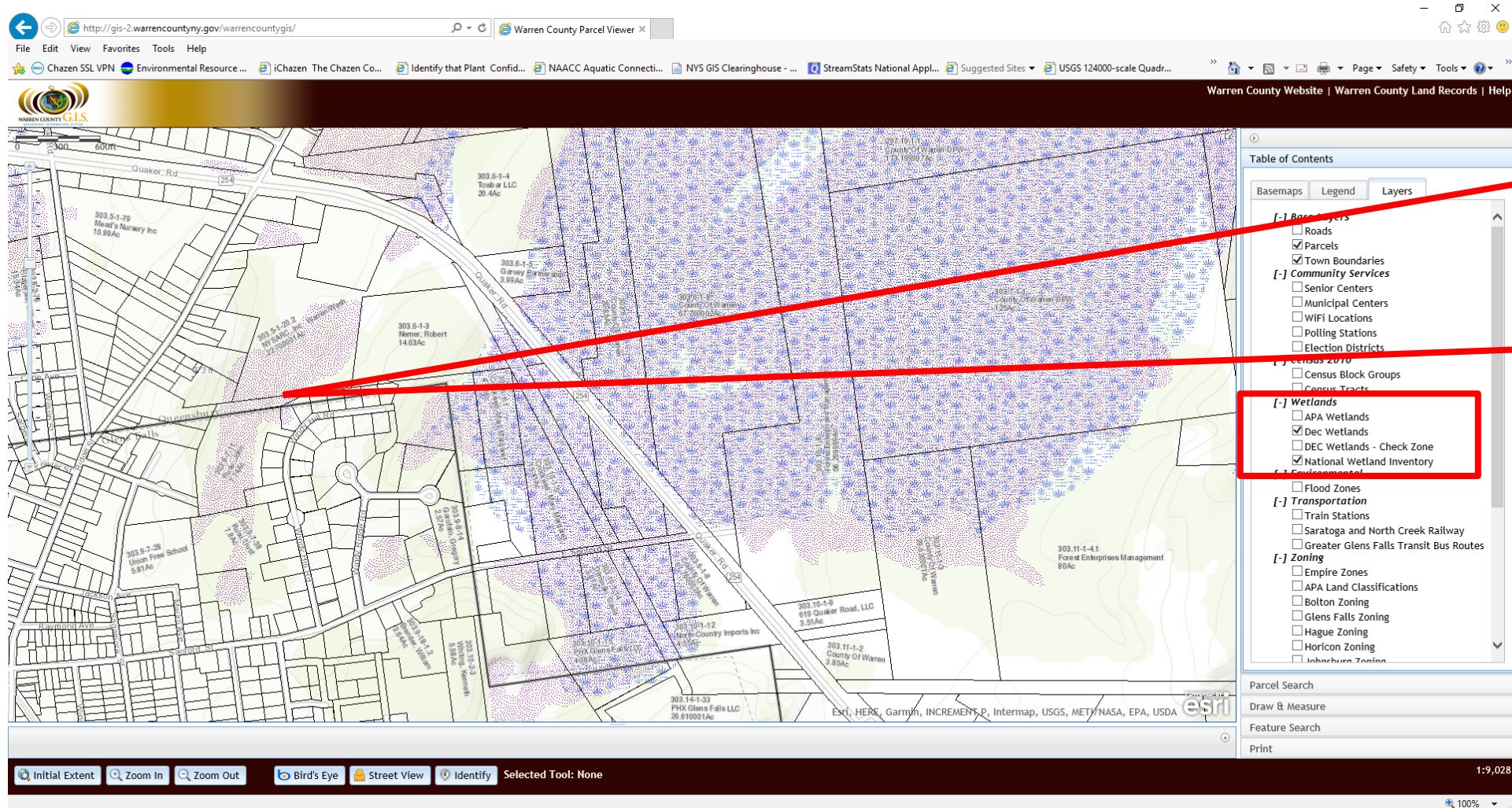
The map shows a large green area labeled "Warren County Airport Wetlands" and a blue line labeled "Halfway Brook".

Two information popups are displayed:

- Waterbody Classifications for Rivers/Streams**
Regulation: 830-513
Standard: AA(T)
Classification: AA
[Zoom to](#)
- State Regulated Freshwater Wetlands**
Wetland ID: HF-3
Wetland Class: 1
Wetland Size (Acres): 782.7
[Zoom to](#)

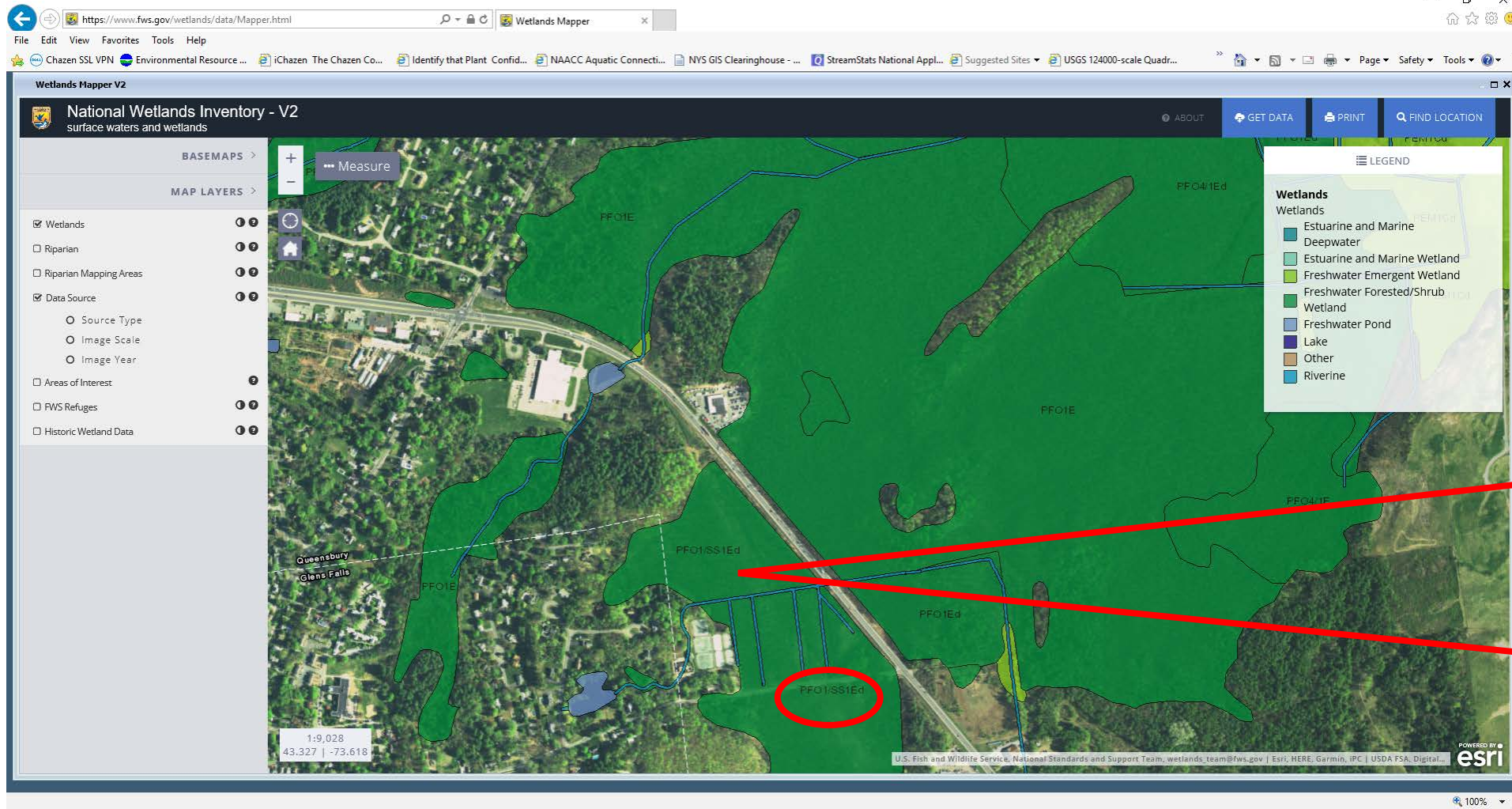
The bottom of the page features a dark navigation bar with links for Agencies, App Directory, Counties, Events, and Programs. The NYSDEC logo is also present in the bottom left corner.

Identifying Aquatic Resources - Mapping



NWI Wetland Map
– A non-regulatory map, but good tool, for looking at status and trends of wetlands in United States and for identifying potential wetlands.

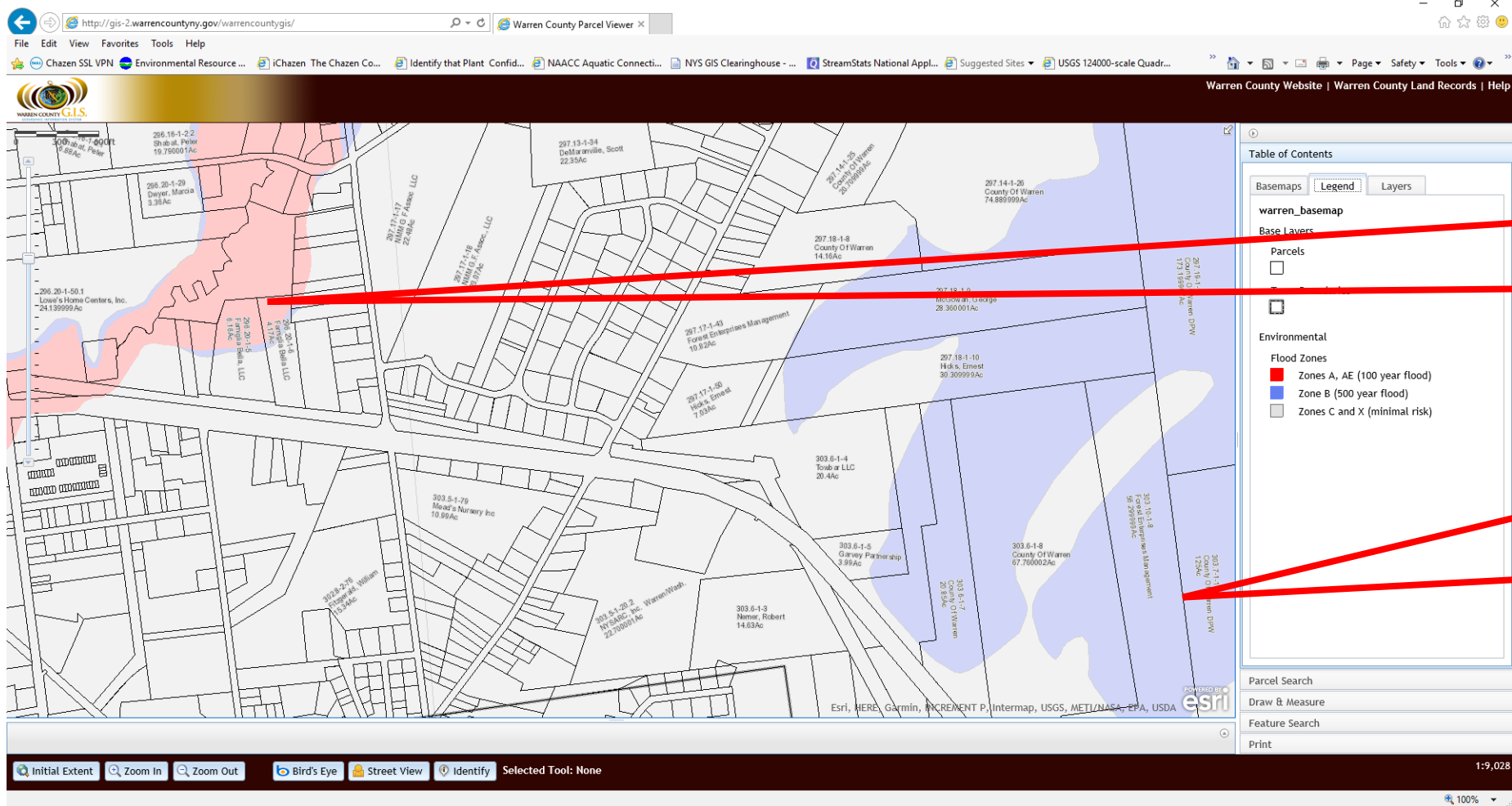
Identifying Aquatic Resources - Mapping



NWI Wetland Map
– A non-regulatory map, but good tool, for looking at status and trends of wetlands in United States and for identifying potential wetlands.

National Wetland Inventory Mapping – Cowardin Classification

Identifying Aquatic Resources - Mapping

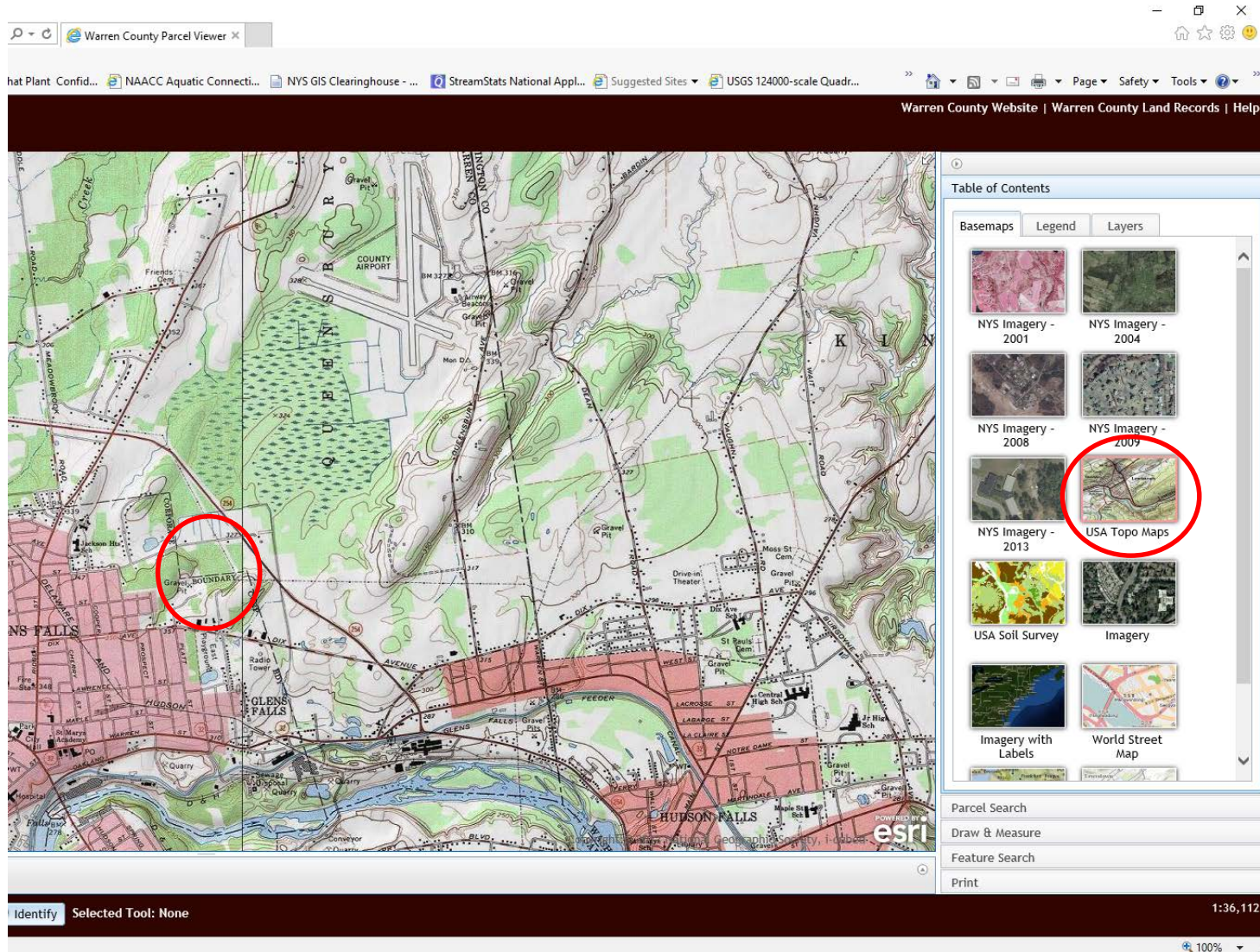


**FEMA 100 YEAR
Flood Zone**, with or
without base
elevation

**FEMA 500 YEAR
Flood Zone**

Warren County GIS Parcel Data

Identifying Aquatic Resources - Mapping



USGS Topographic Map

Mapped streams, lakes or ponds?

Mapped wetland or swamp?

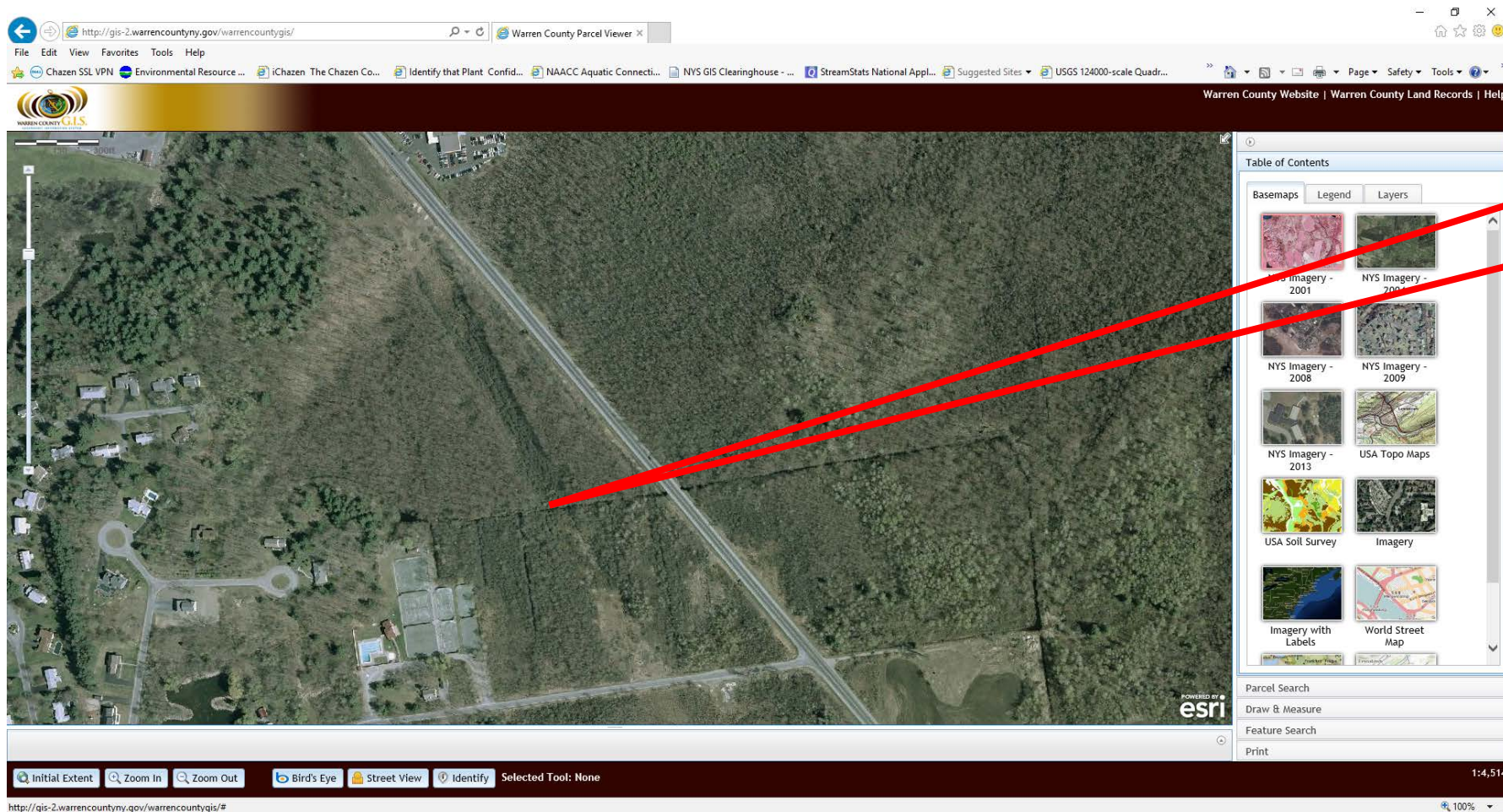
Mapped drainage ditches?

Is it flat?

Where is the low spot on the site?

**Mapped topographic indicators of drainage
("V"s in topographic contour lines)?**

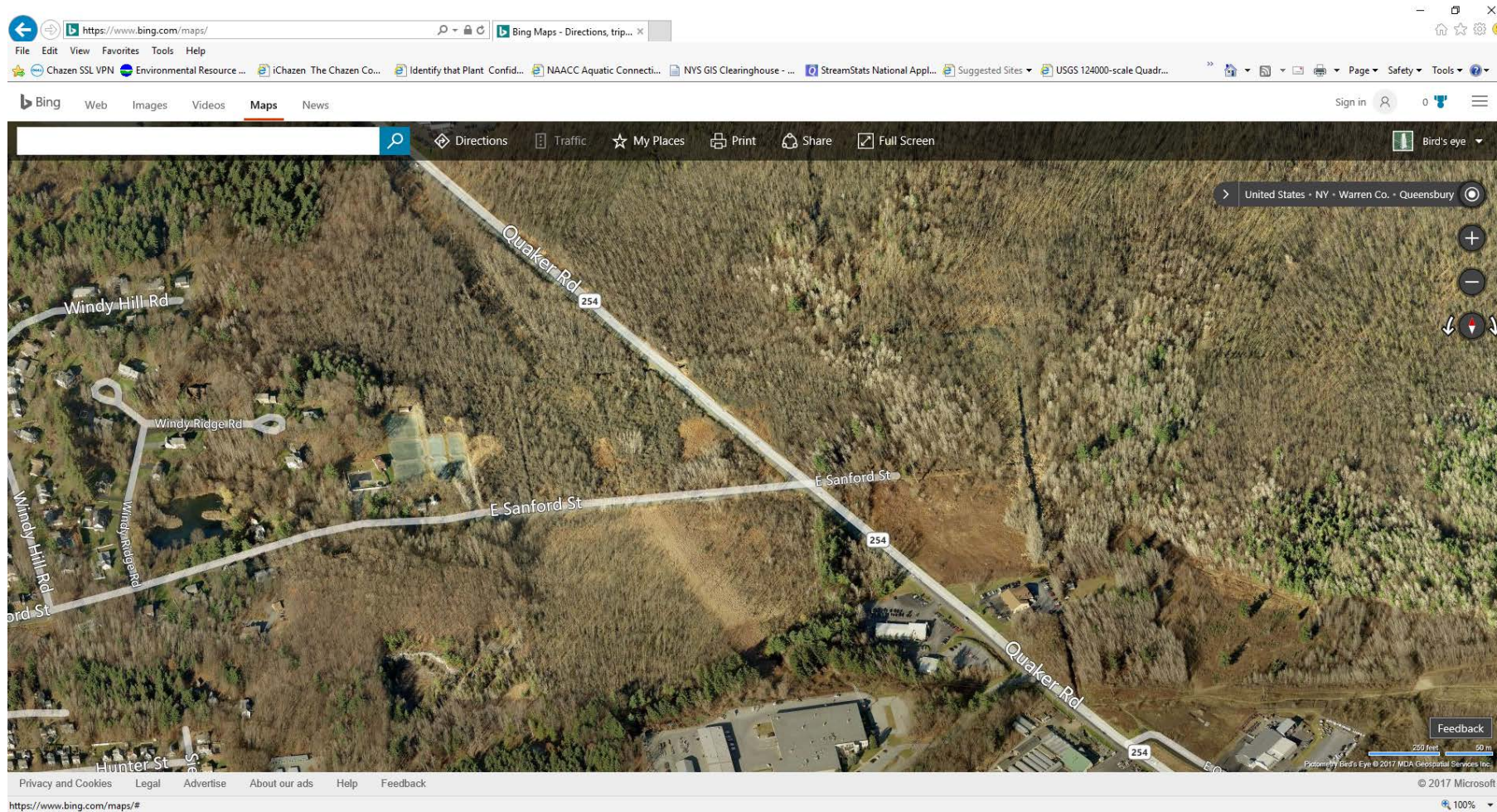
Identifying Aquatic Resources - Mapping



**Numerous Drainage
Ditches
Cattail marsh
Drainage Channels**

Warren County GIS Parcel Data

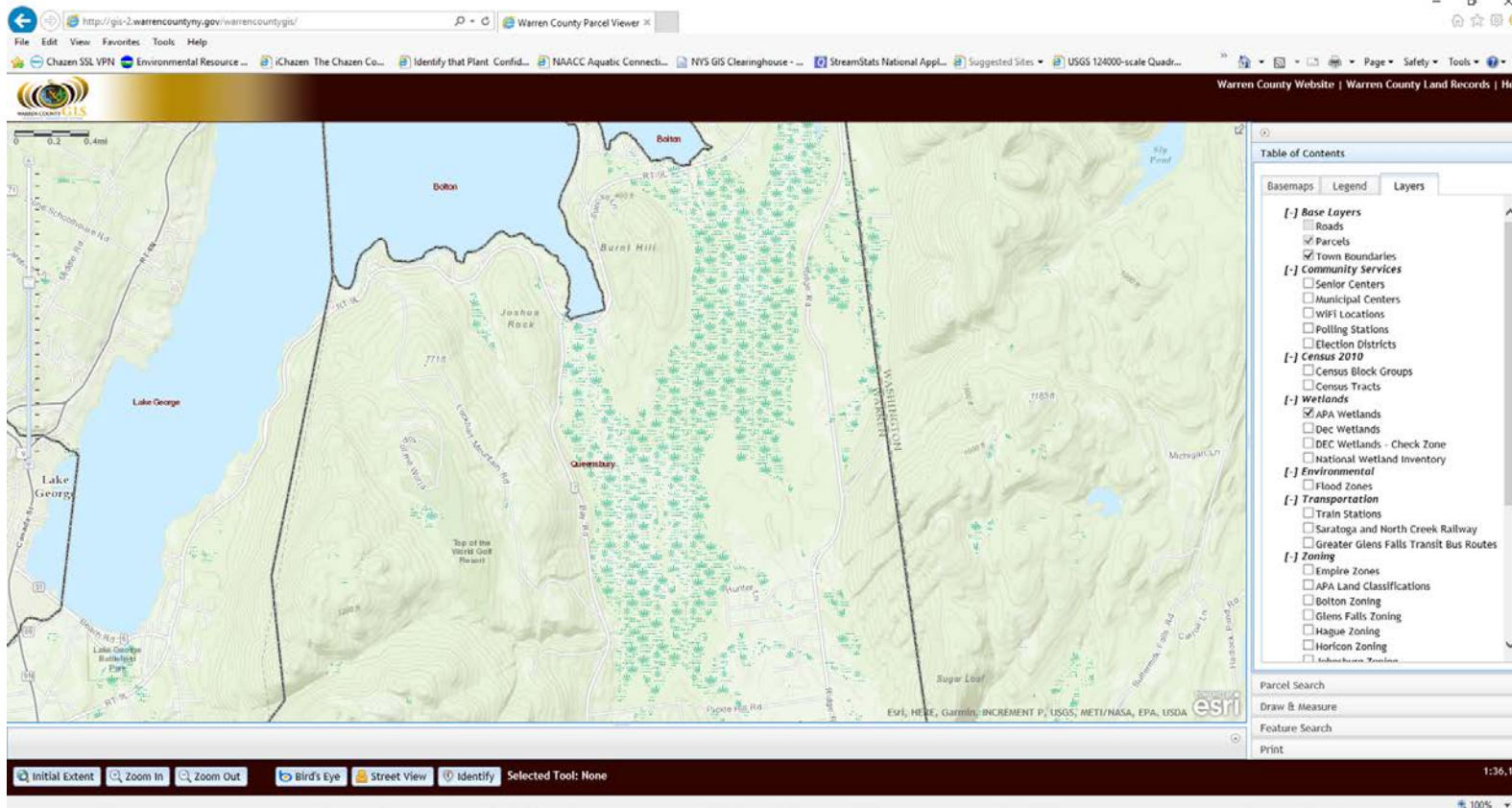
Identifying Aquatic Resources - Mapping



Cattail Marsh
Drainage ditches
Ditches
Ponds

Bing Maps Bird's Eye View

Identifying Aquatic Resources - Mapping



APA Wetland Map

- Simplified single layer on Warren County GIS Mapping.

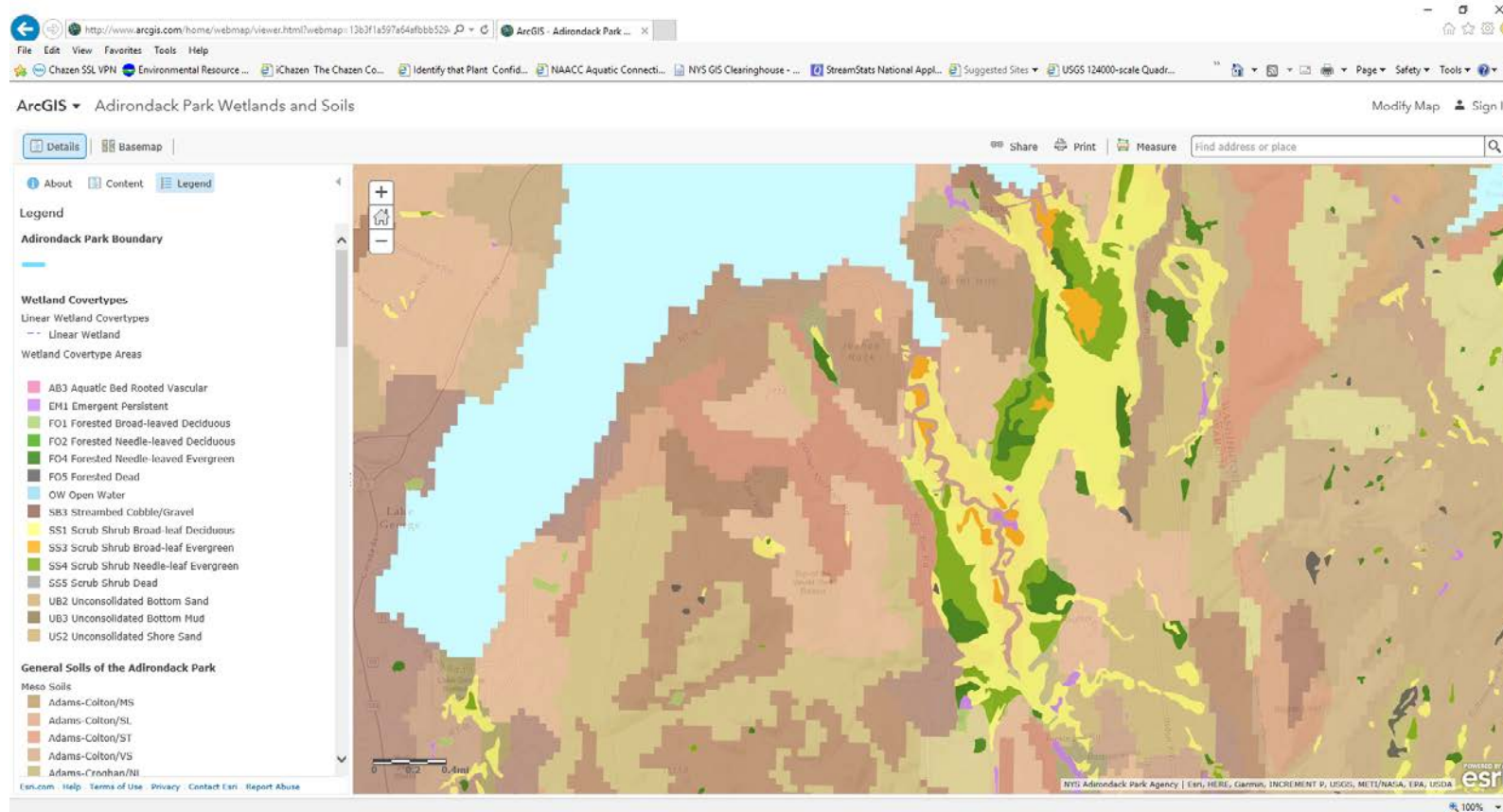
NOTE:

You will still need to look up water body classifications on NYSDEC Environmental Resource Mapper as Waters are regulated by NYSDEC in Adirondack Park.

Stream mapping by NYSDEC not on Warren County GIS Mapper

South End of Lake George, Warren County, NY
Warren County GIS Mapper

Identifying Aquatic Resources - Mapping



South End of Lake George, Warren County, NY
Adirondack Park Agency Website

APA Wetland Map

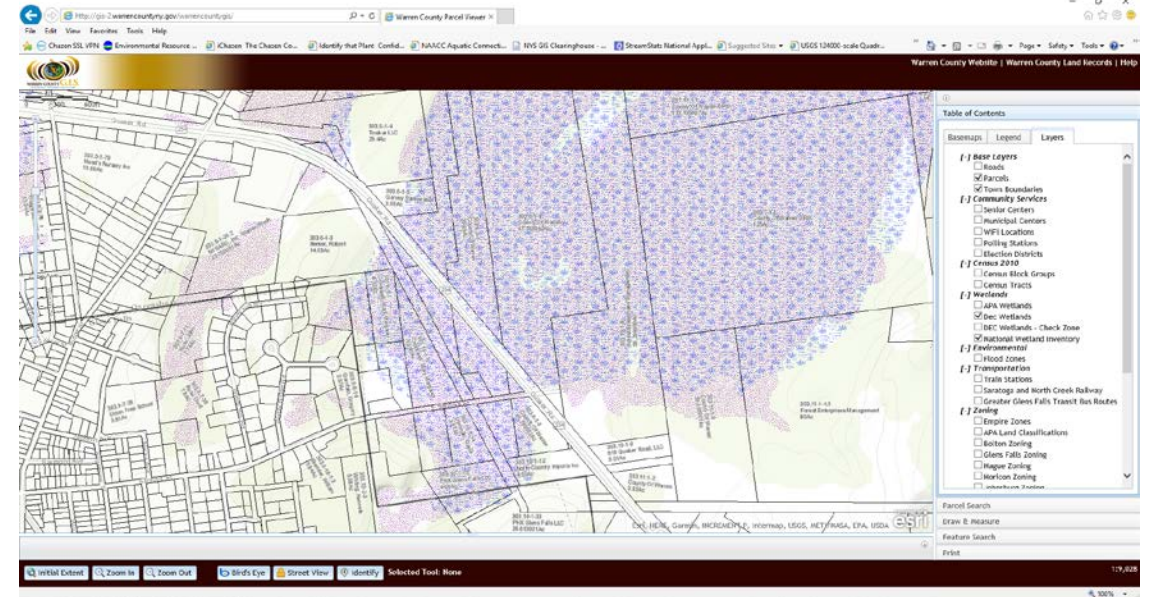
- Google “Adirondack Park Agency GIS Mapping.”
- Scroll down the webpage to “DATA” and click “Wetland Covertypes – View On-line map.”
- Scroll into the picture of the Adirondack Park to the location of the site.

Illustrates various wetland covertypes on a variety of base maps.

NOTE:

- Water body classifications on NYSDEC Environmental Resource Mapper.
- Waters regulated by NYSDEC in Adirondack Park.

Identifying Aquatic Resources - Mapping



Ask yourself: When I look at all the mapping data, is there a pattern?

- No wetlands or waters?
- On some part of the site?
- The whole site could be wet?

Ask yourself: Does this collaborate what I am seeing in the field?

Identifying Aquatic Resources - Mapping

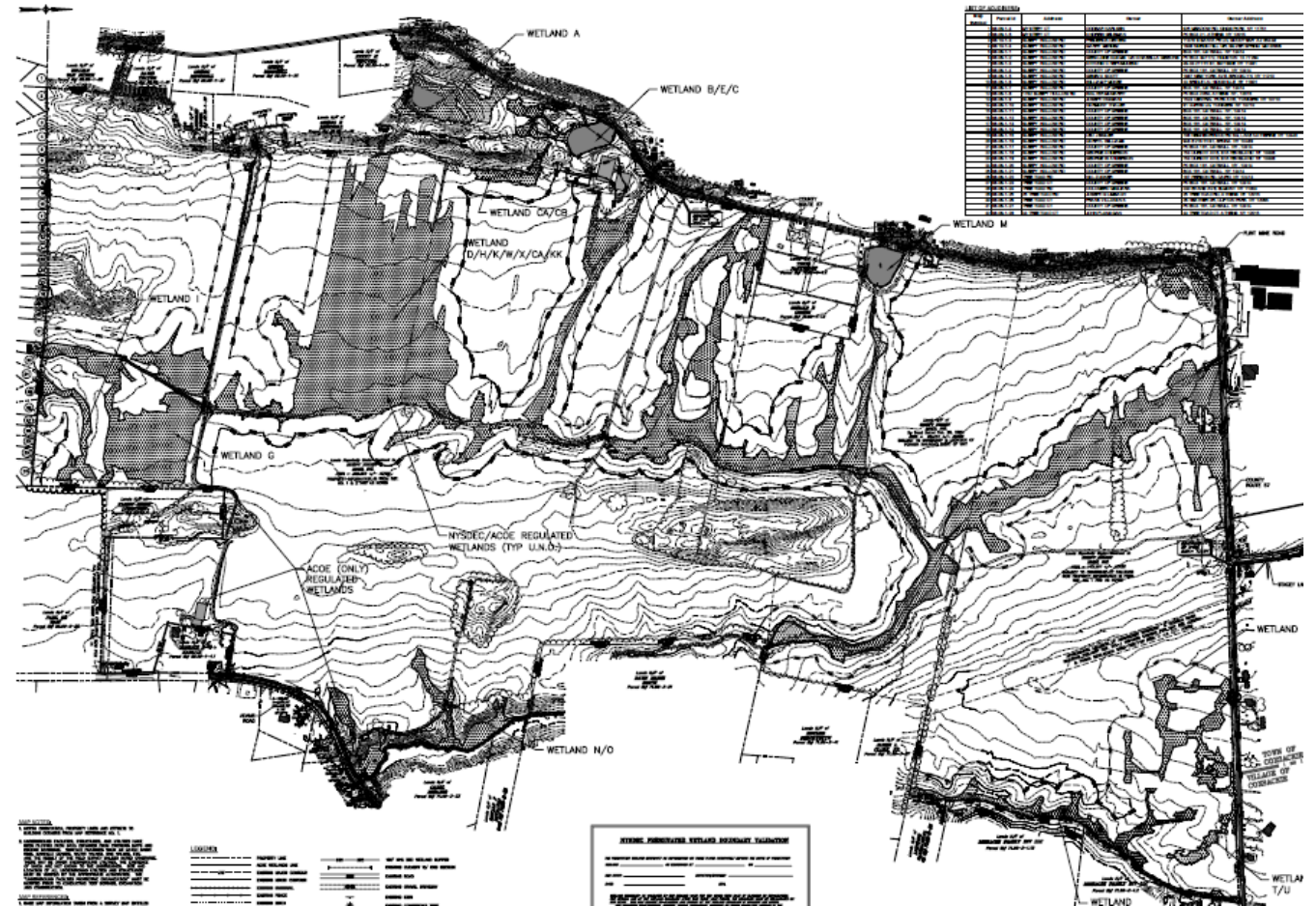
THE CAUTIONARY TALE OF RELYING ON MAPPING

- 600+ acres of old abandoned agricultural lands
- No NWI or NYSDEC wetlands mapped
- No “hydric” soils mapped
- But, flat as a pancake on heavy clay soils, and
- Infrared Orthophotography shows drainage problems



Identifying Aquatic Resources - Mapping

- 93 acres of Corps wetlands... and NYSDEC wetland
- NYSDEC jurisdiction adds 158 acres of regulated buffer



Identifying Aquatic Resources – Red Flags

Based on what you have learned here

Based on your past experience

What are some red flags that an aquatic resource (water or wetland) might be present

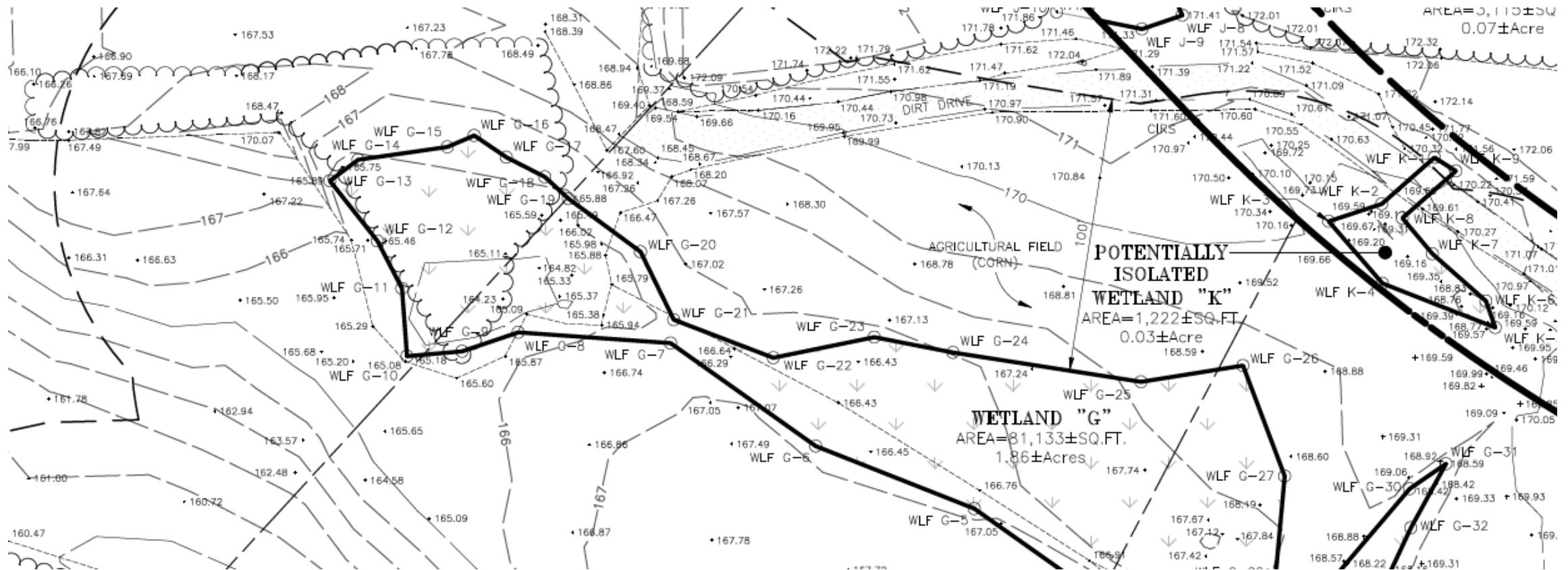


Identifying Aquatic Resources – Red Flags

- ☐ Lake, pond, stream, wetland on regulatory maps
- ☐ Lakes, ponds, streams, drainage ditches, wet spots or dark spots on aerial photographs
- ☐ Topographic mapping shows a flat site, or a site with “U”s in the topographic lines
- ☐ Standing water on site
- ☐ Soggy soils on site
- ☐ Leaves are black or have mud on them
- ☐ Grass or soil is rutted where it has been mowed
- ☐ It looks like water flows over or sits on part(s) of the site
- ☐ The soils are not a bright color
- ☐ The soils do not pass a percolation test for on-site septic
- ☐ The site is flat and there are drainage ditches every 25 to 50 feet
- ☐ There are wetlands nearby (across the street, on the next lot)
- ☐ The trees have numerous roots that are flat on the ground
- ☐ It looks like a one of the photographs in this slide show
- ☐ It just looks like it could be wet



Jurisdictional Determinations and Validations



- When/Who completed delineation stated on survey.
- Points sequentially numbered, straight lines between.
- Wetlands labeled, area stated.
- Wetland locations make sense.
- NYSDEC wetlands show 100-foot buffer.
- For federal “approved JD” status of wetland noted
- For federal wetlands, there is information on total area of property, total area of Jurisdictional Determination, area of each wetland, length of each stream.

Jurisdictional Determinations and Validations

Corps Jurisdictional Determinations (JD)

By letter. Letter will generally cite a particular survey map with titles, prepared by, dates, and revision dates. If Approved JD, will state which wetlands/waters are NOT regulated under the Clean Water Act, if present. May have a timeframe for validation, may be stated at the end of the letter.

APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

- A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): MAY 08 2014
- B. DISTRICT OFFICE, FILE NAME, AND NUMBER: New York District; Mohr, David; NAN-2013-00413
- C. PROJECT LOCATION AND BACKGROUND INFORMATION: East side of West Ave., north of Washington Ave.
State: NY County/parish/borough: Saratoga City: Saratoga Springs
Center coordinates of site (lat/long in degree decimal format): Lat. 43.08118° N, Long. -73.80303° E.
Universal Transverse Mercator:
Name of nearest waterbody: Unnamed tributary to Putnam Brook
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Kayaderosseras Creek
Name of watershed or Hydrologic Unit Code (HUC): Hudson-Hoosic, 02020003
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.
- D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): July 23, 2013



DEPARTMENT OF THE ARMY
US Army Corps of Engineers, ATTN: CENAN-OP-RU
Upstate Regulatory Field Office
1 Buffington St., Building 10, 3rd Fl. North
Watervliet, New York 12189-4000

Upstate New York Section

MAY 08 2014

SUBJECT: Permit Application Number NAN-2013-00413
by Mohr, David
City of Saratoga Springs, Saratoga County, New York

David Mohr
Mohr Service Center
239 Washington Street
Saratoga Springs, NY 12866



THE CHAZEN COMPANIES

Dear Mr. Mohr:

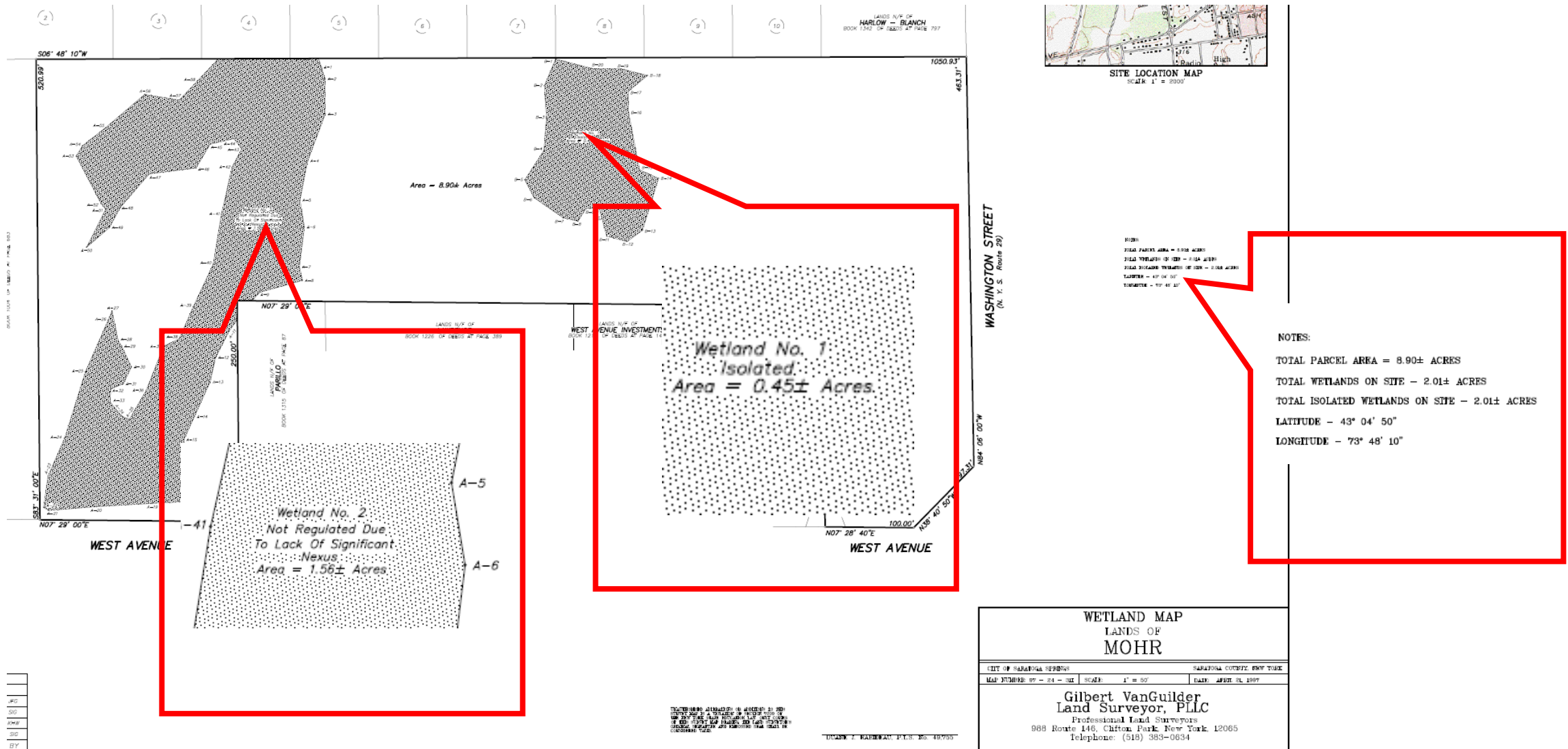
On April 11, 2013, the New York District of the U.S. Army Corps of Engineers received a request for a Department of the Army jurisdictional determination for an 8.9 acre site, currently owned by David Mohr. This request was made by The Chazen Companies, as your consultant. The site is located in the Hudson River watershed, along the east side of West Avenue and the north side of Washington Street in the City of Saratoga Springs, Saratoga County, New York.

The submittal received by this office on April 11, 2013, included a proposed delineation of the extent of waters of the United States within the project boundary. A site inspection was conducted by a representative of this office on July 23, 2013, in which it was agreed that changes would be made to the delineation and that the modified delineation, along with additional information that was requested during the inspection, would be submitted to this office. In submissions received on January 21 and March 20, 2014, this office received the modified delineation and requested additional information.

Based on the material submitted and the observations of the representative of this office during the site inspection, the New York District has been determined that there are no jurisdictional waters of the United States on the 8.9 acre site. The site is depicted on the drawing entitled "Wetland Map, Lands of Mohr", prepared by Gilbert VanGuilder Land Surveyor, PLLC, dated April 21, 1997, and last revised on September 26, 2013.

It should be noted that, in light of the U.S. Supreme Court decision in two cases (Rapanos v. United States, No. 04-1034, and Carabell v. U.S. Army Corps of Engineers, No. 04-1384, both decided June 19, 2006), the area consisting of 1.56 acres and identified as Wetland No. 2 on the above referenced drawing does not meet the current criteria of waters of the United States under Section 404 of the Clean Water Act. The Court ruled that non-navigable tributaries that are not relatively permanent and their adjacent wetlands can no longer be considered waters of the United States if they

Jurisdictional Determinations and Validations



Jurisdictional Determinations and Validations

NYSDEC

By map. Map signed and dated by NYSDEC staff in a validation block, with a statement of expiration. If multiple maps, signed on first map, and map cites other maps in set. Maps should show state wetlands, acreage, class, and buffer. Map may also show other federal waters, not regulated by NYSDEC.

APA

In Final Permit Decision. APA permit typically includes reference to approved wetland delineation map, and list of waters regulated by the NYSDEC under ECL Article 15.

<u>NYSDEC FRESHWATER WETLAND BOUNDARY VALIDATION</u>	
The freshwater wetland boundary as represented on these plans accurately depicts the limits of Freshwater Wetland _____ as delineated by _____ on _____.	
DEC Staff: _____	Surveyor/Engineer: _____
Date: _____	SEAL
Wetland boundary as validated by DEC remains valid for three years from date of flagging or revalidation. For official use of the wetland boundary after this three year period, the boundary must be revalidated by DEC staff. This may include re-flagging and survey of the wetland boundary if changes are noted.	
Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.	

NYSDEC 100' Adjacent Area

NYSDEC Wetland

NYSDEC FRESHWATER WETLAND BOUNDARY VALIDATION

The freshwater wetland boundary as represented on these plans accurately depicts the limits of freshwater wetlands "A", "B" and "C" as delineated by The Chazen Companies on July 21, and 29, 2011.

DEC Staff: Jed H. Surveyor/Engineer: C.T. Mole Associates, P.E.

Date: 1-25-12

Wetland boundary as validated by NYSDEC remains valid for three years from date of tagging or revocation. For official use of the wetland boundary after this three-year period, the boundary must be revalidated by NYSDEC staff. This may include re-tagging and survey of the wetland boundary if changes are noted.

Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

Revised on (Date): _____ Revised on (Date): _____

Aquatic Resources – Federal

But I heard President Trump repealed the Clean Water Act, and wetlands aren't regulated anymore....

FALSE

1. On February 28, 2017, President Trump signed an Executive Order rescinding 2015 regulations redefining Waters of the United States
2. Waters and wetlands continue to be regulated under 2007 guidance issued after US Supreme Court decision *Rapanos v. US*. This requires a “significant nexus” determination for the Corps to regulate or not regulate waters/wetlands based on connection to US Commerce
3. A complicated issue. One should assume a water/wetland is regulated by the federal government until documented otherwise
4. Under state law, waters and wetlands still regulated by NYSDEC and APA
5. This information is correct as of the date of this presentation

Where do I find HELP?

What do I do/Where do I find help?

- Ask - has the site had any prior wetland delineations/reviews completed
- Society of Wetland Scientists Professional Certification Program
 - Names/Towns of Certified Professional Wetland Scientists in your state
- Ask Environmental Land Use Attorneys Specializing in Wetlands
- Google Wetlands Consultants
- Regulatory Agency Staff – NYSDEC and APA may delineate wetlands, especially on small sites for “mom and pops” You may wait awhile

Regulatory Assessment

- Ask wetland consultant for Regulatory Site Assessment - who regulates what where, and how to proceed
- Ask for a wetland delineation
- Ask Environmental Attorney to review papers/documents for completeness, issues

Regulatory Reviews for Existing Projects – Discussed Later

Basics of Identifying Aquatic Resources

QUESTIONS AND DISCUSSION

Regulation of Aquatic Resources

Regulation of Aquatic Resources

How regulated – The Simple Version

AVOID, MINIMIZE, MITIGATE

- Has the project avoided wetland impacts?
 - Is there another site the project could be located on without wetland impacts?
 - Could the project be redesigned to avoid wetland impacts?
- Could the project be redesigned to minimize wetland impacts?
- How are unavoidable wetland impacts being compensated?

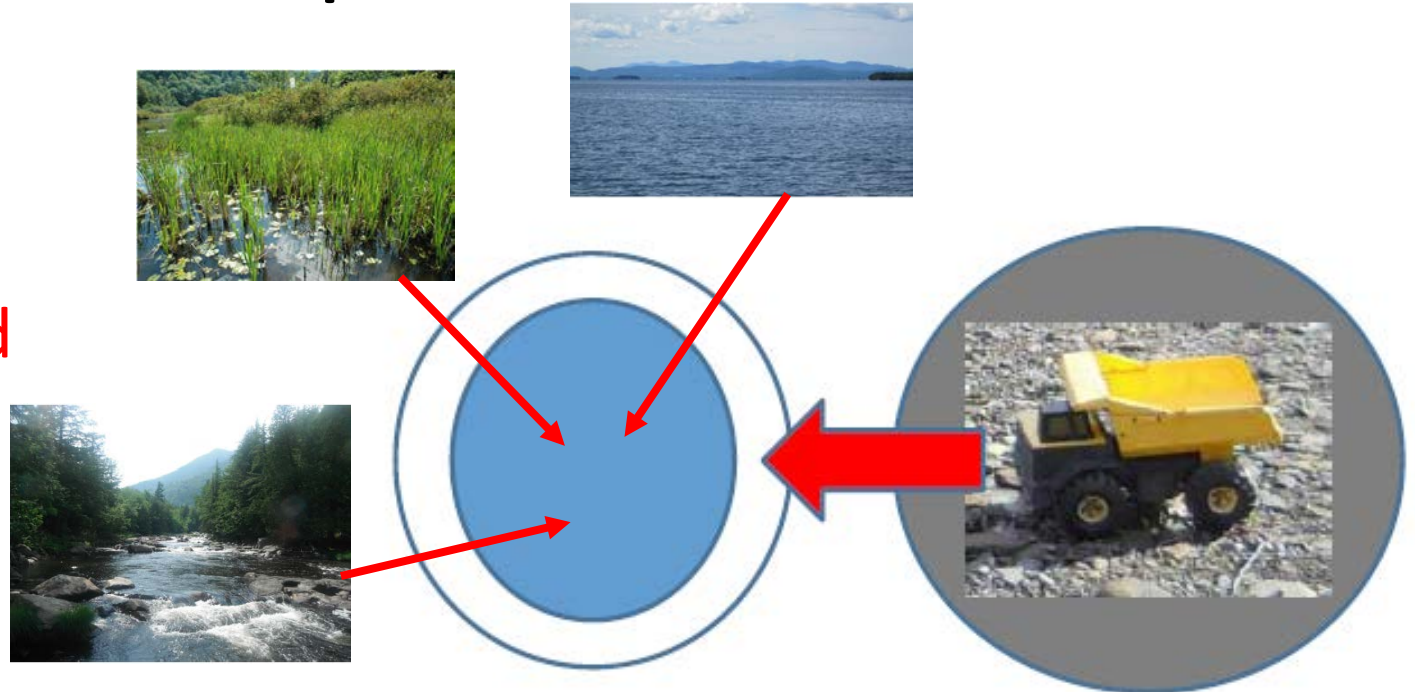
PUBLIC INTEREST REVIEW

- Does project adversely impact important public interest factors (health, safety, ecosystem)?
- On balance (weighing pros and cons), is the project in the public interest?



Regulation of Aquatic Resources

WHEN a regulated activity
INTERSECTS WITH
a regulated aquatic resource,
A PERMIT is probably needed



**Regulated Resource
(and buffer?)**

Ask yourself:

DOES THIS NEED A PERMIT?

Is the resource regulated?

By what agenc(ies)?

Is the activity regulated by that agenc(ies)?

Will the activity intersect with the resource?

Regulation of Aquatic Resources

Three Agencies – The Simple Version

Corps:

Federal Clean Water Act – All waters and wetlands*

Federal Navigable Waters – Work and Structures

NYSDEC:

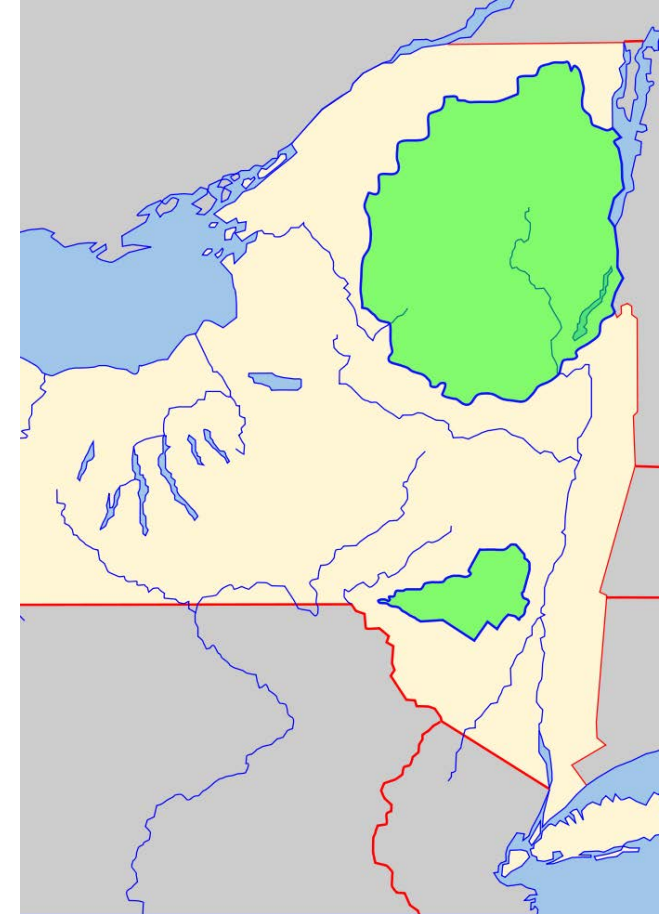
Stream Protection Regulations - All Class C(t), B, A Streams

State Freshwater Wetlands outside the Adirondack Park

APA:

State Freshwater Wetlands inside the Adirondack Park

* - with a connection to Interstate Commerce



Regulation of Aquatic Resources

Corps of Engineers	NYSDEC	Adirondack Park Agency
<p>Traditionally Navigable Water (Section 10 Rivers Harbors Act)</p> <ul style="list-style-type: none"> • Doing work, placing structures in Traditionally Navigable Waters <p>All Waters (including wetlands) if they have a link to Interstate Commerce (Section 404 of the Clean Water Act)</p> <ul style="list-style-type: none"> • The discharge of dredged or fill material into a water of the United States • No minimum size wetland or water • Has a connection to interstate commerce • Includes moving soil around in the wetland • Includes grubbing trees and shrubs • Includes placing fill material • Does not include excavation of wetlands with no sidecasting. 	<p>Use and Protection of Waters (ECL Article 15, 6 NYCRR 608)</p> <ul style="list-style-type: none"> • Impacts to bed/banks of protected streams • Dams • Impacts to navigable waters • Docks and moorings • Water Quality Certificates <p>Freshwater Wetlands Act (ECL Article 24, 6 NYCRR 663)</p> <ul style="list-style-type: none"> • Most activities within state wetland or its 100-foot regulated buffer. Wetlands mapped, >12.4 acres, or smaller mapped wetlands of local importance 	<p>IN ADIRONDACK PARK ONLY Freshwater Wetlands Act (ECL Article 24, 6 NYCRR 663)</p> <ul style="list-style-type: none"> • Most activities within state wetland or that could have an impact on the wetland • Smaller mapped wetlands >1 acre or any size wetland associated with a waterbody • Includes creating ponds out of wetlands

Regulation of Aquatic Resources

Corps of Engineers

- Dams, dikes in navigable waters
- Other structures or work, dredging, disposal in navigable waters.
- Altering course of navigable waters
- Discharge of dredged or fill material into waters of the United States including wetlands



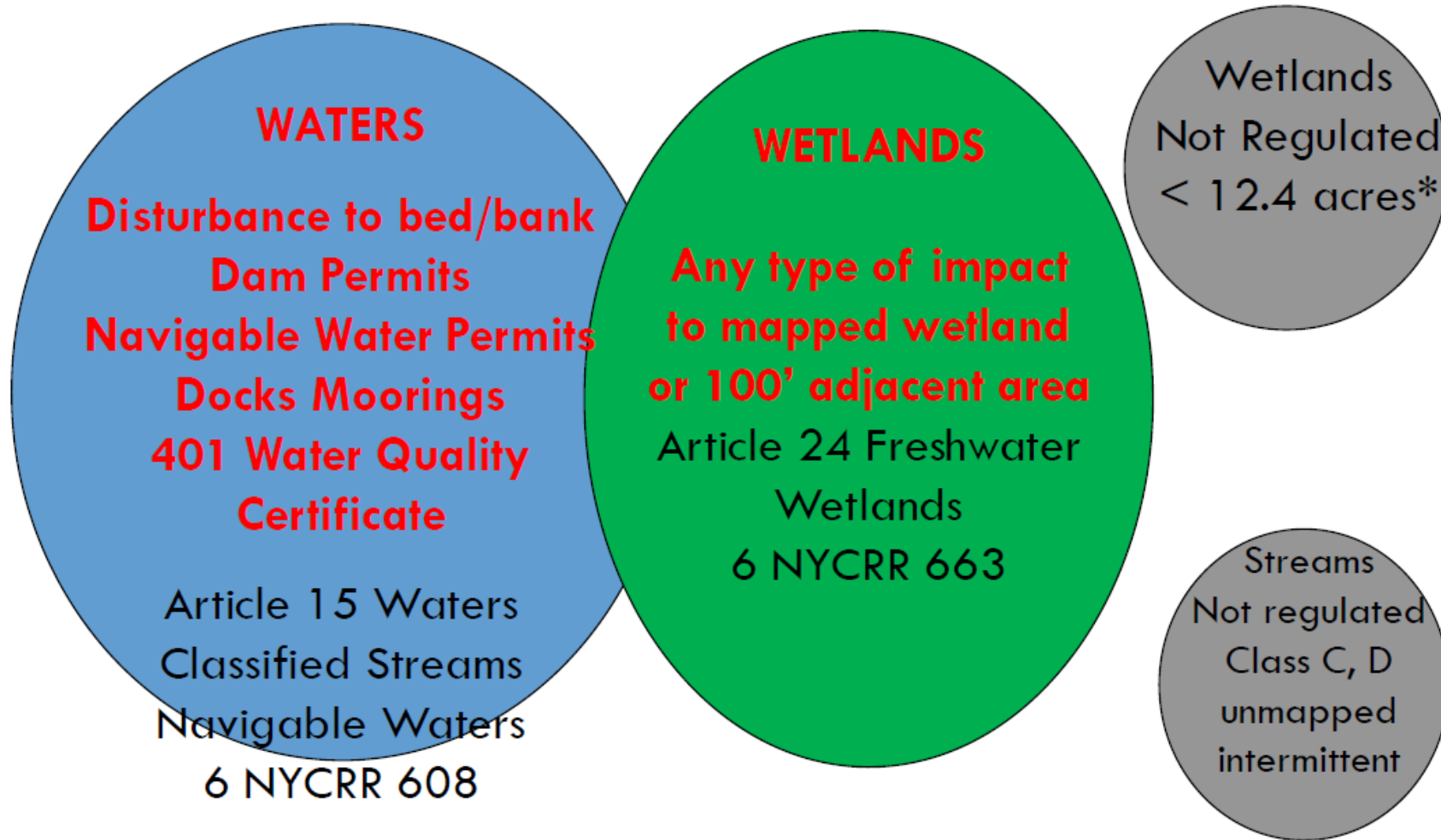
Regulation of Aquatic Resources

Corps of Engineers

Area of Impact	Corps	
0 to 0.1 acre	Activity Specific Nationwide Permit (NWP) No compensatory wetland mitigation required	NWP 3 – Maintenance and Repair NWP 12 – Utility Lines
>0.1 to < 0.5 acre 300 LF stream	NWP Requires compensatory wetland mitigation Requires on-site Alternatives Analysis >300 LF stream = Corps waiver	NWP 13 – Bank Stabilization NWP 14 - Roadways NWP 29 – Single Family Homes NWP 39 – Commercial Development
0.5 to <3.0 acre	Individual Corps Permit with mitigation Off-Site Alternatives Analysis Public Notice USEPA and USFWS involvement	Updated every three years. New National Permits / Regional Conditions/ Water Quality Certificates released March 22, 2017
>3.0 acre	US EPA typically assumes jurisdiction	

Regulation of Aquatic Resources

NYSDEC



Regulation of Aquatic Resources

NYSDEC Waters

- Disturbance bed or banks of protected stream (water quality C(t), B, A)
- Dams
- Docks or moorings in state-owned underwater lands
- Excavation/Placement of fill in navigable waters
- Section 401 Water Quality Certifications



Regulation of Aquatic Resources

NYSDEC - Waters

6 NYCRR 608.6 – Permit Application Procedures

- List of items required in a permit application

6 NYCRR 608.7 – Permit Application Review

- Decisions and considerations

6 NYCRR 608.8 – Standards for Permit Issuance

- Project is in the public interest
- Project is reasonable and necessary
- Project will not endanger the health, safety or welfare of the people of the state of NY
- Project will not cause unreasonable, uncontrolled or unnecessary damage to the natural resources of the state including soil, forests, water, fish, shellfish, crustaceans, and land-related environment.

Regulation of Aquatic Resources

NYSDEC - Waters

6 NYCRR 608.9 – 401 Water Quality Certificate

- 401 Water Quality Certificate is a checks and balances between State and Federal Government
- NYSDEC Blanket 401 Water Quality Certificate issued for many Corps NWPs
- Generally blanket Water Quality Certificate for impacts >0.25 acre.
- If project does not meet condition of blanket Section 401 WQC, than an individual WQC is required

Regulation of Aquatic Resources

NYSDEC - Wetlands

Process:

1. Delineate/Map/Validate wetlands (NYSDEC will delineate)
2. Identify impacts to wetland or within 100 foot adjacent area
3. (Avoid and minimize those impacts to the maximum extent practicable)
4. Examine compatibility by activity (6 NYCRR 663.4(d))
5. Evaluate Standards for Permit Issuance (6 NYCRR 663.5(3))
6. Submit permit application documenting Steps 1 through 5

Regulation of Aquatic Resources

NYSDEC - Wetlands

Two sets of permit issuance standards – these are the tougher ones

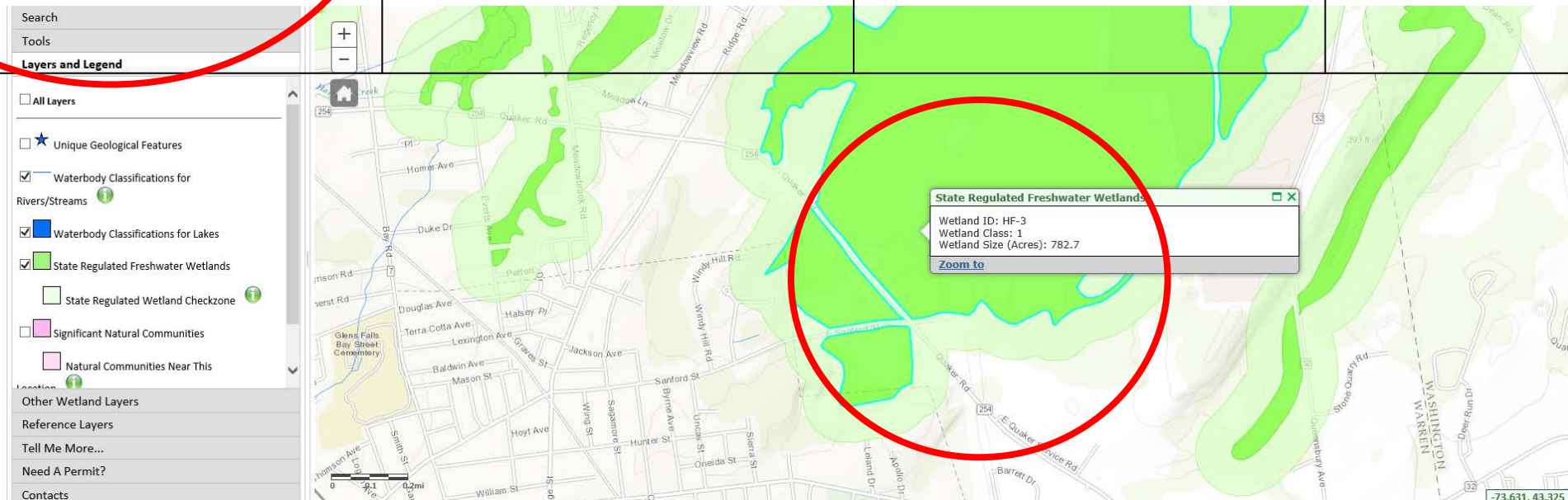
(2) **Weighing** - These weighing standards must be applied to all activities identified as P(X) in subdivision 663.4 (d), and to all those activities listed as P(C) or (N) in subdivision 663.4 (d) or not listed in subdivision 663.4 (d) that do not meet the three tests of compatibility listed in paragraph 663.5 (e) (1). If the proposed activity is listed as (X) or cannot meet the three tests for compatibility, then a permit may be issued only if the proposed activity meets each of the standards below for the class of wetland affected:

- For wetland Classes I, II, III and IV, the proposed activity must be compatible with the public health and welfare, be the only practicable alternative that could accomplish the applicant's objectives and have no practicable alternative on a site that is not a freshwater wetland or adjacent area.
- For wetland Classes I, II, and III, the proposed activity must minimize degradation to, or loss of, any part of the wetland or its adjacent area and must minimize any adverse impacts on the functions and benefits that the wetland provides.
- For wetland Class IV, the proposed activity must make a reasonable effort to minimize degradation to, or loss of, any part of the wetland or its adjacent area.

Regulation of Aquatic Resources

NYSDEC - Wetlands

Class 1 Wetlands	Class II Wetlands	Class III Wetlands	Class IV Wetlands
Class 1 wetlands provide the most critical of the state's wetland benefits, reduction of which is acceptable only in the most unusual circumstances. A permit shall be issued only if it is determined that the proposed activity satisfied a compelling economic or social need that clearly and substantially outweighs the loss of or detriment to the benefit(s) of the Class I wetland.	Class II wetlands provide important wetland benefits, the loss of which is acceptable only in very limited circumstances. A permit shall be issued only if it is determined that the proposed activity satisfies a pressing economic or social need that clearly outweighs the loss of or detriment to the benefit(s) of the Class II wetland.	Class III wetlands supply wetland benefits, the loss of which is acceptable only after the exercise of caution and discernment. A permit shall be issued only if it is determined that the proposed activity satisfies an economic or social need that outweighs the loss of or detriment to the benefit(s) of the Class III wetland.	Class IV wetland provide some wildlife and open space benefits and may provide other benefits cited in the Act. Therefore, wanton or uncontrolled degradation or loss of Class IV wetlands is unacceptable. A permit shall be issued for a proposed activity in a Class IV wetland only if it is determined that the activity would be the only practicable alternative which could accomplish the applicants objectives.



Regulation of Aquatic Resources

NYSDEC - Wetlands

NYSDEC Article 24 General Permit for AA impacts

- Demolition/removal of existing accessory/appurtenant structures.
- Construction of driveways or parking areas 1,000 square feet within adjacent area.
- Additional to existing structures 1,000 square feet.
- Installation of garages, decks, porches, sheds, pool, utility lines and structures of less than 1,0000 square feet in adjacent area.
- In-kind, in-place replacement of existing accessory/appurtenant structures, roads, utilities.

Regulation of Aquatic Resources

Other Involved Regulations

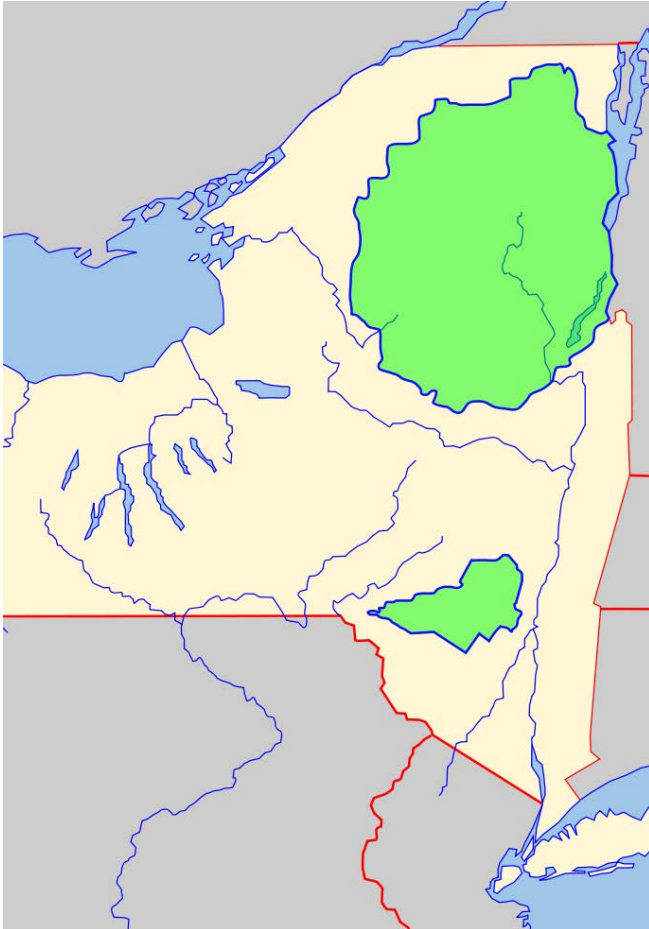
Permitting triggers other regulatory reviews:

- State Environmental Quality Review Act / National Environmental Policy Act
- Federal and State Endangered Species
- Bald Eagle Protection – Management Guidelines
- Cultural and archeological resources
- State Water Pollution Prevention Plans (SWPPS)
- Floodplains
- Wild, Scenic, Recreational Rivers and National Inventory Rivers
- Navigation
- Use of underwater lands belonging to the State
- Movement of aquatic organisms, maintenance of flows

Typically part of a “Public Interest Review” aspect of the permitting review

Regulation of Aquatic Resources

APA - Wetlands



Who Regulates Wetlands in the Adirondack Park?

Wetlands in Adirondack Park are regulated by the Adirondack Park Agency.

Wetlands outside the Park are regulated by NYSDEC.

NYSDEC regulates streams both inside and outside the Park.

Neither the NYSDEC nor the APA are responsible for the Applicant obtaining all necessary permits.

The Corps of Engineers also regulates wetlands and streams in the Park.

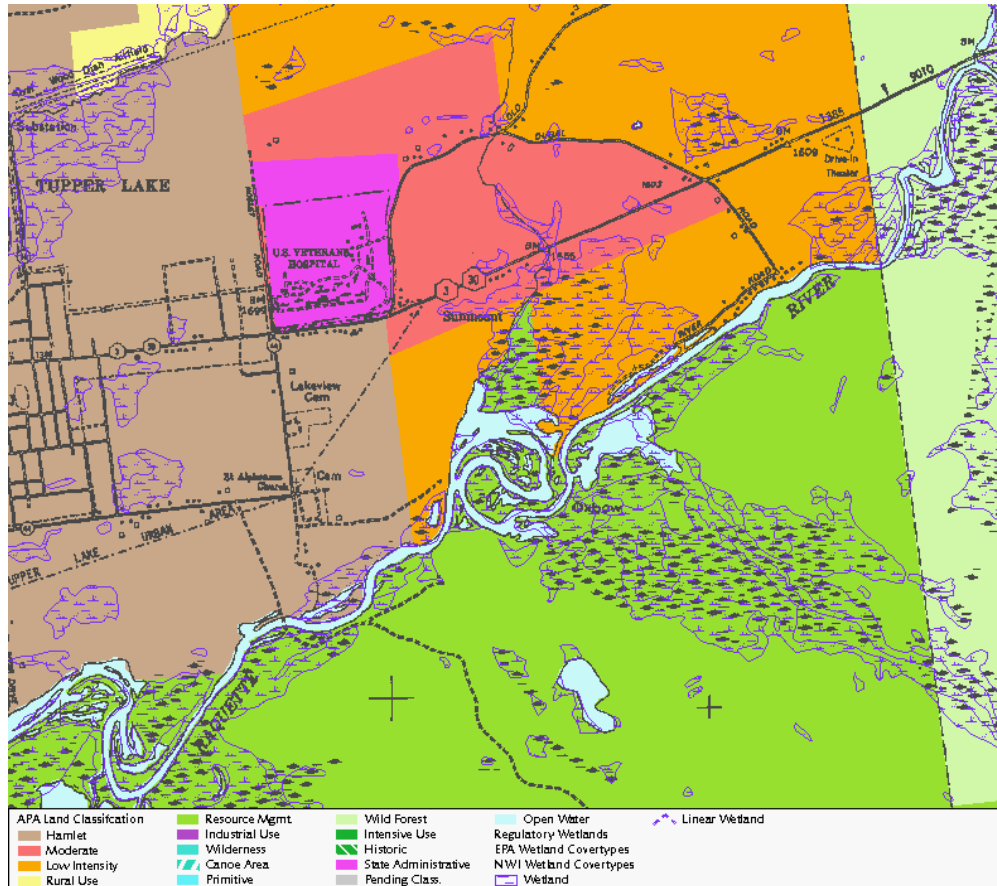
Most activities would be covered by Nationwide Permits.

However, most Nationwide Permits require notification.

It is always the responsibility of the landowner and their contractors to obtain all necessary approvals for any project.

Regulation of Aquatic Resources

APA - Wetlands



Adirondack Park Agency Wetland Mapping

- Maps are for reference only
- On-site delineation required to determine wetland boundaries relative to project
- If a jurisdictional wetland does not appear on the map, it is still subject to Agency regulation if it is >1 acre or associated with a waterbody
- Waterbodies with submerged aquatic vegetation are regulated as wetlands under Article 24 within the park.



Regulation of Aquatic Resources

APA - Wetlands

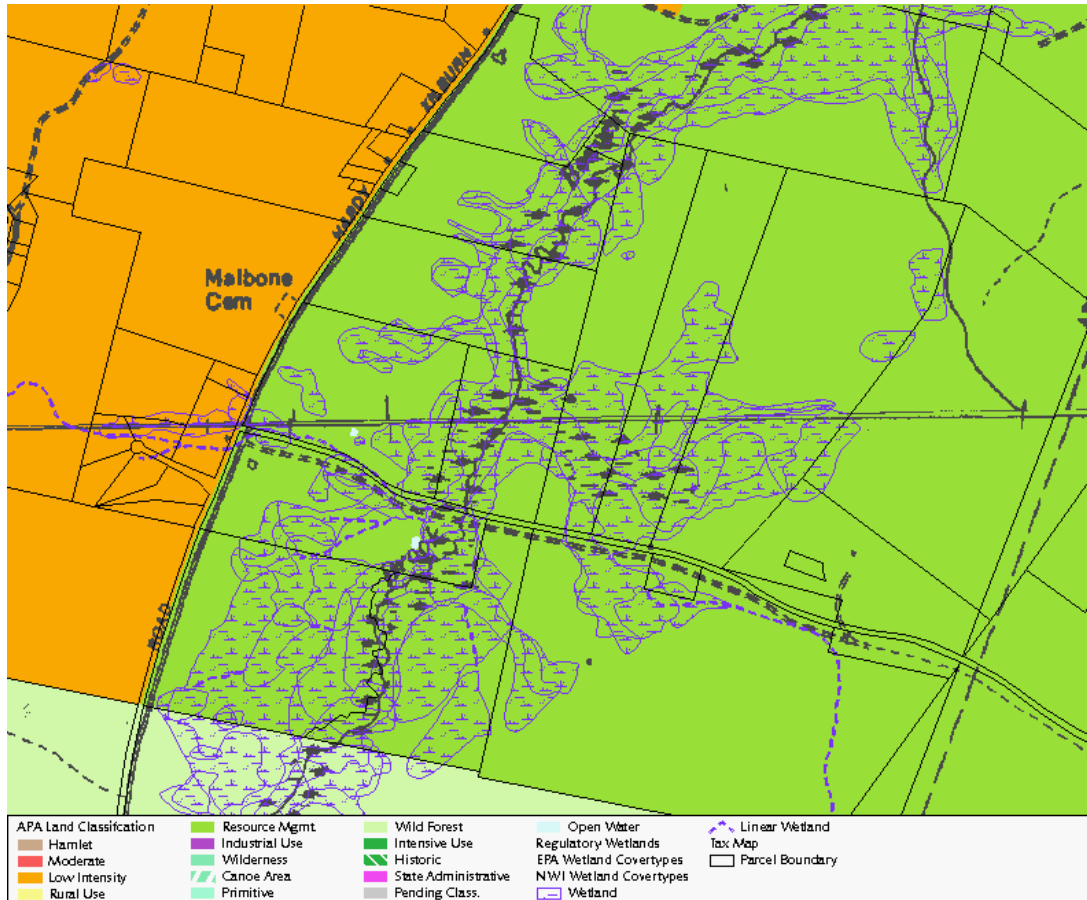


An APA permit is needed for:

- **Filling, draining and dredging**
- **Excavating**
- **Structures in a wetland**
- **Leach field within 100 feet of a wetland**
- **Subdivision**
- **Clearcutting 3 or more acres**
- **Any pollution which drains into a wetland**
- **Creating a pond out of a wetland**
- **Anything else that affects a wetland**

Regulation of Aquatic Resources

APA - Wetlands



How Does the APA Review Wetland Projects?

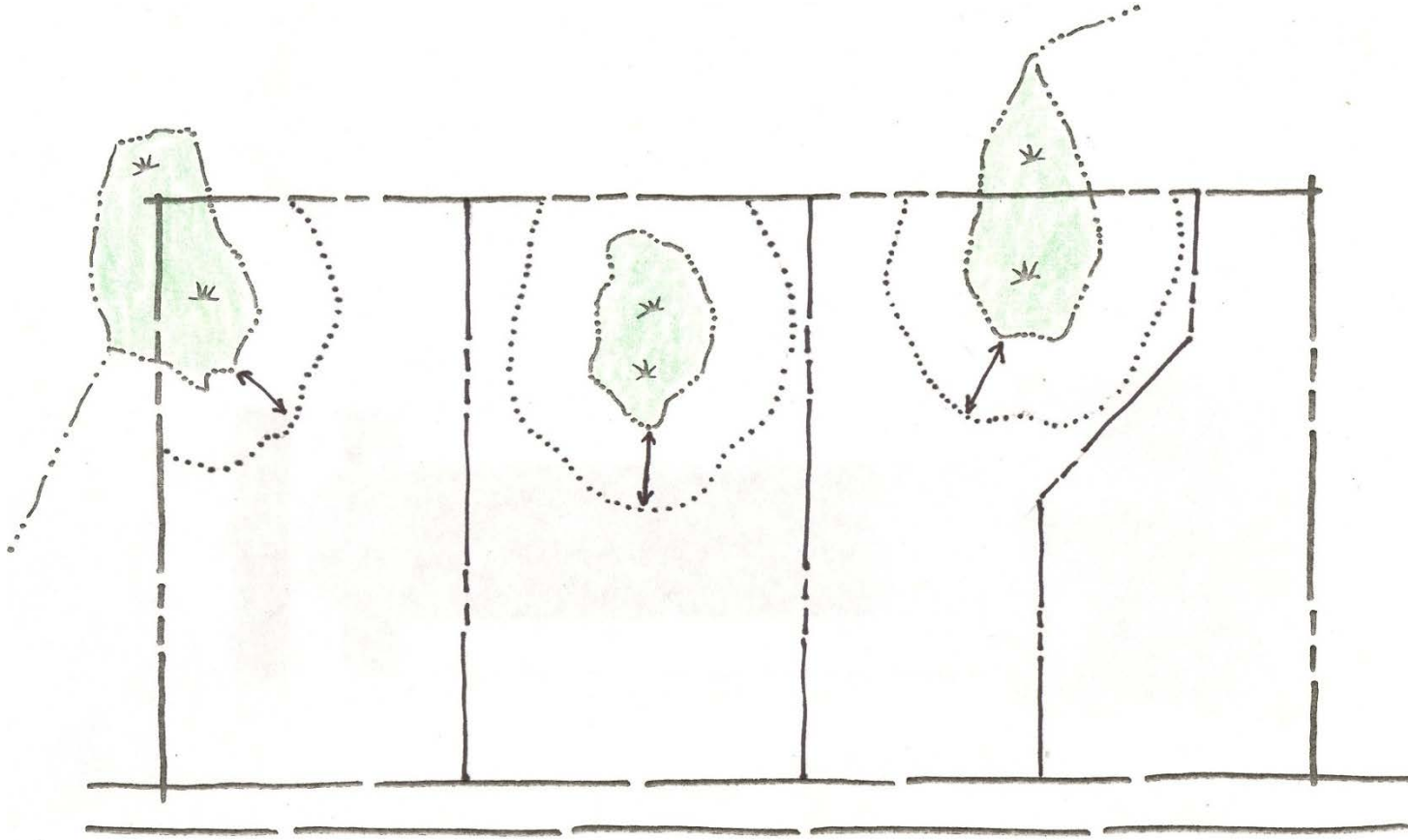
Avoid, Minimize, Mitigate

This is the number one rule in planning wetlands projects.

Here is an example of a few lots where wetland avoidance would probably dictate the placement of development. Some of these have building sites near the road that would likely have to be utilized in order to avoid wetland impacts. Minimization and mitigation would need to be employed to develop the one that has wetlands extending up to the roadside. To develop this lot, the driveway would need to be as narrow as possible (~8 feet) and mitigation would need to be done to make up for the loss of wetlands.

Regulation of Aquatic Resources

APA - Wetlands



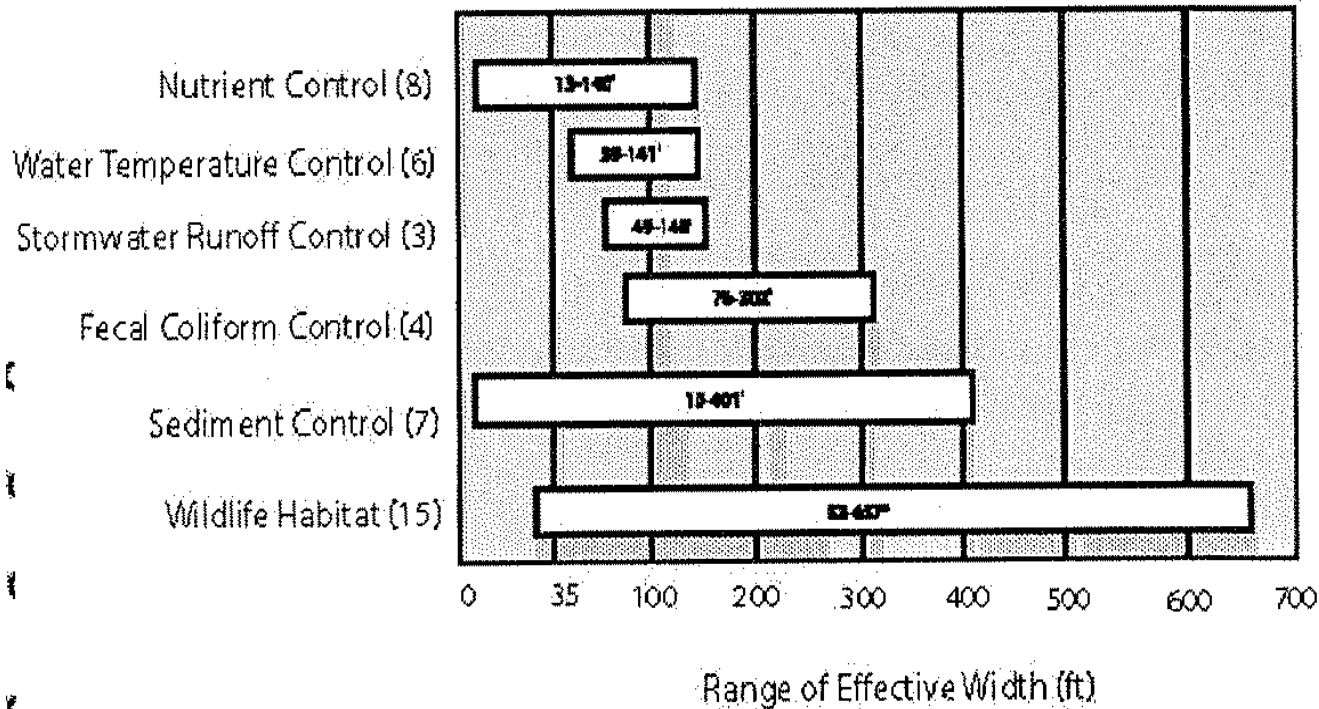
New Rules: No lot requires a permit

Designed around the wetlands so...
new lot lines are 200 feet from wetlands

Regulation of Aquatic Resources

APA - Wetlands

Figure 1. Recommended Shoreline Buffer Widths
Based on (x) Studies



MAINTENANCE OF BUFFERS

Best case:

- Wetlands are avoided.
- Adequate buffers maintained.
- Silt fence used to prevent erosion and sedimentation into a wetland. (Temporary for construction).
- A permanent multi-layered vegetated buffer, consisting of trees, shrubs and herbaceous plants is a more permanent and effective tool to prevent E+S.
- Grass alone is not an effective buffer, as it is shallow rooted, providing little erosion prevention.

Regulation of Aquatic Resources

APA - Wetlands



MAINTENANCE OF BUFFERS

- Under APA regulation, any new structure greater than 100 square feet must be set back from lakes, ponds, rivers and streams.
- Includes retaining walls and rip rap.

Regulation of Aquatic Resources

APA - Wetlands



DOCKS AND STRUCTURES OVER DEEP WATER MARSHES

- For projects affecting areas of deepwater marsh
- Minimize wetland impacts by raising docks above the surface of the wetland
- Light can penetrate = aquatic vegetation survives.



Regulation of Aquatic Resources

APA - Wetlands



BRIDGES AND CULVERTS ACROSS STREAMS WITH WETLANDS

- Minimize the amount of fill associated with them.
- For footbridges, boardwalks are preferred over fill.
- For roads/bridges, use the minimum volume of fill and rip-rap.
- Project ≤ 300 square feet of wetland impact may qualify for a general permit.
- Project ≥ 300 square feet of wetland impact may require full permitting and wetland mitigation.

Regulation of Aquatic Resources

APA - Floodplains



- A proposed subdivision or development never requires an Agency permit solely because it will occur in a floodplain.
- However, the APA takes floodplains into account when reviewing proposals that require a permit for other reasons
 - Wetlands
 - Wastewater Treatment Systems

Regulation of Aquatic Resources

Compensatory Mitigation

Not “Build Wetland Here to Replace Wetland There”

Sequential – Avoid, Minimize, Mitigate

Difficult to do successfully



Is creation, restoration, enhancement of wetlands to compensate for lost wetland area and functions. Needs to mimic the wetland being impacted.

NYSDEC and APA require on-site in-kind mitigation.

Enlarge existing wetland or create entirely new wetland.

Corps allows for purchase of wetland credits from a mitigation bank or in-lieu fee program (limited coverage over NYS) or development of wetland mitigation. Typically replaced on 1.5 to 1 to 2.0 to 1 ratio.

It needs to be designed by a professional and monitored for a number of years to ensure proper function.

Regulation of Aquatic Resources

Violations and Enforcement



You buy it – You may own it.

Impacting streams or wetlands without a permit can result in enforcement actions from the Corps, NYSDEC, APA.

Area of impact is evaluated based on aerial photographs, conditions below the fill, existing wetlands/resources in vicinity.

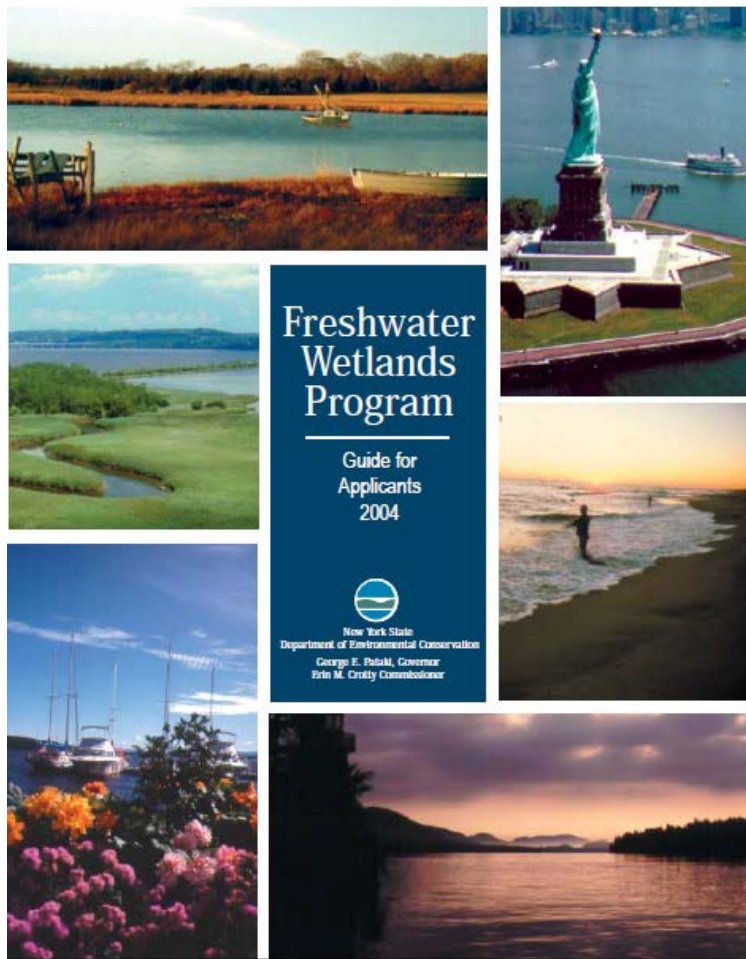
Typically required to stop work, remove some area of fill to bring back into compliance, complete permitting, mitigation.

May include fines.

Knowing and flagrant violators = criminal offense.

Where do I find HELP????

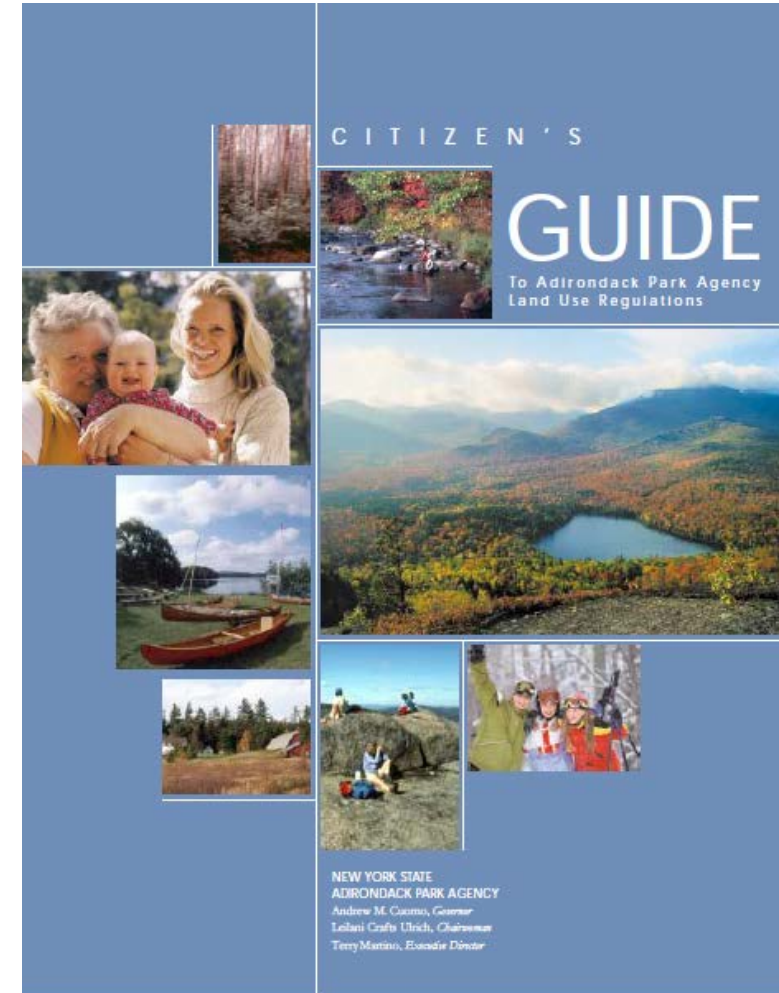
- Similar resources suggested under Delineation
- Guides for Applicants



United States Army Corps of Engineers
New York District

Regulatory Program Applicant Information Guide

FY 2014



Regulation of Aquatic Resources

QUESTIONS AND DISCUSSION

Floodplains and FEMA

Why Are They Protected and Regulated?

§ 91-1. Findings.

The Town Board of the Town of Queensbury finds that the potential and/or actual damages from flooding and erosion may be a problem to the residents of the Town of Queensbury and that such damages may include destruction or loss of private and public housing; damage to public facilities, both publicly and privately owned; and injury to and loss of human life. In order to minimize the threat of such damages and to achieve the purposes and objectives hereinafter set forth, this chapter is adopted.

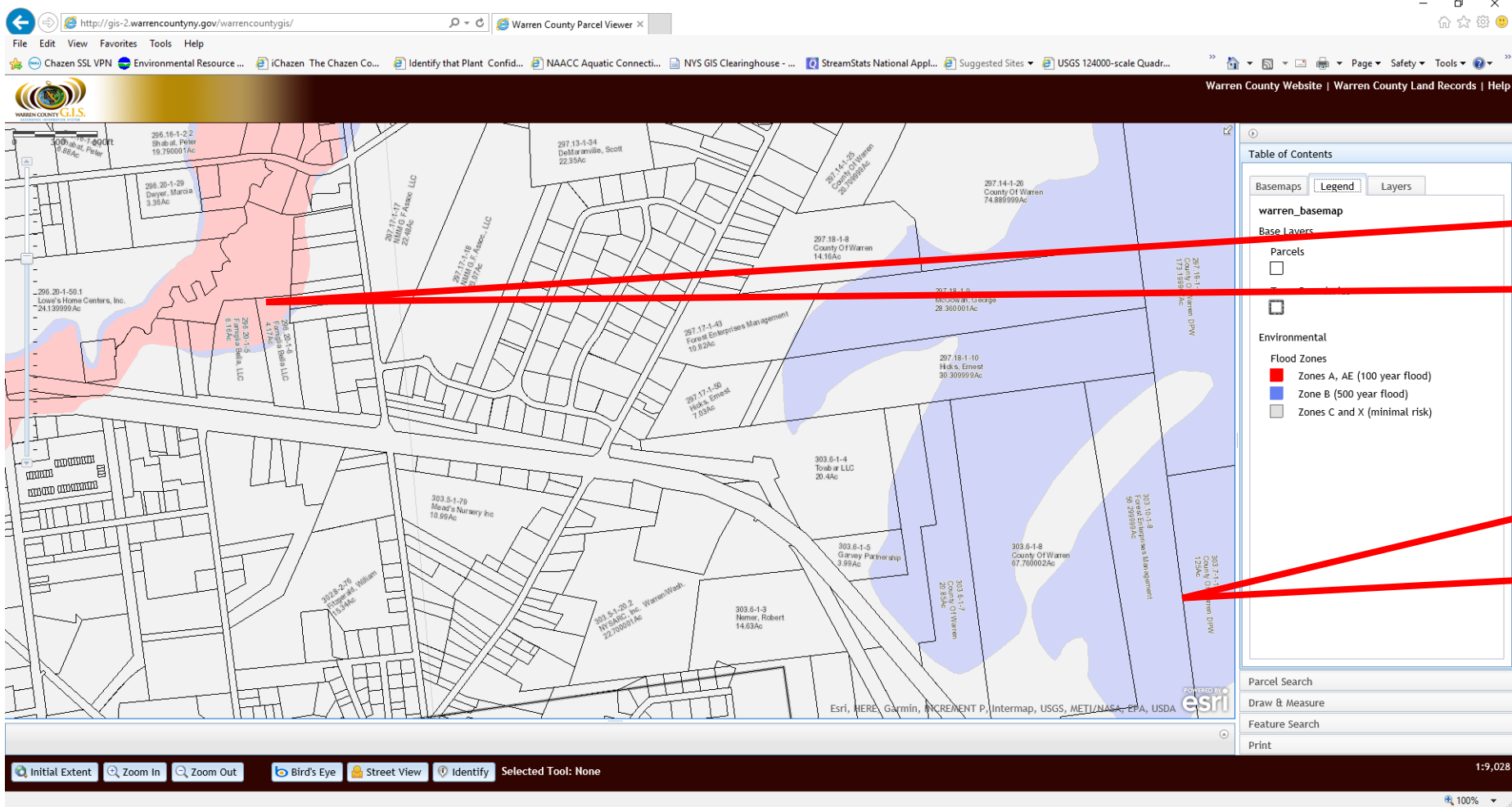
§ 91-3. Objectives.

The objectives of this chapter are to:

- A. Protect human life and health.
- B. Minimize expenditure of public money for costly flood control projects.
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.
- D. Minimize prolonged business interruptions.
- E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard.
- F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas.
- G. Provide that developers are notified that property is in an area of special flood hazard.
- H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.



Floodplains and FEMA



**FEMA 100 YEAR
Flood Zone**, with or
without base
elevation

**FEMA 500 YEAR
Flood Zone**

Warren County GIS Parcel Data

Floodplains and FEMA

https://msc.fema.gov/portal

Federal Emergency Man... FEMA Flood Map Service C...

File Edit View Favorites Tools Help

Chazen SSL VPN Environmental Resource ... iChazen The Chazen Co... Identify that Plant Confid... NAACC Aquatic Connecti... NYS GIS Clearinghouse - ... StreamStats National Appl... Suggested Sites USGS 124000-scale Quadr...

Page Safety Tools

FEMA

Navigation

Search

Languages

MSC Home

MSC Search by Address

MSC Search All Products

MSC Products and Tools

Hazard

LOMC Batch Files

Product Availability

MSC Frequently Asked Questions (FAQs)

MSC Email Subscriptions

Contact MSC Help

FEMA Flood Map Service Center: Welcome!

Looking for a Flood Map?

Enter an address, a place, or longitude/latitude coordinate

Queensbury, NY

Search

Looking for more than just a current flood map?

Visit [Search All Products](#) to access the full range of flood risk products for your community.

About Flood Map Service Center

The FEMA Flood Map Service Center (MSC) is the official public source for flood hazard information produced in support of the National Flood Insurance Program (NFIP). Use the MSC to find your official flood map, access a range of other flood hazard products, and take advantage of tools for better understanding flood risk.

FEMA flood maps are continually updated through a variety of processes. Effective information that you download or print from this site may change or become superseded by new maps over time. For additional information, please see the [Flood Hazard Mapping Updates Overview Fact Sheet](#).

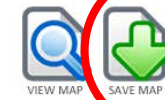
Announcements

Hazus 4.0 (Tsunami) Now Available: The Hazus Team has deployed Hazus 4.0 - Tsunami Module. The software can be downloaded for free on the FEMA Flood Map Service Center (MSC) [Hazus Download page](#). Hazus 4.0 is supported on ArcGIS 10.4 and Windows 10 64-bit, with continued support for Windows 8.1 and 7 (64-bit only).

NOTE: You must uninstall any existing versions of Hazus and all Microsoft SQL components from your computer before

Search Results—Products for QUEENSBURY, TOWN OF

The flood map for the selected area is number **3608790027B**, effective on **07/16/1984**



Show **all products** for this area

Letters of Map Change

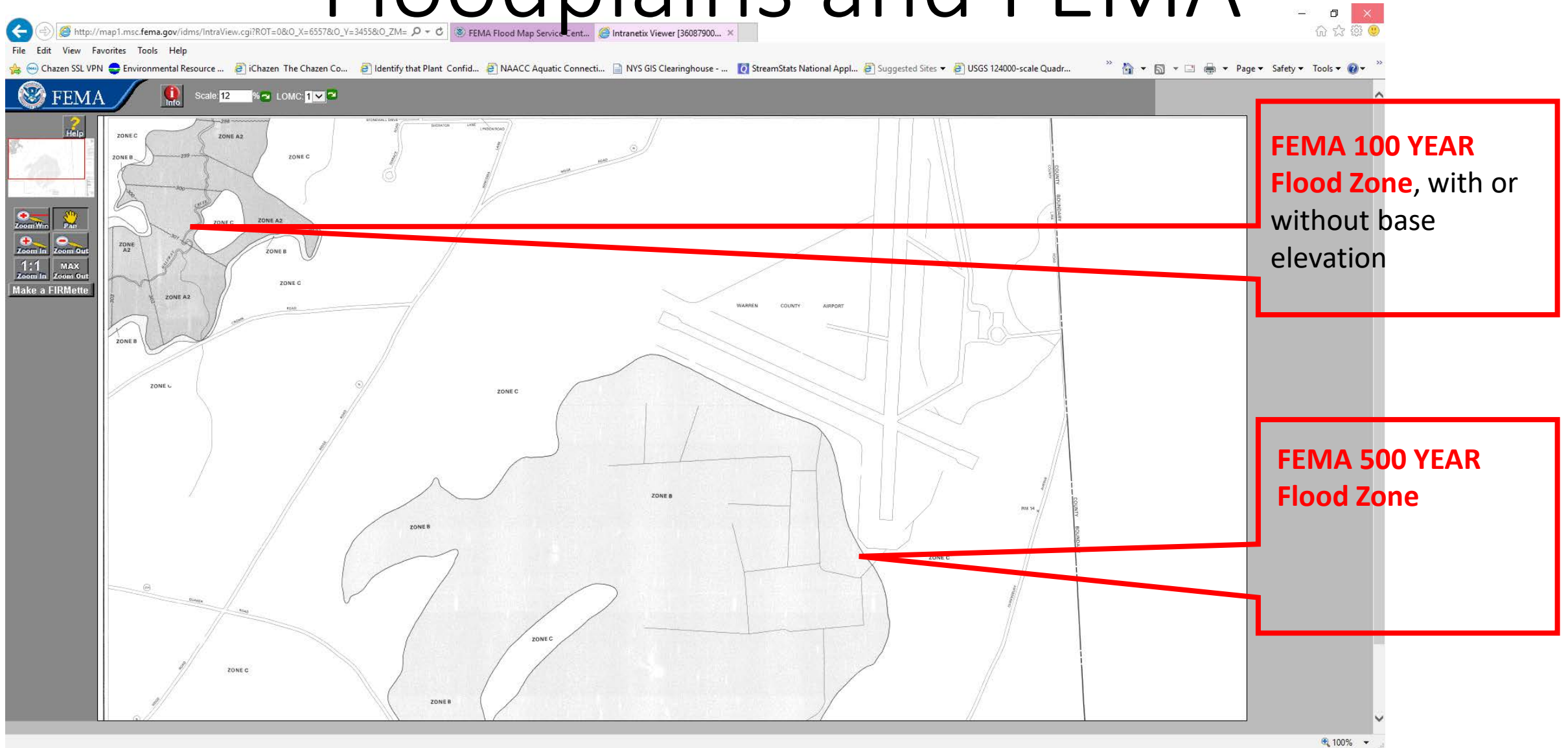
- Revisions (0)
- Amendments (1)
- Revalidations (0)

Locator Map

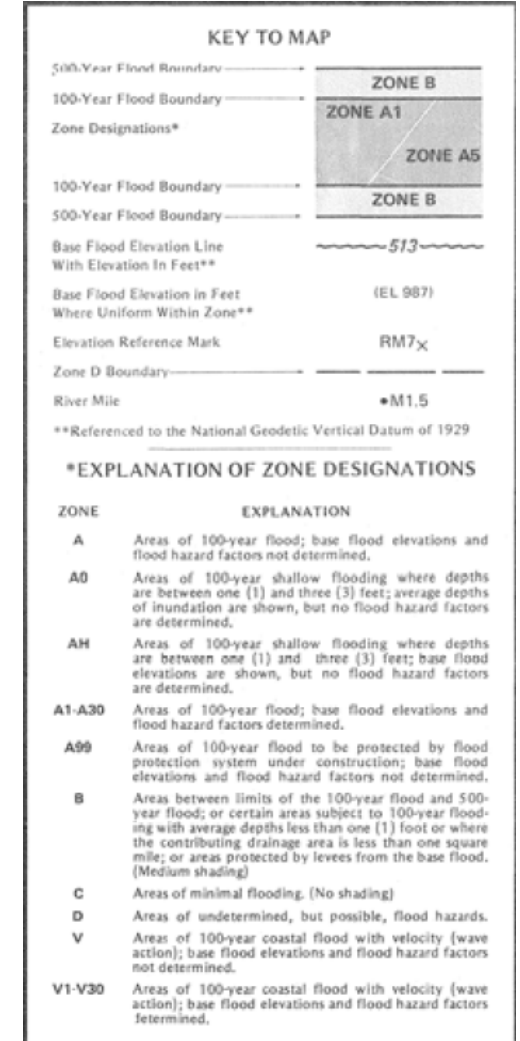
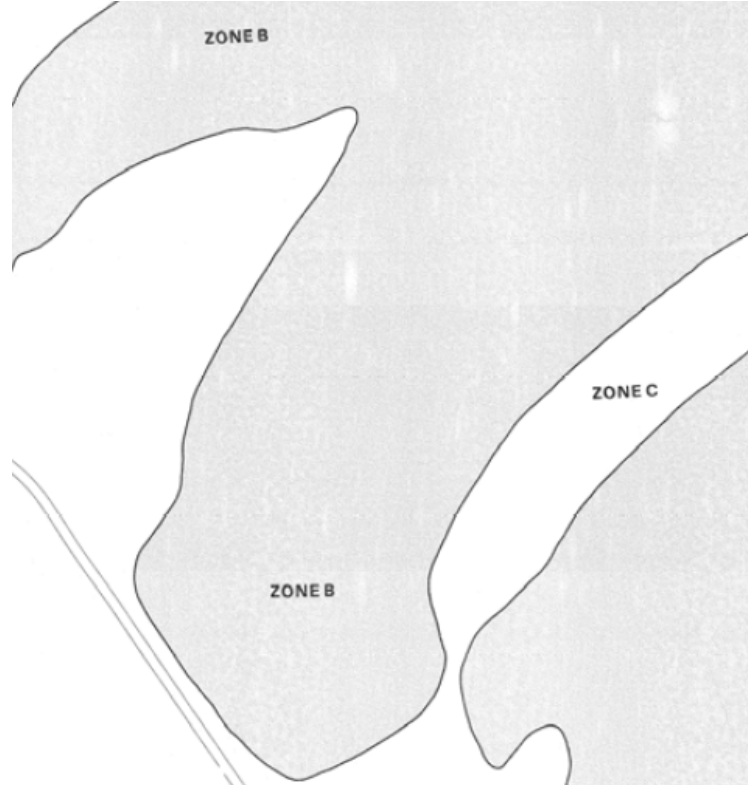
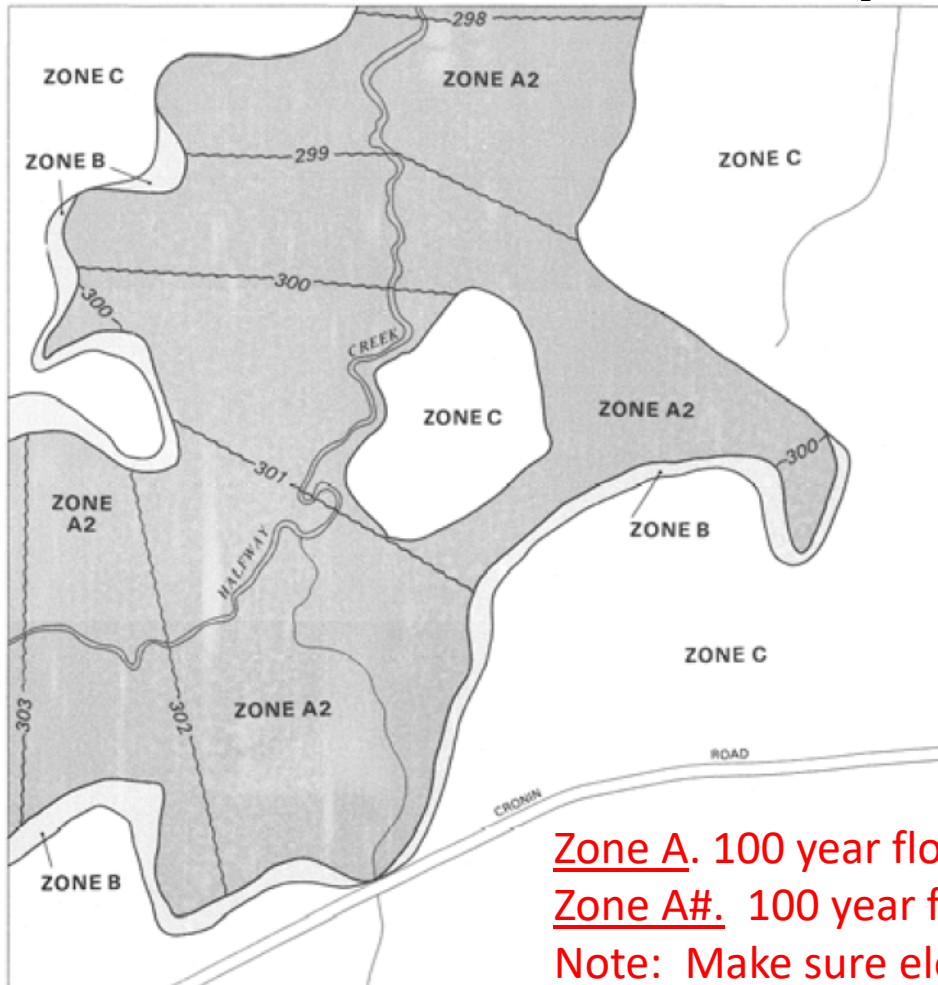


Google “FEMA Floodplain Mapping”

Floodplains and FEMA



Floodplains and FEMA



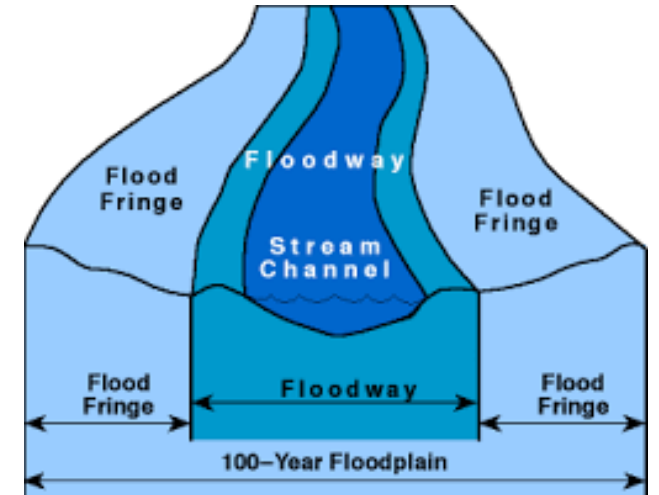
Zone A. 100 year flood

Zone A#. 100 year flood elevation is calculated to particular height
Note: Make sure elevation datum of survey map is same as FEMA.

Zone B. Between 100 and 500 year flood boundary.

Floodway. Not show here – often present on larger creeks

Floodplains and FEMA



Floodway. present on larger creeks

Zone A. 100 year flood

Zone A# or AE. 100 year flood elevation calculated to particular height

Note: Make sure elevation datum of your survey map is same as FEMA elevation datum.

Zone B. Between 100 and 500 year flood boundary.

Updated Maps coming to many areas.

FEMA Website

Floodplains and FEMA

Often regulated by Municipality. If not, then by NYSDEC.

Floodplain Insurance available at discounted rates for properties in a municipality based on proper regulation of development in floodplains by that Municipality.

For example, regulated by Town of Queensbury.

*Town of Queensbury, NY
Thursday, March 23, 2017*

Chapter 91. Flood Damage Prevention

[HISTORY: Adopted by the Town Board of the Town of Queensbury 8-12-1996 by L.L. No. 2-1996.^[1]
Amendments noted where applicable.]

Floodplains and FEMA

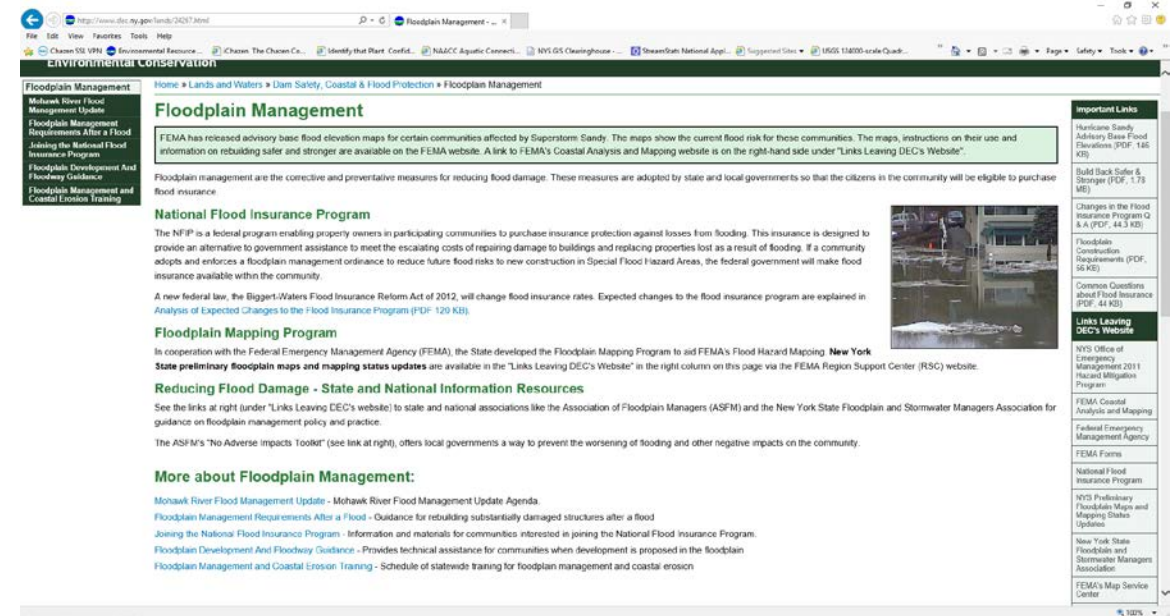
Typical Requirements Summarized –

Actual legal wording and requirements may be different

- Requires floodplain development permit from floodplain administrator for construction in any special flood hazard. (Review project to ensure compliance).
- Very stringent requirements for development in floodways.
- In 100-year floodplains, buildings/improvements be engineered/designed and constructed to flood ordinance requirements.
 - Bottom floor elevations of living spaces must be certain height above floodplain elevation.
 - Walls, utilities, other infrastructure must be engineered to withstand flooding.
- Requires no additional fill volume in floodplain, or if fill added, engineering study to demonstrate no significant impact (less than 1 foot increase) to flood elevations.

Where Do I Find Help?

- Local Municipal Floodplain Administrator
- NYSDEC Regional Office
- Consulting Engineers
- Consulting Floodplain Managers



Obligations as Realtors™

A real estate broker who becomes an agent of a seller or buyer, either intentionally through the execution of a written agreement, or unintentionally by a course of conduct, will be deemed to be a fiduciary. Fiduciary duties are the highest duties known to the law. Classic examples of fiduciaries are trustees, executors, and guardians. As a fiduciary, a real estate broker will be held under the law to owe certain specific duties to his principal, in addition to any duties or obligations set forth in a listing agreement or other contract of employment. These specific fiduciary duties include:

Loyalty ▪ Confidentiality ▪ Disclosure
Obedience ▪ Reasonable care and diligence ▪ Accounting

Risk Management & License Law Forum
May 15, 2013

Fiduciary Duties

Obligations as Realtors™

Disclosure

An agent is obligated to disclose to his principal all relevant and material information that the agent knows and that pertains to the scope of the agency. The duty of disclosure obligates a real estate broker representing a seller to reveal to the seller:

- All offers to purchase the seller's property.
- The identity of all potential purchasers.
- Any facts affecting the value of the property.
- Information concerning the ability or willingness of the buyer to complete the sale or to offer a higher price.
- The broker's relationship to, or interest in, a prospective buyer.
- A buyer's intention to subdivide or resell the property for a profit.
- Any other information that might affect the seller's ability to obtain the highest price and best terms in the sale of his property.

Risk Management & License Law Forum
May 15, 2013

Fiduciary Duties

Obligations as Realtors™

A real estate broker representing a buyer is obligated to reveal to the buyer:

- The willingness of the seller to accept a lower price.
- Any facts relating to the urgency of the seller's need to dispose of the property.
- The broker's relationship to, or interest in, the seller of the property for sale.
- Any facts affecting the value of the property.
- The length of time the property has been on the market and any other offers or counteroffers that have been made relating to the property.
- Any other information that would affect the buyer's ability to obtain the property at the lowest price and on the most favorable terms.

CAVEAT: An agent's duty of disclosure to his principal must not be confused with a real estate broker's duty to disclose to non-principals any known material facts concerning the value of the property. This duty to disclose known material facts is based upon a real estate broker's duty to treat all persons honestly and fairly. This duty of honesty and fairness does not depend on the existence of an agency relationship.

Risk Management & License Law Forum
May 15, 2013

Fiduciary Duties

More Information/Questions

Barbara B. Beall, PWS, LEED®AP
Principal
Director, Natural Resource Service
The Chazen Companies
375 Bay Road
Queensbury, NY 12804
518-824-1934
bbeall@chazencompanies.com

Real Estate Professionals – Reference List

1. Functions and Values

Corps Highway Methodology Workbook Supplement

<http://www.nae.usace.army.mil/Portals/74/docs/regulatory/Forms/HighwaySupplement6Apr2015.pdf>

USACOE. 1999. The Highway Methodology Workbook Supplement. US Army Corps of Engineers New England Division. 37 pp. NAEPP-360-1-30a.

Corps Highway Methodology Workbook

<http://www.nae.usace.army.mil/Portals/74/docs/regulatory/Forms/HighwayMethodBook.pdf>

USACOE. 1993. The Highway Methodology Workbook. US Army Corps of Engineers New England Division. 28 pp. NEDEP-360-1-30.

EPA Wetlands Factsheet Series

<https://www.epa.gov/wetlands/wetlands-factsheet-series>

EPA. 2016. Wetlands Factsheet Series. Environmental Protection Agency.

2. Wetland Losses

<https://www.fws.gov/wetlands/Documents/Wetlands-Losses-in-the-United-States-1780s-to-1980s.pdf>

Dahl, T.E. 1990. WETLANDS LOSSES IN THE UNITED STATES 1780's TO 1980's. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., 13 pp.

3. Identifying Aquatic Resources – Waters

Part 608 Use and Protection of Waters

[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=If9aaad50b5a011dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=If9aaad50b5a011dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

NYSDOS – Division of Administrative Rules in coordination with Thomson Reuters. 2017. New York Codes, Rules and Regulations. Part 608 Use and Protection of Waters.

Corps Regulations and Guidance

<http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Federal-Regulation/>

USACOE. Regulations and Guidance. US Army Corps of Engineers Headquarters.

Definition of Waters of the United States

<https://www.gpo.gov/fdsys/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part328.pdf>

USACOE. Definition of Waters of the United States. US Army Corps of Engineers Headquarters. 3 pp. Government Printing Office.

3. Identifying Aquatic Resources – Wetlands

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region

http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/NCNE_supp2.pdf

USACOE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. Version 2.0. 176 pp.

NYSDEC Wetland Delineation Manual

http://www.dec.ny.gov/docs/wildlife_pdf/wdelman.pdf

NYSDEC. 1995. NYSDEC Wetland Delineation Manual.

Hydric Soils Manual, Version 8.0

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf

United States Department of Agriculture, Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States*, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

4. Identifying Aquatic Resources – Mapping

Warren County Geographic Information Systems (GIS)

<http://warrencountyny.gov/gis/>

Warren County. 2017. Warren County Planning and Community Development Department - GIS Program.

Washington County Geographic Information Systems (GIS)

<http://www.co.washington.ny.us/270/GIS-Web-Map>

Clinton County Geographic Information Systems (GIS)

<http://www.clintoncountygov.com/Departments/Planning/GISMAP.html>

Essex County Geographic Information Systems (GIS)

<http://essex-gis.co.essex.ny.us/>

USGS Topo Download, Version 1.0

<https://viewer.nationalmap.gov/basic/?basemap=b1&category=ustopo&title=US%20Topo%20Download>

National Wetlands Inventory Mapper

<https://www.fws.gov/wetlands/Data/Mapper.html>

NYSDEC Environmental Resource Mapper

<http://www.dec.ny.gov/gis/erm/>

USDA/NRCS Web Soil Survey

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

Adirondack Park Agency (APA) Wetland Mapper

<http://www.arcgis.com/home/webmap/viewer.html?webmap=80eb2e7ac00640eba0bd5ac53821e9c4&extent=-75.0255,43.6019,-73.5876,44.3402>

Bing Maps

<https://www.bing.com/maps>

Society of Wetland Scientists Professional Certification Program <http://www.wetlandcert.org/>

5. Aquatic Resources - Federal

Executive Order on “Waters of the United States”, Trump

<https://www.whitehouse.gov/the-press-office/2017/02/28/presidential-executive-order-restoring-rule-law-federalism-and-economic>

6. Jurisdictional Determination/Validation

Jurisdictional Information

http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/juris_info/

Regulatory Guidance Letter RGL 16-01

http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl_16-01.pdf?ver=2016-11-01-093306-010

7. Regulation of Aquatic Resources

NYSDEC Part 663

[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I03a74980b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I03a74980b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

NYSDEC – Division of Administrative Rules in coordination with Thomson Reuters. 2017. New York Codes, Rules and Regulations. Part 663 Freshwater Wetlands Permit Requirements.

APA Wetland Regulations

<https://apa.ny.gov/Regulations/index.html>

New York/Buffalo District Public Notice of New NWP’s Conditions (**N/A yet**)

New York District Website

<http://www.nan.usace.army.mil/>

NYSDEC, Freshwater Wetlands Program

http://www.dec.ny.gov/docs/permits_ej_operations_pdf/freshwetprogramguide.pdf

NYSDEC Validation Block

<http://docs.newwindsor-ny.gov:8080/dsweb/Get/Planning Board-889/PB %2003-23%20-%20NYS%20Dept%20of%20Environmental%20Conservation%20-%20%20Shadowfax%20-%20Delineating%20and%20Surveying%20Freshwater%20Wetland%20Boundaries.pdf>

Adirondack Park Agency, Citizen Guide to Land Use Regulations

<http://docs.newwindsor-ny.gov:8080/dsweb/Get/Planning Board-889/PB %2003-23%20-%20NYS%20Dept%20of%20Environmental%20Conservation%20-%20%20Shadowfax%20-%20Delineating%20and%20Surveying%20Freshwater%20Wetland%20Boundaries.pdf>

Corps Applicant Guide

http://www.nan.usace.army.mil/Portals/37/docs/regulatory/geninfo/Applicant_Guide_2014.pdf

7. FEMA Floodplains

NYSDEC Floodplain Management Website - <http://www.dec.ny.gov/lands/24267.html>



**Department
of Health**

Water Quality Protection in the Champlain Basin

**Individual Wells and On-Site Wastewater
Treatment Systems**

Objectives – Individual Water Supply

1. Learn the basics of individual wells and how they work
2. Essential elements of DOH standards, regulations, and policy
 - a) Separation Distances
 - b) Testing
3. Roles of DOH, DEC, CEOs, Realtors, etc.
4. Residential Code and its relationship to individual wells and onsite wastewater systems



Objectives – Onsite Wastewater Treatment Systems

1. Goals of OWTS management
2. Learn the basics of OWTSs and how they work
3. Essential Elements of DOH standards, regulations, and policy
 - a) Separation Distances
 - b) Soil Investigations
4. Identifying Failures
5. Roles and responsibilities of DOH, DEC, CEOs, Realtors, etc.

Handouts

- Fact Sheet #5 – Susceptible Water Sources
- Fact Sheet #7 – Testing, Operation, and Maintenance
- Concerns about Surface Water as a Drinking Water Source
- Septic System Operation & Maintenance Manual
- PE Fact Sheet

ACRONYMS

- IWS – Individual Water Supply (Residential)
- OWTS – Onsite Wastewater Treatment System (aka: septic system)
- LHD – Local Health Department
 - a) 37 County Health Departments
 - b) 9 District Offices
 - c) NYC
- 5-B – Appendix 5-B: Standards for Water Wells
- 75-A – Appendix 75-A: Wastewater Treatment Standards – Residential Onsite Systems





**Department
of Health**

Residential (Individual) Water Supply

Residential (Individual) Water Supply

- By “individual” we really mean “household” or “residential”: “RWS” or “IWS”
- Non-residential/non-public water supply wells also considered IWS (e.g. dentist office with a well, out in the country and not on public water)
- Appendix 5-B, “Standards for Water Wells”, released 11/23/05
- Public water supplies (PWS) are preferred over individual water supplies

Objectives

- Attendees should be able to:
- Categorize types of IWS
- Describe a properly constructed IWS
- Describe DOH policy
- Describe disinfection, treatment & other protective measures
- Describe roles of local CEO, DEC, DOH, Local Health Departments

Goals of Properly Constructed IWS

- Quality: Assures acceptable water quality for short and long term use

“Quality” refers to safe and aesthetic properties (taste and appearance)
- Protect: Protect against contamination
- Quantity: Assures acceptable quantity for short and long term use
- Maintenance and Treatment: Relatively low maintenance or treatment is needed



IWS “Facts and Factoids”

- About 1.1 million homes in NYS have wells...
- About 4 million home residents in NYS (and millions of visitors) depend on residential water wells
- About 43 million USA home residents (14% of population) depend on residential water wells
- About 10,000 new (10%), or replacement (90%), residential wells installed every year in NYS
- NYS is a “water rich” state; however, our groundwater resources are not inexhaustible



Types of IWS

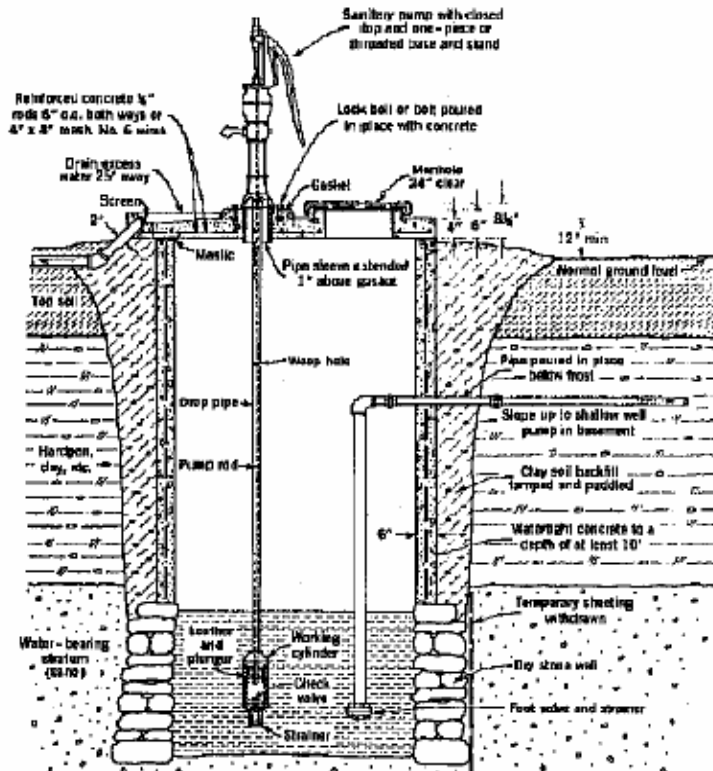
- Expect to come across these types:
- Dug wells
- Driven well “points”
- Springs
- Cisterns
- Surface water/shore wells
- SEE FACT SHEET 5
- Drilled wells



Types of IWS

Dug wells:

- Not recommended....
- Shallow
- Easily contaminated
- Subject to drought



Types of IWS

Driven “points”

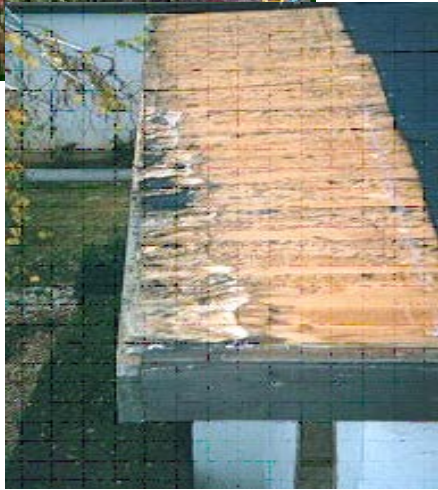
- Usually refers to a shallow, single pipe *under vacuum* (pump in basement)
- Also not recommended...
- Shallow, easily contaminated, subject to drought
- Very popular - cheap and easy to install



Types of IWS

Cisterns

- Collects rainwater that drains from roof (bird droppings, leaves, shingles, etc.)
- Not recommended/should not be allowed:
- Easily contaminated, subject to drought



Types of IWS

Surface water:

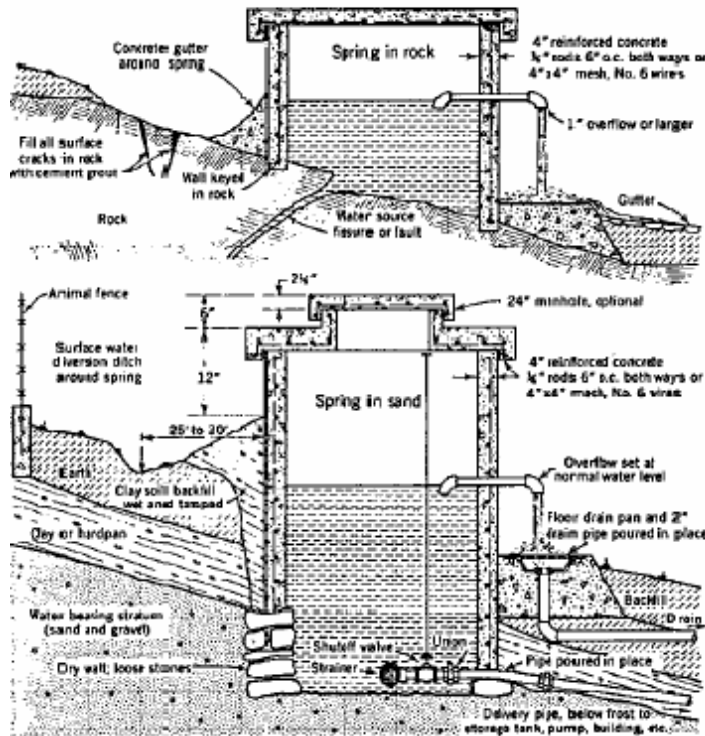
- Not recommended/should not be allowed;
- High degree of treatment and maintenance for micro-organisms and other contaminants



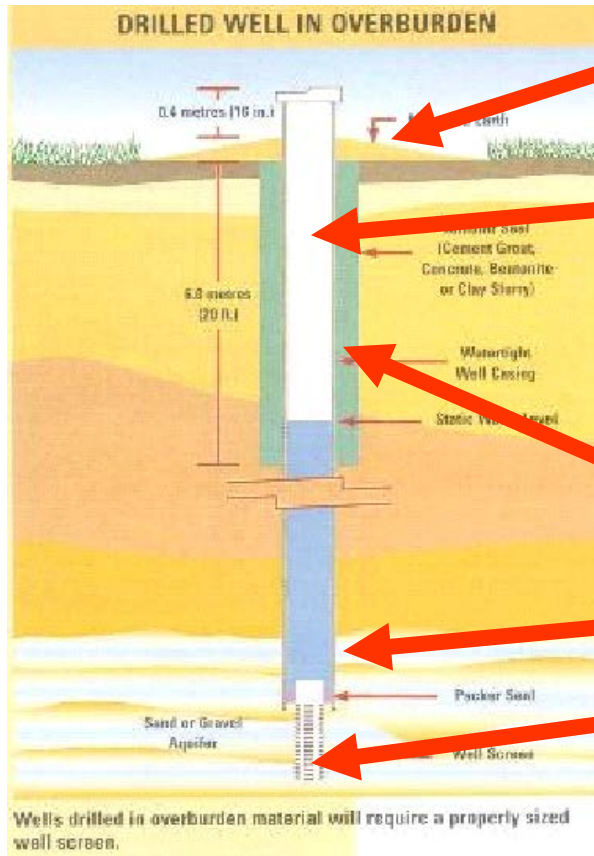
Types of IWS

Springs

- Not recommended...
- Easily contaminated
- Subject to drought
- Water comes from where?

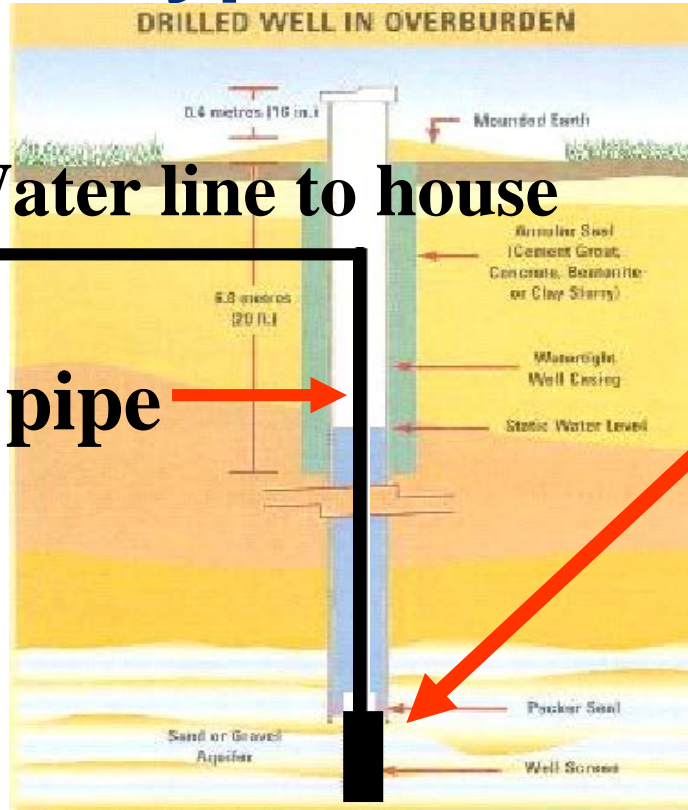


Types of IWS: Drilled wells



- Earth mounded around top of casing
- Casing (steel or PVC, 6" diameter pipe) - Extends at least 20 feet below ground, 1 foot above grade
- Grout seal around casing
- Casing seated into bedrock
- Screen – if necessary

Types of IWS: Drilled wells



Water line to house

Drop pipe

Submersible pump

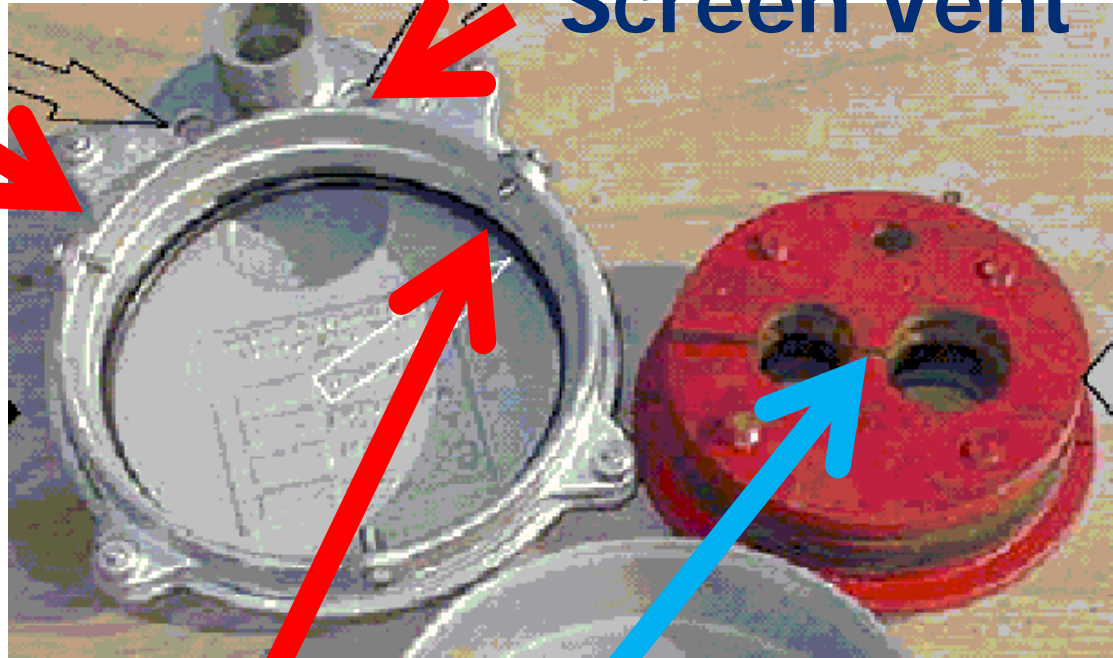
- Permanent casing surrounds drop pipe (drop pipe is a small pipe within the casing)
- Drop pipe connects to the submersible well pump...
- Drop pipe connects to water line to house plumbing

Well Caps

Screen Vent

Good well cap:

- Sealed
- Watertight
- Vermin-proof
- Screen vented



Seal

“Split”
well caps NOT
allowed



Department
of Health

Well Caps

Another Bad Well Cap:

- Not watertight
- Not vermin-proof
- Not vented

This was a public water supply well and tested positive for e-coli. Much work was needed to remediate this.



Typical Drilled Well Construction

SUBMERSIBLE PUMP

- Long life – 20+ years
 - The life of the well is dependent on the life of the pump.
- Easy to maintain
- Water lubricating
- Fits inside well casing



Typical Drilled Well Construction

Well Pits

- A pit was where the drop pipe and the well casing connection used to be located
- Pits were open:
 - to the elements
 - to vermin and contamination
- Safety concerns

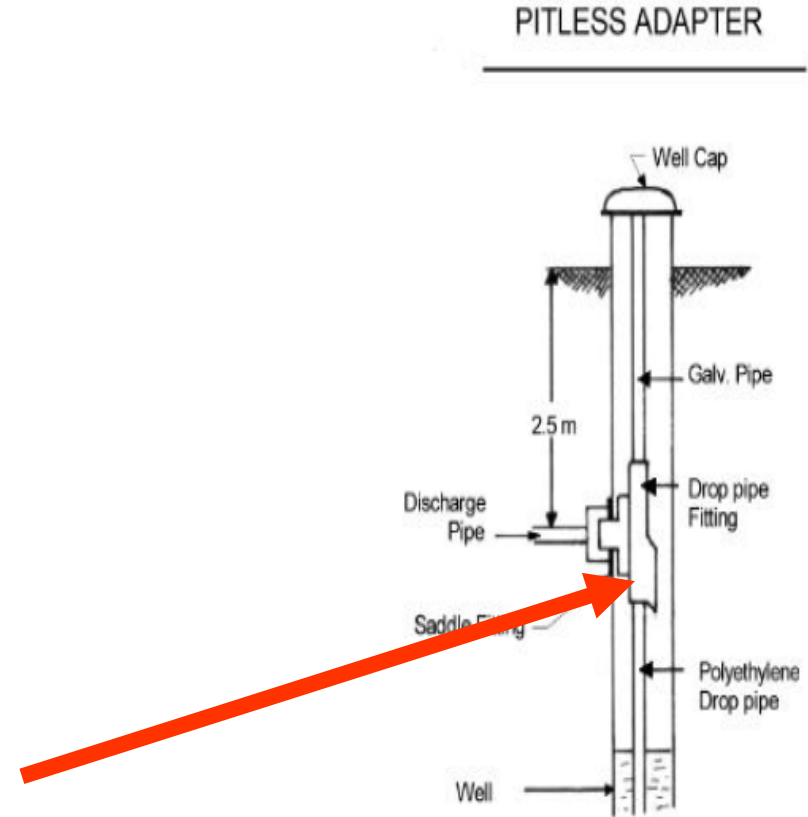
PITLESS adapters
are much better



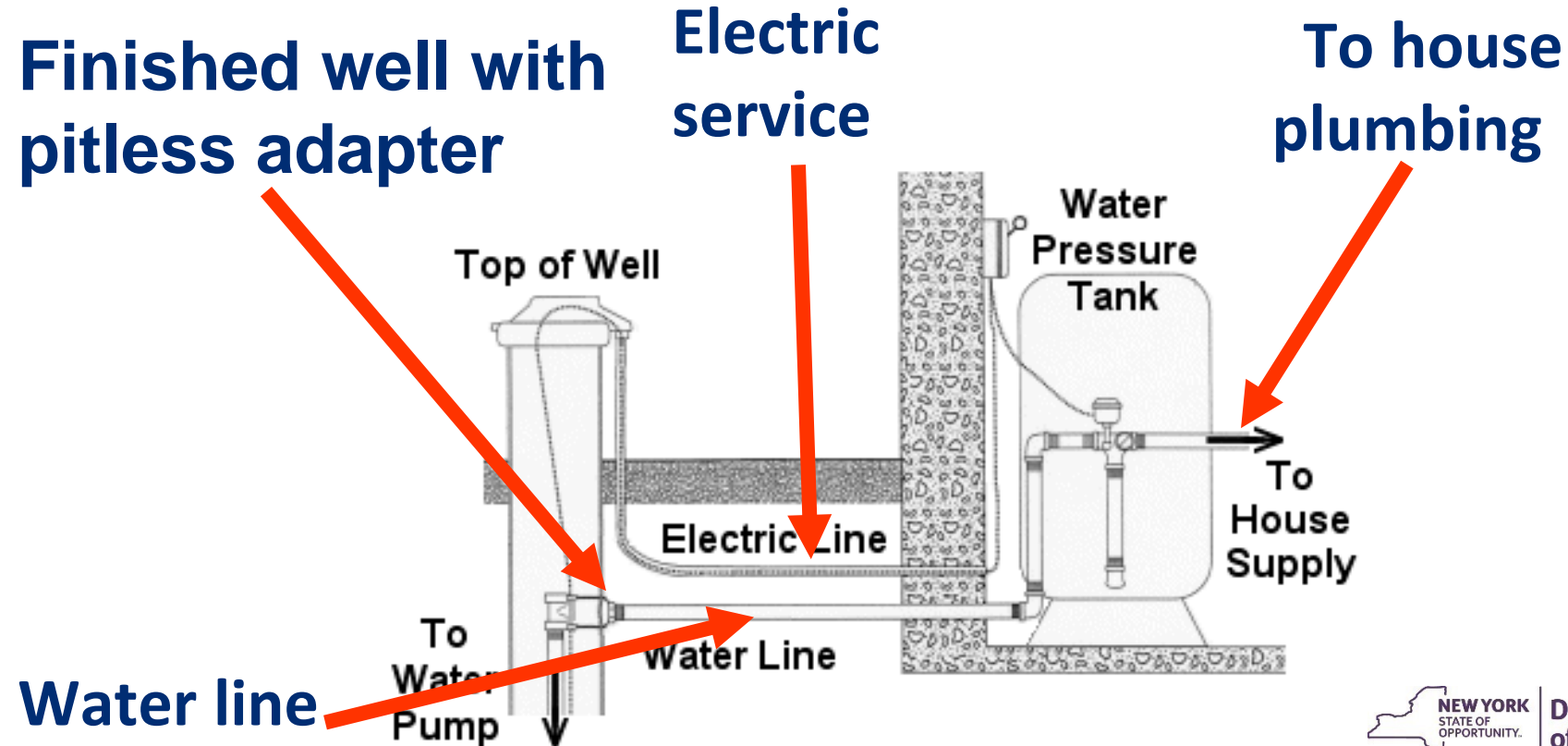
Typical Drilled Well Construction

Pitless Adapter

- Buried underground
- Sanitary (sealed and not open to contamination, including drainage)
- Frost-proof
- Convenient to service



Typical Drilled Well Construction



Yield Testing

- Average water usage for 3 bedroom house: 330 gallons/day (GPD) – see Appendix 75-A
- 5 gallons per minute (GPM) minimum recommended
- No yield requirement unless home is part of a realty subdivision
- 1-5 GPM: extra storage is recommended for peak flows (e.g. water tank plus storage in well)
 - If well cannot provide water at high enough rate for peak times, draws water from storage
 - Recovery during low flow times

DOH and Other Policy

- 1999 Well Drillers Registration Law required:
 - Well regs (Appendix 5-B) written by DOH
 - Driller registration/certification by DEC(All drillers need to be registered with DEC)
- DEC “Well Completion Report” (well log) needs to be submitted to DEC and to the homeowner by the driller
- Some counties have their own well code and other IWS policy, such as water quality testing (Albany CHD does)
- Applies to new wells



Appendix 5-B

- **Covers: Well construction, pumps (installation and repair), yield tests, separation distances, well abandonment**
- **Developed with drilled, cased wells under positive pressure as the goal**
- **The Residential Building Code references Appendix 5-B; local code enforcement officers (CEOs) can enforce (unless a County has its own IWS program e.g., Dutchess)**

Appendix 5-B

Separation distances:

- Helps to reduce risk from sources of contamination, such as OWTS, barnyards, watercourses, etc.
- Applies to all new construction
- Minimum lot size: 20,000 square feet (~1/2 acre)
 - See 10 NYCRR 74.4(b)

Contaminant Source	Distance to Well (ft)
OWTS Absorption Field	100
Barnyard	100
Septic Tank	50
Stream, Lake	25



Appendix 5-B

Separation distances: distance from contaminant source increased by 50% if well less than 50 feet deep (50/50 Rule)

Contaminant Source	Normal Distance (ft)	50/50 Distance (ft)
Septic Tank	50	75
Absorption Field	100	150
Stream, Lake	25	37.5

Water Quality Testing

- There are currently no statewide well testing requirements
- Some counties do require testing – contact the Local Health Department in the county where home is located
- Possible future testing regulations may require testing:
 - For new wells
 - Upon property transfer
- FHA Loans:
 - No well testing requirements – defers to state/local requirements
 - NY does not have well testing requirements, only recommended standards (see Appendix 75-C)

Appendix 75 – C (Water Quality)

Test	MCL
Coliform bacteria	Any positive result is unsatisfactory
Lead	0.015 mg/L (15 µg/L)
Nitrates	10 mg/L as N
Nitrites	1 mg/L as N
Turbidity	5 NTU
Arsenic	0.010 mg/L
Iron	0.3 mg/L
Manganese	0.3 mg/L
Iron plus manganese	0.5 mg/L
Sodium	No designated limit.
pH	6.5 – 8.5
Hardness	150 mg/L as CaCO ₃
Alkalinity	100 mg/L as CaCO ₃



Treatment

- Naturally occurring hardness, iron, manganese and hydrogen sulfide (“sulfur”) are commonly treated and are not a health concern
- Home may have water softener, etc.
- An ultraviolet (UV) unit or chlorination unit may be present
- These units provide continuous disinfection in cases of a contaminated existing well

Home water softener

Cost of Drilling a Well

Cost of Well Construction (typical well, 50 feet deep):

Item	Quantity	Unit	Unit Cost	Cost
Well Drilling w/Casing	20	feet	\$18/foot	\$360
Grouting Top 20 ft.	20	feet	\$5/foot	\$100
Remaining Drilling	30	feet	\$10/foot	\$300
Drive shoe, well cap	1 each	As noted	\$30, \$75	\$105
Fuel Charge	50	feet	\$1/foot	\$50
			Total:	\$915

Note: cost estimates are from 2008



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of Health**

Cost of Drilling a Well

Cost of Pump and Development (typical well, 50 feet deep):

Item	Quantity	Unit	Unit Cost	Cost
Pump	1	Pump	\$683	\$683
Pressure Tank, fittings, pitless adapter, pipe, disinfection	Item Specific	Item Specific	\$878	\$878
Pump Installation	1	Install	\$300	\$300
Yield Test	6	Hours		\$360
Generator Rental	5	Hours		\$50
Disinfectant	1	Bottle		\$3
Test Report	1	Report		\$50
			Total:	\$2,324



Cost of Drilling a Well

Item Category	Cost
Well Construction	\$915
Pump and Development	\$2,324
Grand Total	\$3,239

Note: All cost estimates are from 2008

- Sampling for all parameters in Appendix 75-C costs an additional \$150 (approximately)
 - This is an average cost
 - Generally more expensive downstate, less expensive upstate



Risks of Contamination

- Shallow and improperly constructed wells at risk for contamination
- Permeable soil allows surface contamination to reach the water entering the well
- Wells whose casing is seated in impermeable formations (bedrock) is protected from surface contamination
- Deeper wells in bedrock are also less likely to run dry
- All well owners should test their water quality regularly

Risks of Contamination

- **Identify contamination by testing:**
 - **Annually for coliform bacteria**
 - **Every 3-5 years for other contaminants in Appendix 75-C**
 - **Whenever there is a change in taste, odor, appearance of water**
 - **See Fact Sheet 7**

Risks of Contamination

- If contamination is found:
 - Identify source (septic system, road salt, etc.)
 - Remediation: move or repair septic system, ensure well is properly constructed, etc.
 - May need to install treatment such as UV

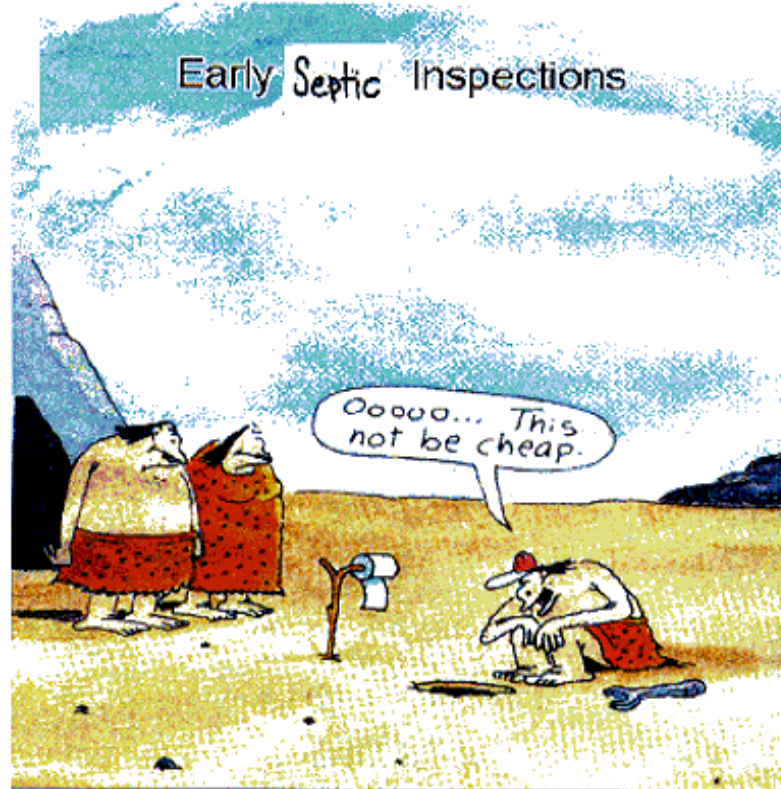
Resources

- IWS Fact Sheets:
http://www.health.ny.gov/environmental/water/drinking/regulations/fact_sheets/
- Appendix 5-B:
http://www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm
- Local Health Department Contact Information:
http://www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm
- Bureau of Water Supply Protection:
bpwsp@health.ny.gov, 518-402-7650

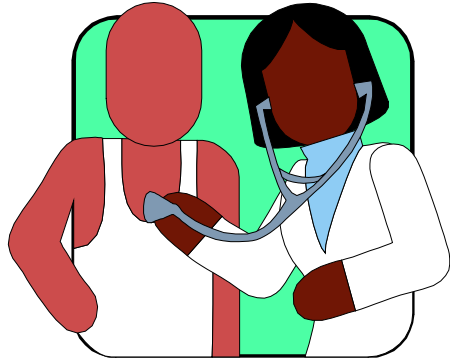


Onsite Wastewater Treatment Systems (OWTS)

Also known as....
Septic Systems

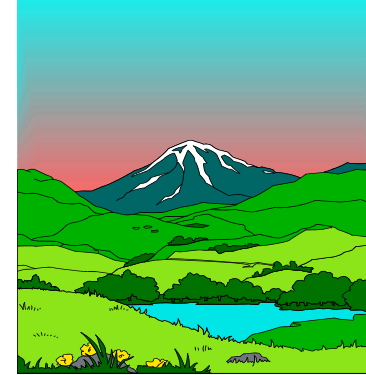


Goals of OWTS Design & Management



Protect Public Health

Protect the Environment



Protect Water Sources



Avoid Nuisance Conditions



**Department
of Health**

OWTS “Take Away” Points

- Systems must be designed by Design Professional (Professional Engineer or Registered Architect)
 - a) Perform site evaluation and prepare plans
 - b) Assure construction in accordance with plans (as-builts)
- Where available – Rely on LHDs for OWTS
- OWTS Fact Sheet (“Need for PE”)
 - a) New systems
 - b) Any increase in flow
 - c) Changes to the absorption field
- Contact your LHD with questions

http://www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm



**Department
of Health**

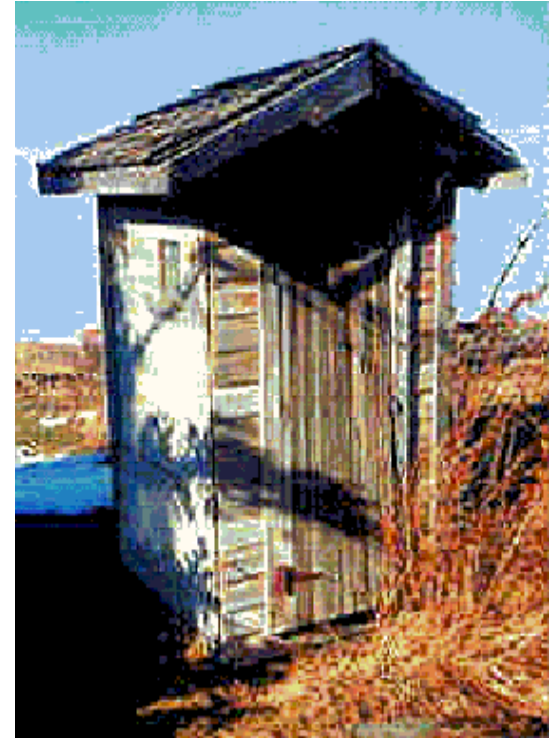
OWTS “Fun Facts”

- About 25% of existing USA houses use OWTSs
- About 33% of new houses in USA use OWTSs
- More than 1.5 million NYS houses use OWTSs
- About 350 million gallons of wastewater from OWTS discharged per day into ground in NYS from residences (for commercial sources estimate an additional 10%)



Brief History of OWTS

- Out House (Privy)
- Indoor Plumbing
- Cesspools
- Septic Tank
- Seepage Pits (Dry Well)
- Soil Absorption System
- Enhanced Treatment Systems (ETU)
 - treatment before soil absorption area

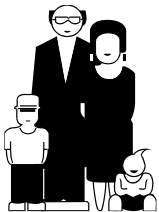


Disposal vs. Treatment

What's in Wastewater???

- Residential Wastewater Contains:
 - Organic matter (pathogens & viruses), solids, nutrients (nitrogen & phosphorus), grease, household chemicals, etc... (homeowner habits)
- Wastewater “strength” is typically measured as:
 - Amount of Biochemical Oxygen Demand (BOD)
 - Suspended particles (TSS)
 - Some non-biodegradable that can “block” the soil area
- Wastewater “strength” and characteristics vary:

Residential



Restaurant



Bar



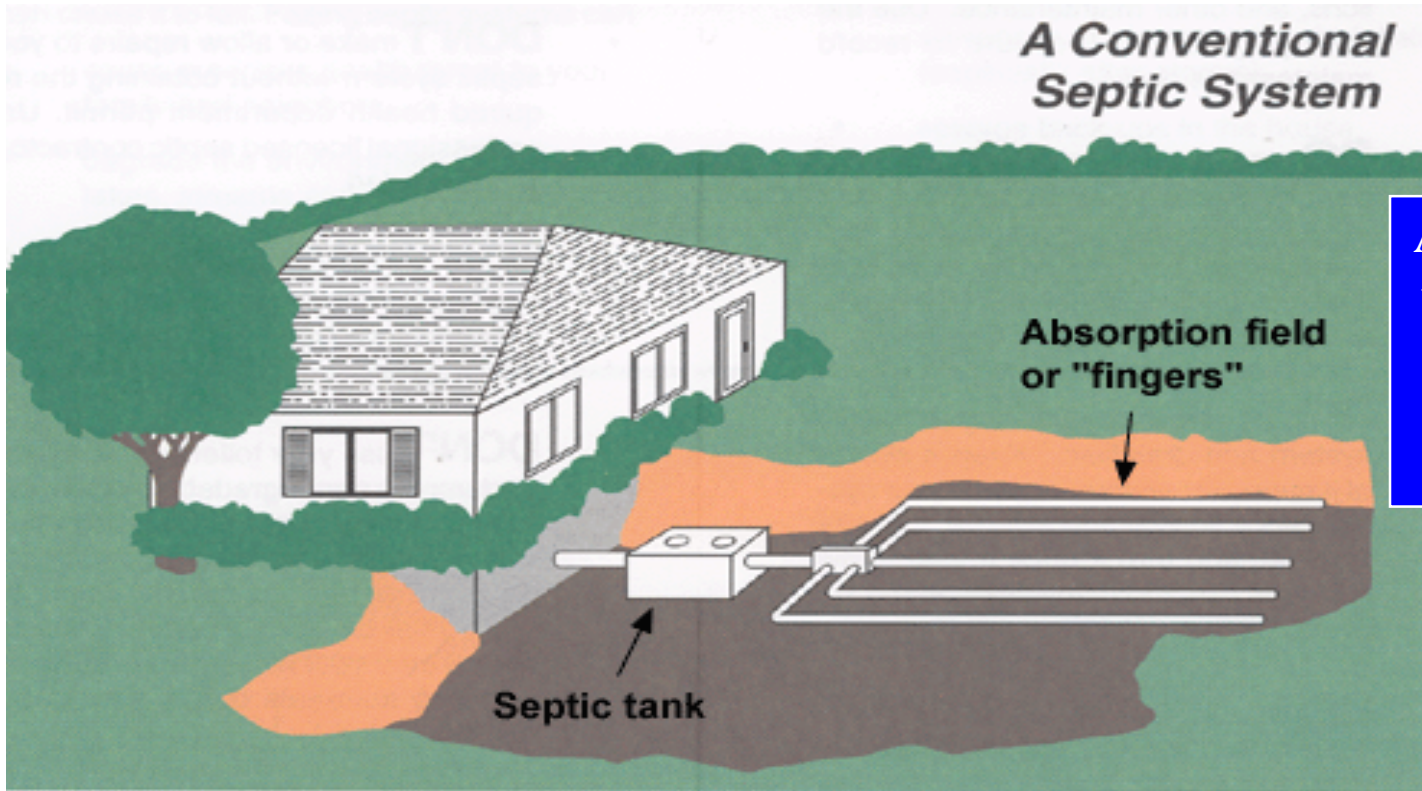
Factory



School



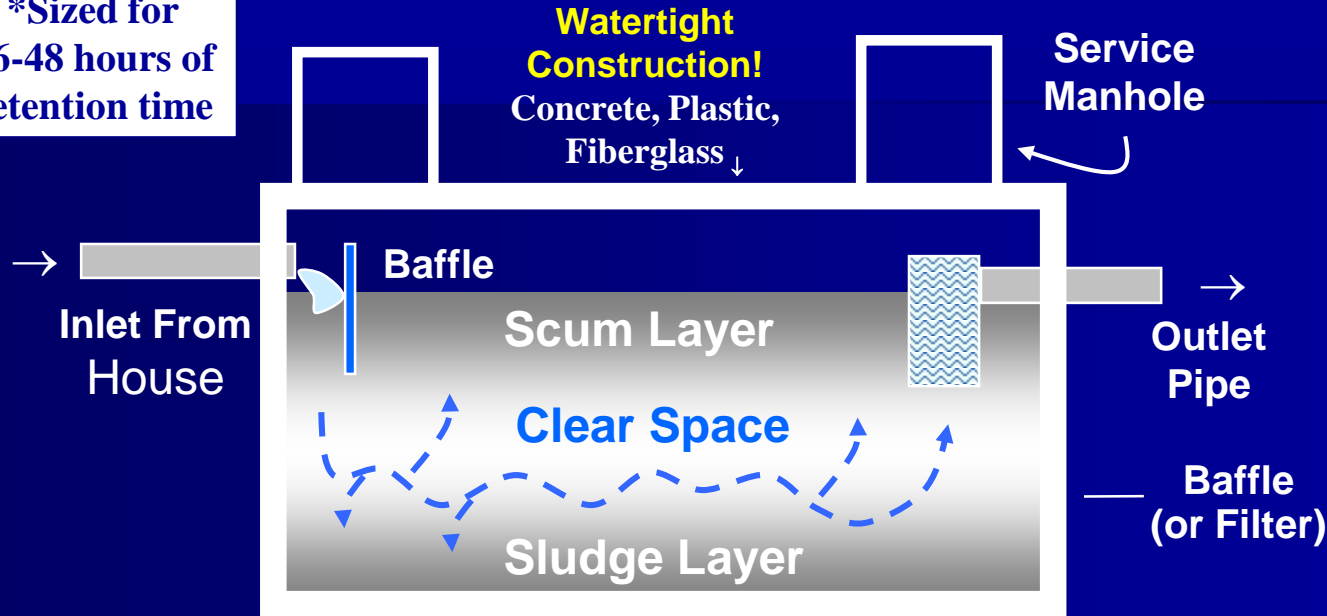
Basic OWTS Components



An OWTS is designed to collect and TREAT wastewater prior to dispersal back to the environment

Septic Tank

***Sized for
36-48 hours of
retention time**



- Allows for solids to settle (sludge) and floatable material to rise (scum)
- Reduces wastewater "strength" going to the soil absorption area
- Effluent filters are used to further reduce effluent "strength"
- Limited anaerobic biodegradation occurs in the septic tank

Septic Tanks and Filters

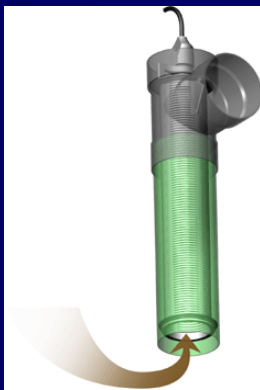
Residential Septic Sizing

<u># Bedrooms</u>	<u>Gallons</u>
1, 2, 3	1,000
4	1,250
5	1,500
6	1,750

Add 250-gallon for BR, garbage grinder or spa-tub



Effluent Filters



www.nsf.org
Standard 46

Plastic or Fiberglass

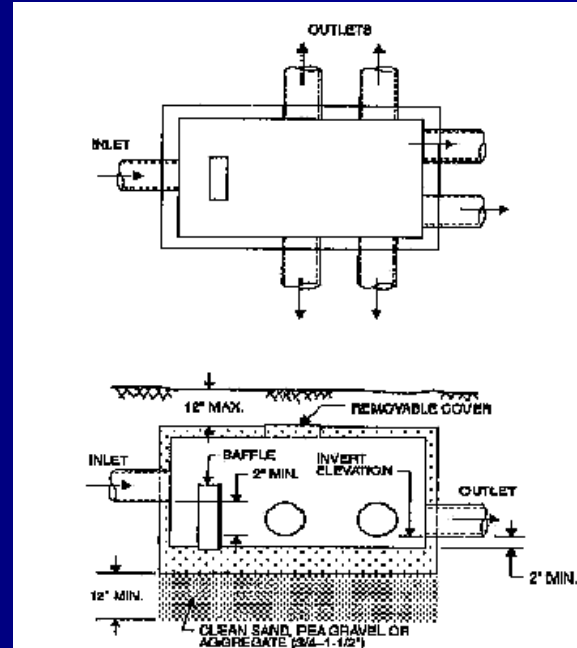


Distribution to the Soil Absorption Area

■ Gravity Distribution

– Distribution Box

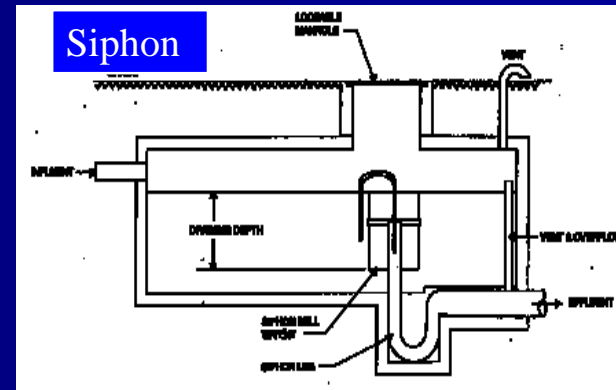
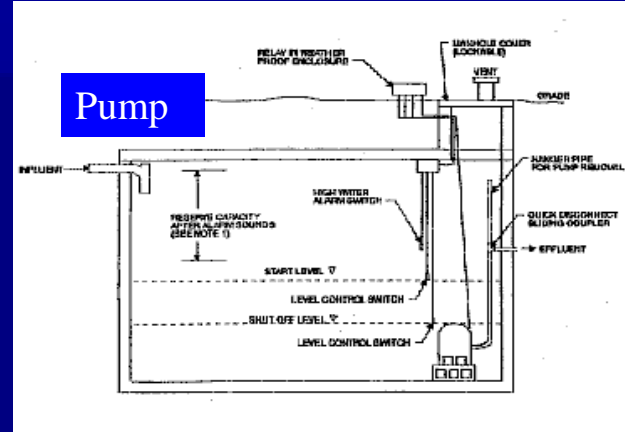
- Provides equal distribution
- Controls flow
- Use Speed Levelers



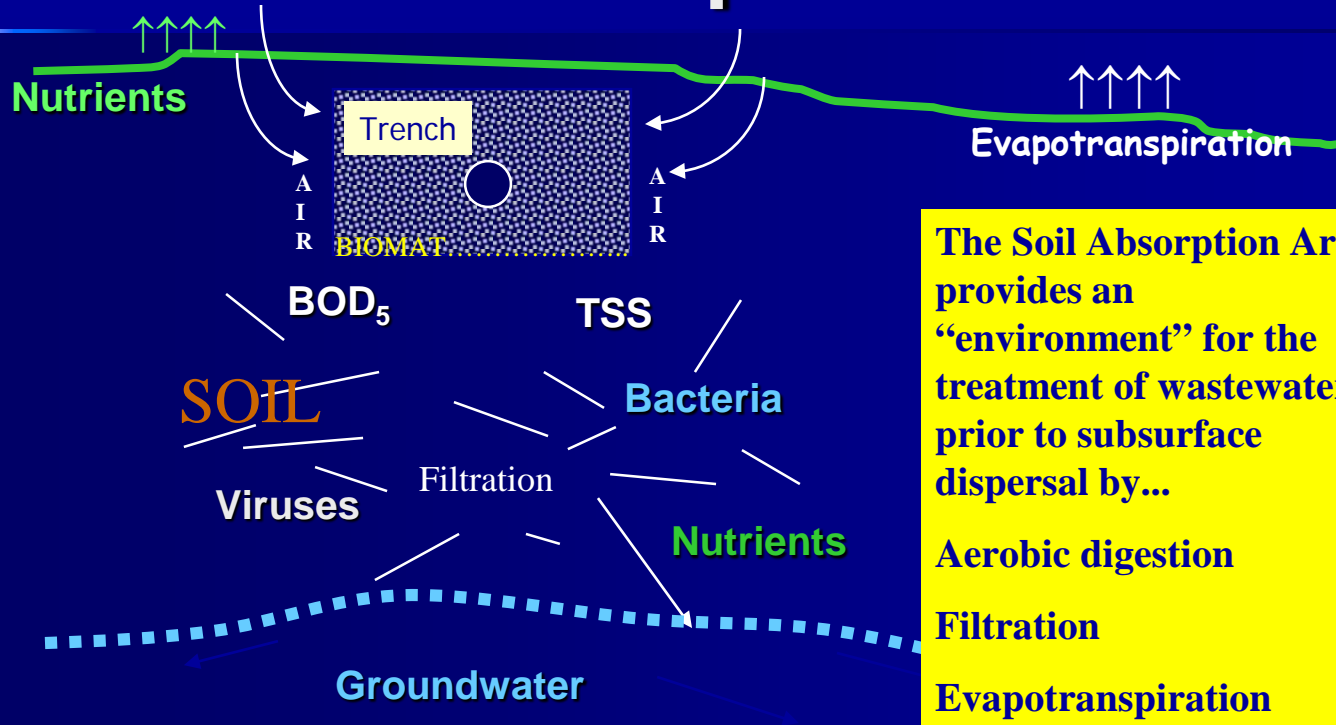
Pump or Siphon Distribution

Dosing

- May be required by design or to “lift” wastewater to the Absorption Area
- Delivers a calculated “dose” of wastewater to the Absorption Area (75-85% of pipe volume)
- “Dose” is typically delivered to a D-Box for gravity feed to the Absorption Area
- *Pressure distribution* is through smaller diameter piping (5-10 times the pipe volume dose). May be required by design



Wastewater Treatment in a Soil Absorption Area



The Soil Absorption Area provides an “environment” for the treatment of wastewater prior to subsurface dispersal by...

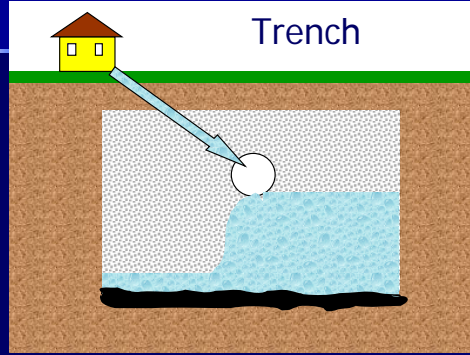
Aerobic digestion

Filtration

Evapotranspiration

Adsorption

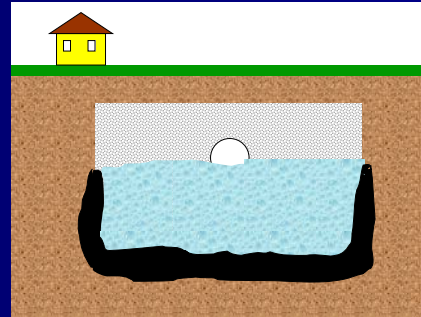
Biomat



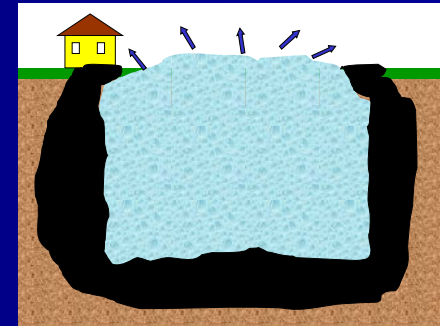
A Biomat is a “bed of bugs” which forms on the soil surface and “digests” organic matter, harmful bacteria and viruses as food. The “bed” also slows down infiltration and helps distribute wastewater

When a Biomat grows too thick wastewater will “surface”

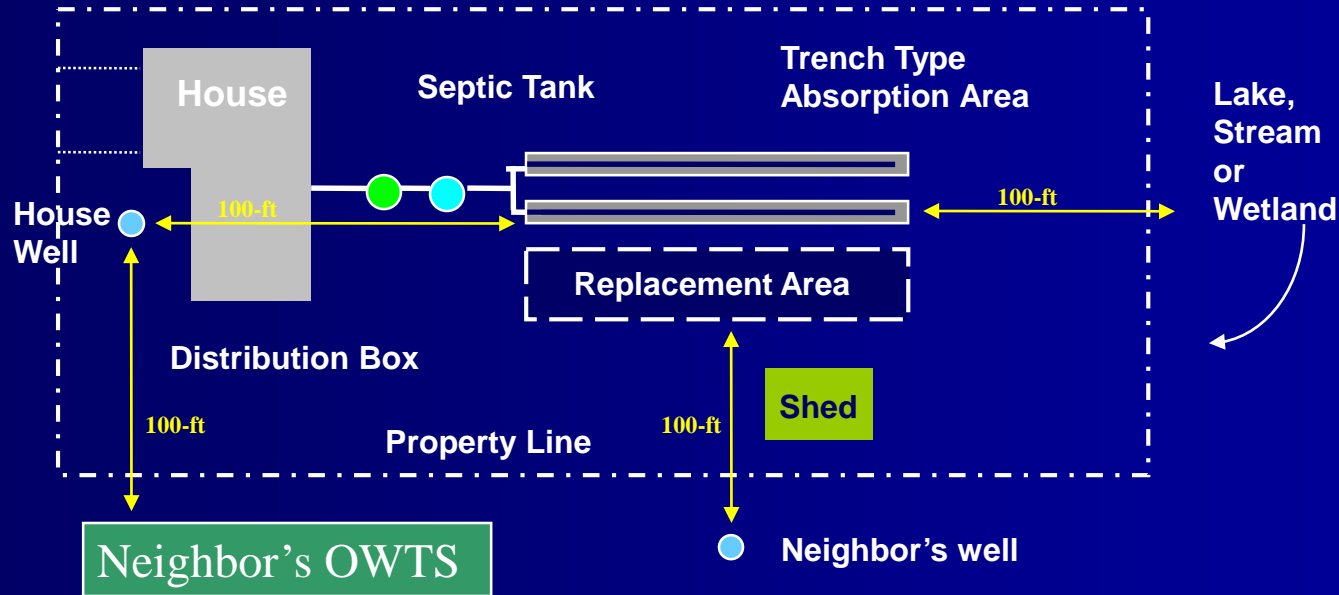
OWTS are designed for an expected life of about 20+ years



OWTSs can last for much longer with proper homeowner use, operation and maintenance

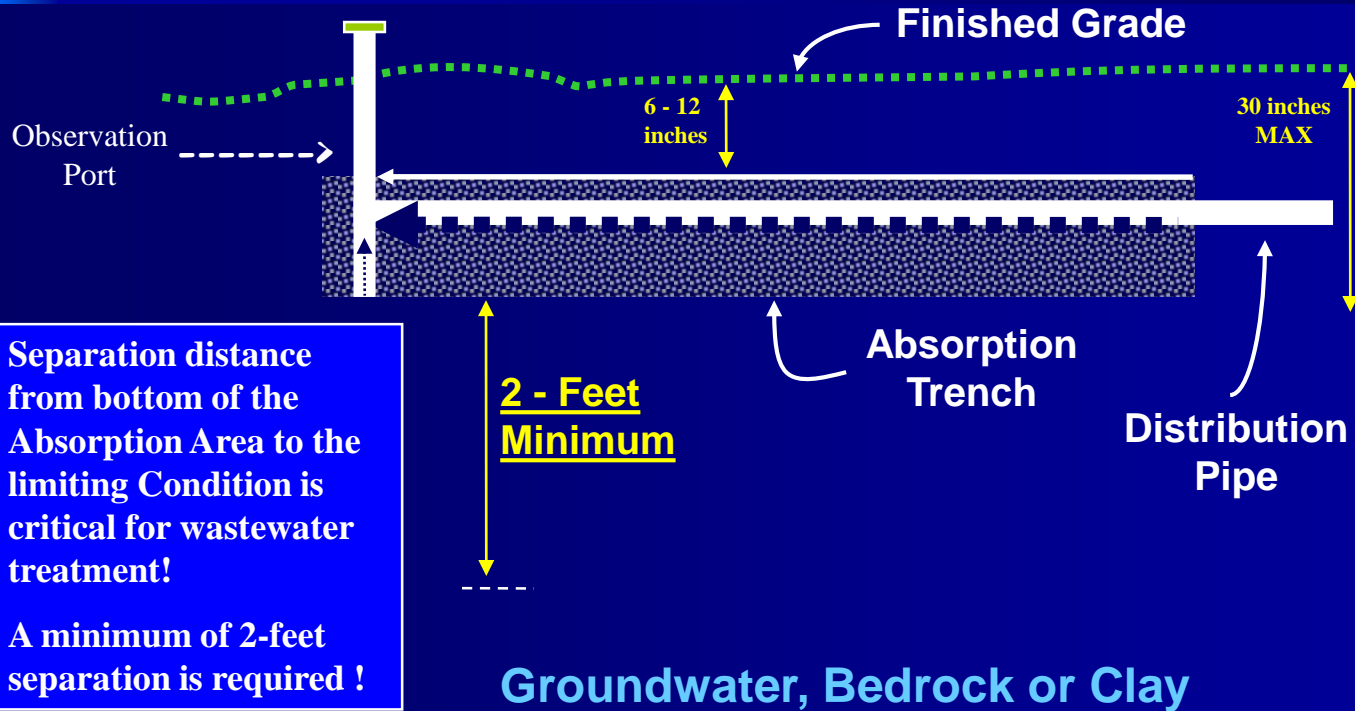


Separation Distances (Horizontal)



Separation distances are maintained to “minimize risks” to public health and the environment

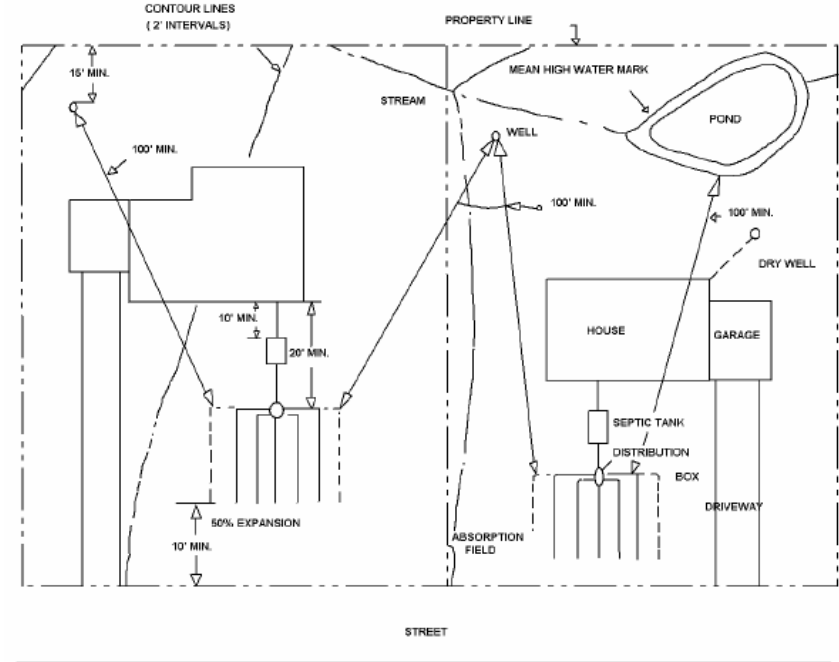
Separation Distances (Vertical)



Separation Distances

TABLE 2
SEPARATION DISTANCES FROM WASTEWATER SYSTEM COMPONENTS
(IN FEET)

System Components	Well or Suction Line (e)(g)	To Stream, Lake, watercourse (b), or Wetland	Dwelling	Property Line
House sewer (watertight joints)	25 if cast iron sewer pipe, 50 otherwise	25	3	10
Septic tank or watertight ETU	50	50	10	10
Effluent line to distribution box	50	50	10	10
Distribution box	100	100	20	10
Absorption field (c)(d)	100 (a)	100	20	10
Seepage pit(d)	150 (a)	100	20	10
Raised or Mound system (c)(d)	100 (a)	100	20	10
Intermittent Sand Filter (d)	100 (a)(f)	100 (f)	20	10
Non-Waterborne Systems with offsite residual disposal	50	50	20	10
Non-Waterborne Systems with onsite discharge	100	50	20	10



Soil Evaluation

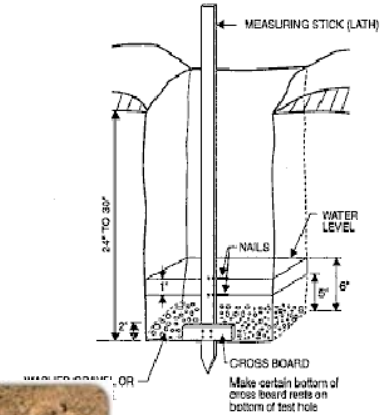
- Test Pits performed by design professional
- Identify soil type and “limiting conditions” (water, bedrock, clay)
- Used to determine the TYPE of absorption area appropriate for the site
- Typically 6 feet deep



Soil Evaluation

- Percolation Test performed by design professional
- Measure “How Fast” soil will absorb water, measured in minutes per inch (mpi)
- Used to determine the SIZE of the soil absorption area
- “Perc” between 1-60 mpi
- Too Slow: liquid will not disperse fast enough (untreated water may surface)
- Too Fast: liquid will disperse before treatment can occur (groundwater contamination)

- Dig a hole about 12" wide on all four (4) sides or 12" diameter - 24" to 30" deep, or to depth of absorption trench.
- Scrape sides and remove loose soil from bottom.
- Install measuring stick.
- Place 2" of washed gravel or crushed stone on bottom.
- Presoak and saturate soil.
- Observe and record the time in minutes required for the water to drop from 6" to 5".
- Repeat the test at least 3 times until the time for the water to drop from 6" to 5" for two successive tests is approximately equal.



Conventional vs. Alternative Absorption Areas

Conventional: “good” sites

Trenches (Stone & Pipe or Gravelless)

Shallow Absorption Trenches

Deep Absorption Trenches

Absorption Bed

Seepage Pit

Alternative: “difficult” sites

Raised System (soil fill)

Mound (sand fill)

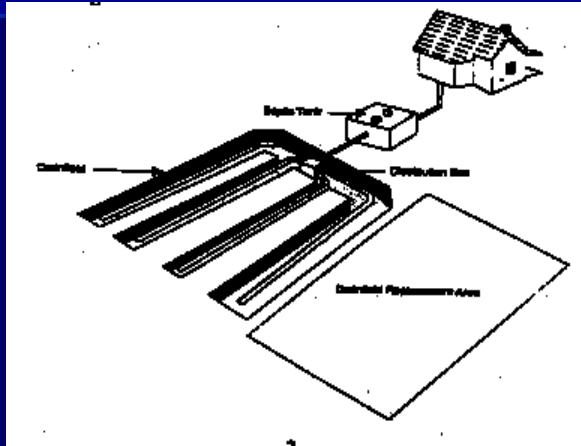
Sand Filter

Enhanced Treatment Units

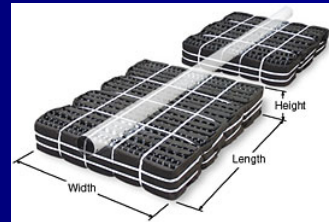
Others: Composter, “Waiver”,
Holding Tank (temporary only)

OWTS design decisions are based upon the *depth* of useable soil (1-60mpi), the *percolation rate* and the overall *site characteristics* (slopes, separation)

Conventional Absorption Trench System



Gravelless



Alternative Systems & ETUs

www.nsf.org
Standard 40



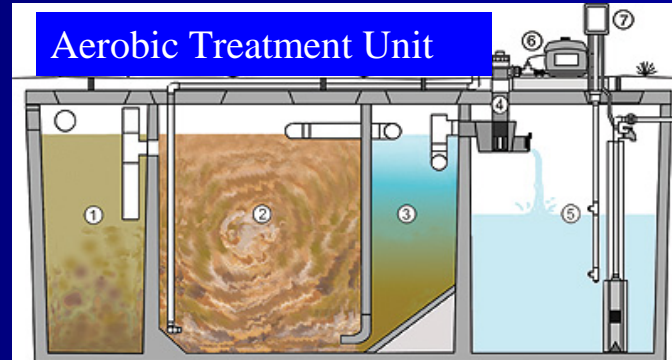
Raised System



Peat Filter



Sand Filter



OWTS Maintenance

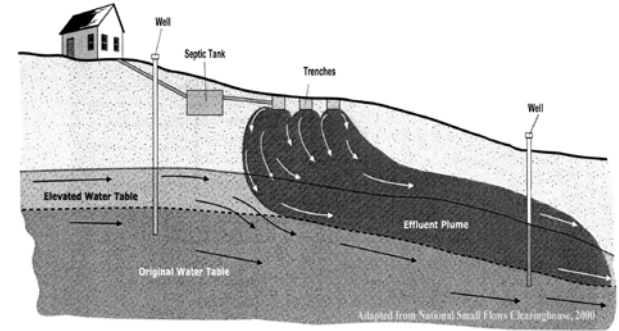
- **DON'T** drain or flush certain items: diapers, plastic, trash, etc. (“flushable wipes” are not flushable)
- Normal amounts of household products (bleach, detergents, drain cleaner, etc.) are **OK**
- **DON'T** flush household drugs; refer to local recycling coordinator or https://www.health.ny.gov/professionals/narcotic/medication_drop_boxes/
- Pump septic tank every 2-3 years
- Additives don't work and are not necessary

NYS General Business Law 396-s

- *On and after July first, nineteen hundred eighty-one every vendor shall, either in person or by certified mail, deliver to a vendee at the time of the transfer of title of the newly constructed home serviced by an individual sewage disposal system a copy of the health bulletin. If the political subdivision within which the home is located has published a waste treatment handbook or pamphlet on individual sewage disposal systems, the vendor shall supply a copy of such informational material to the vendee in the same manner as the health pamphlet.*

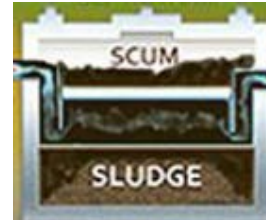
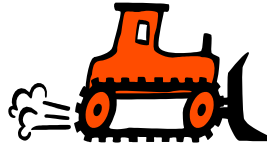
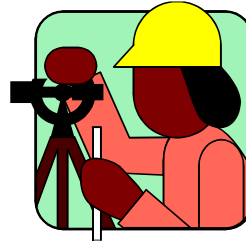
OWTS Failure

- Exposure to pathogens
- Contamination of drinking water wells
- Environmental contamination of surface water (e.g. eutrofication) and groundwater
- Public nuisance: odors, exposure, run-off (neighbors)



OWTS Failure - Causes

- Misuse (over use of water, grease, garbage grinder, etc.)
- Poor design and site evaluation
- Old, “legacy” systems
- Poor Installation
- System abuse or neglect (e.g. not pumped)





How to know if your system is failing?

- Sewage backup in drains and toilets
- Slow flushing toilets
- Surfacing of wastewater over absorption field
- Sewage odors in the house
- Lush green grass over the absorption field, even during extremely dry weather
- Dye test indicators



Regulations

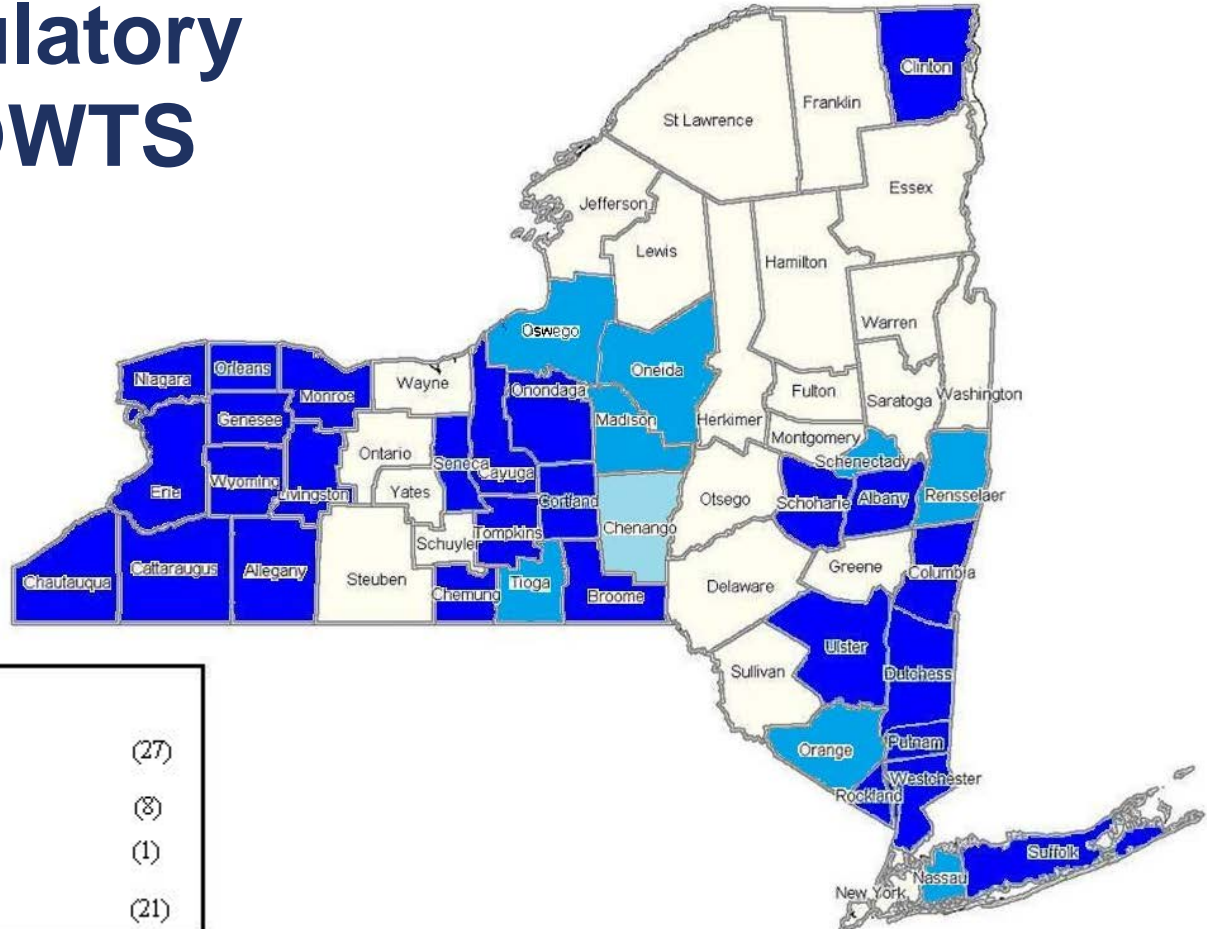
- **Residential Code** 
- 10 NYCRR Part 75
- **10 NYCRR Appendix 75-A** 
- Residential Onsite Wastewater Treatment Systems Design Handbook (best practice guide) - 2012
- Design Standards for Intermediate Sized Wastewater Treatment Systems – 2014 (DEC)

DOH Roles and Responsibilities (State/LHD)

- OWTS
 - Residential System <1,000 gpd*
 - Review/approval for LHDs where it is written into their sanitary code (see map)
 - DOH permitted facilities (restaurants, campgrounds, mobile home parks, etc.)
 - Issue waivers from Appendix 75-A
 - Nuisance Complaints
 - Technical Assistance



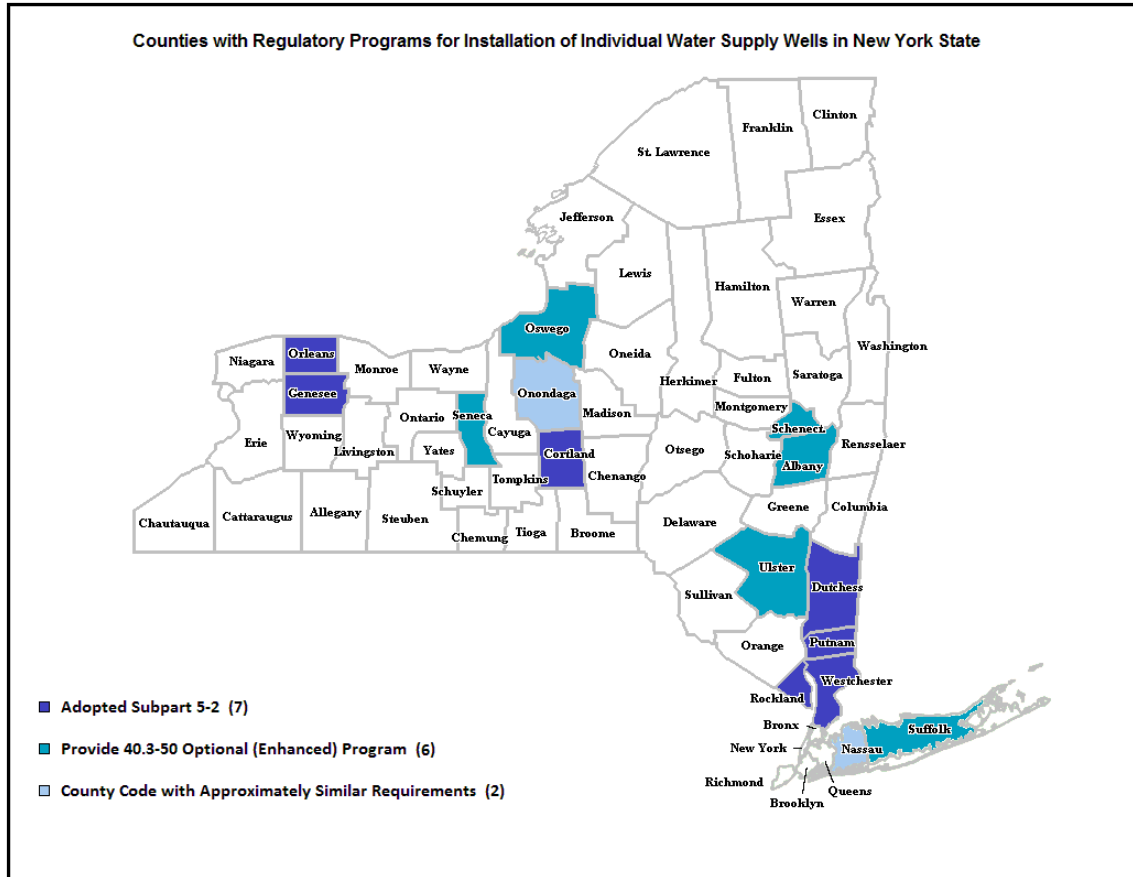
LHDs with regulatory programs for OWTS



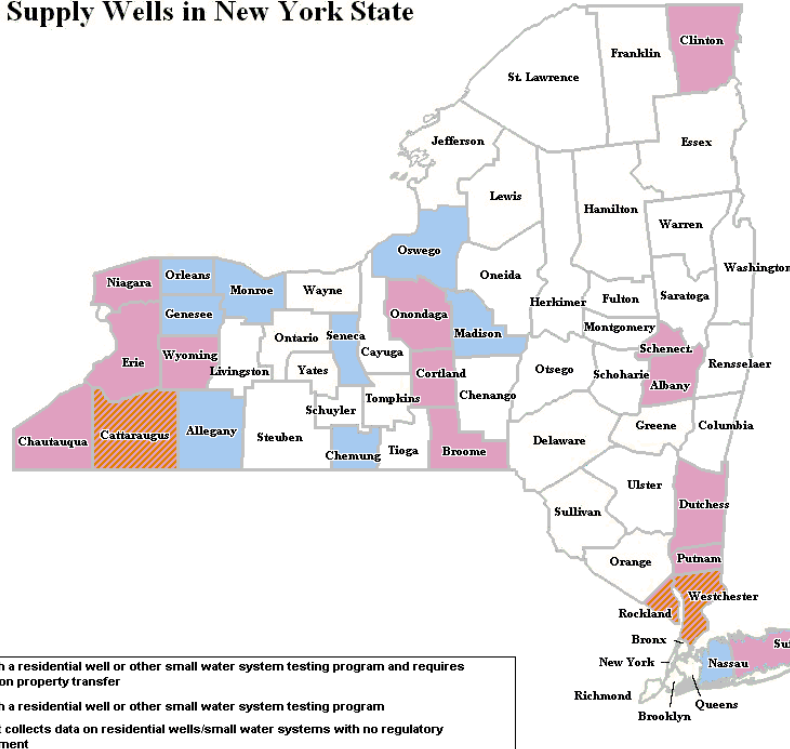
DOH Roles and Responsibilities (State/LHD)

- IWS
 - Some LHDs have permitting programs/testing requirements
 - Issue waivers from Appendix 5-B
 - Technical Assistance

County Well Permitting Programs



Counties with Regulatory Programs for Installation of Individual Water Supply Wells in New York State



DEC Roles and Responsibilities

- OWTS
 - Commercial systems >1,000 gpd (non permitted facilities)
 - Issuance of SPDES permits
 - All surface discharges
 - Subsurface discharges from all facilities >10,000 gpd
 - Septic Haulers – transport/disposal

DEC Roles and Responsibilities

- IWS
 - Regulate Well Drillers
 - Maintain well logs for all drilled wells – since 1999
 - Enforcement of well drillers

CEO Roles and Responsibilities - OWTS

- Building permits should not be issued until OWTS plans have been completed by design professional and reviewed/approved by LHD where applicable
- Review/approve conventional systems in counties covered by a State District Office
- Certificate of Occupancy should only be issued once design professional certifies as-built construction
- CEO **CANNOT** issue waivers from Appendix 75-A



CEO Roles and Responsibilities - IWS

- A copy of the well log should be given to CEO
- Certificate of Occupancy should only be issued once well log is obtained and the well meets Appendix 5-B
- CEO **CANNOT** issue waivers from Appendix 5-B

2015 International Residential Code

- Section P2602 Individual Water Supply and Sewage Disposal – 2602.1

“The water-distribution and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public water supply or sewer system, respectively, if available. Where either a public water-supply or sewer system, or both, are not available, or connection to them is not feasible, an individual water supply or individual (private) sewage-disposal system, or both, shall be provided.”



2016 Uniform Code Supplement

- P2602.1.1 Individual water supplies. Individual water supplies (private wells) shall be installed by a well driller registered with the Department of Environmental Conservation and be in compliance with the provisions of Appendix 5-B of the New York State Department of Health regulations (10NYCRR Appendix 5-B.)
- P2602.1.2 Individual sewage treatment system. Individual sewage treatment systems shall be constructed in conformance with the provisions of Appendix 75-A (Wastewater Treatment Standards-Individual Household Systems) of the New York State Department of Health, Sanitary Code (10 NYCRR).



Realtors Roles and Responsibilities

- Have a general understanding of the rules/regulations in your area – separation distances are key
- Understand differences between existing homes and new construction
- Provide septic system operation & maintenance pamphlet where appropriate
- Know who to contact with questions – DOH/CEO

Thank You - Questions

Diane Sheppard or Kevin Kenyon
New York State Department of Health
Bureau of Water Supply Protection
Empire State Plaza – Corning Tower Room 1119
Albany, NY 12237
(518) 402-7650; Fax: (518) 402-7599
diane.sheppard@health.ny.gov
kevin.kenyon@health.ny.gov



List of Water & Sewer systems handouts for Realtor Training

- Individual Water Supply Wells – Fact Sheet #5: Susceptible Water Sources (Well Points, Dug Wells, Springs and Shore Wells)

https://health.ny.gov/environmental/water/drinking/regulations/fact_sheets/docs/fs5_susceptible_water_sources.pdf

- Individual Water Supply Wells – Fact Sheet #7: Testing, Operation, and Maintenance of Residential Wells

https://health.ny.gov/environmental/water/drinking/regulations/fact_sheets/docs/fs7_individual_water_supply_wells.pdf

- Concerns About Surface Water as a Drinking Water Source

https://health.ny.gov/environmental/water/drinking/docs/surface_water_fact_sheet.pdf

- Septic System Operation & Maintenance Manual

<https://health.ny.gov/publications/3208.pdf>

- Fact Sheet: Need for Licensed Design Professionals – Residential Onsite Wastewater Treatment Systems

https://health.ny.gov/environmental/water/drinking/wastewater_treatment_systems/docs/design_handbook.pdf

(Appendix B-1, Page 203&204 of 277 in the Residential Onsite Wastewater Treatment Systems Design Handbook)