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851 Chemung Street  
Horseheads, New York, 14845

October 23, 2013

Attn: Mr. Rock Picarazzi, Stormwater Manager Officer  
City of Elmira Codes Department  
101 West 2<sup>nd</sup> Street  
Elmira, New York 14901

Attn: Mr. Brian Beasley  
City of Elmira Department of Public Works  
840 Linden Place  
Elmira, New York 14901

Re: **Stormwater Pollution Prevention Plan (SWPPP) Review**  
**Staybridge Suites Hotel**  
**City of Elmira, New York**

Mr. Picarrozi and Mr. Beasley:

As per the City's request, we have reviewed the following information in regards to stormwater management for the above-referenced project.

- Site Plan Drawings for Staybridge Hotel Site Plan, Prepared by Fagan Engineers, F. E. Project No. 2013.051, Stamped by a licensed professional engineer, Revision dated June 26, 2013, Received September 25, 2013
- Stormwater Pollution Prevention Plan for Staybridge Hotel, Prepared by Fagan Engineers, F. E. Project No. 2013.051, Not stamped by a licensed professional engineer, Dated August 2013, Received September 25, 2013

My review comments and questions regarding the above-referenced project are as follows.

**STORMWATER MANAGEMENT**

**Hydrologic and Design Calculations**

1. Tributary drainage area maps should be included in the SWPPP, including the area, CN value, and Tc value.
2. Background data and calculations regarding the Stage versus Storage values and Stage versus Discharge (total infiltration flows in this case) values for the proposed StormTech system are requested.
  - The Stage versus Storage information (Page 6.01 of the PondPack calculations) indicates a storage volume of 0.314 acre-feet, which is higher than the volume of 0.254 acre-feet noted on SWPPP-6.
  - Will the Isolator Row have lower infiltration rates (than the other rows), in regards to the development of the Stage versus Discharge relationship?

3. Calculations that demonstrate the ability of the proposed drywells to accept peak flows from the roof areas should be included in the SWPPP.
4. In regards to the calculations for the sizing of the Isolator row, it does not appear that consideration was given to the top elevation of the Integral Concrete Weir (844.15). At an elevation of 844.15, the complete volume of the chambers (and stone voids) would not be realized and the WQv would not be able to be stored (below that elevation).

#### Stormwater Infiltration Chamber System & Drywells

1. The proposed "Isolator" row should be labeled as such on the plans.
2. The 2' x 4' Catch Basin Detail on Sheet C10 does not appear to match the plan on Sheet C5. The orientation of the catch basin (as well as the integral concrete baffle) does not appear to agree.
3. In regards to the StormTech system, the following questions pertain to the ability to monitor and access the chambers.
  - Are inspection ports proposed?
  - Will the proposed 30" x 30" concrete Infiltration Chamber Inlet/Outlet Structures provide sufficient access to the chambers for inspection, monitoring, and maintenance?

#### Groundwater Protection

1. It is requested that the location of the project site, in relation to the City's designated Well Head Protection Areas, be provided on a map, as part of the SWPPP.
2. How will runoff from the dumpster area be managed?

#### STORMWATER COLLECTION & CONVEYANCE

1. The type of storm sewer pipe should be clearly specified.
2. The diameter of the proposed roof drain storm sewers should be noted on the plans.
3. Hydraulic and hydrologic calculations, justifying the sizing of the storm sewers (including the roof drain storm sewers) and inlets should be provided. Will the 100-year peak storm flows be able to be conveyed to the stormwater infiltration system without any flows leaving the project site? Will the water surface elevation within the StormTech system present a tailwater condition that will reduce the capacity of the storm sewer system?

#### OPERATION & MAINTENANCE

1. For permanent stormwater management controls for which their long-term performance/viability depends upon routine maintenance, an associated operation & maintenance agreement for the proposed stormwater management system must be developed and executed by the Owner. In addition to the maintenance of the proposed stormwater system, this agreement should also include provisions for the following.

- Maintenance and inspection requirements for stormwater conveyance system
- Maintenance and inspection requirements for stormwater management system, including the drywells
- Maintenance of the dumpsters and associated area

This agreement must be binding and enforceable and run in perpetuity with the property. This agreement should be reviewed by the City's lawyer. A sample "front end" portion of a Stormwater Control Facility Maintenance Agreement is included in the City's Stormwater Management and Erosion and Sediment Control Ordinance.

2. The Operation and Maintenance Plan, provided in the SWPPP, appears to pertain to an open stormwater basin system. The Operation and Maintenance Plan should be specific to the proposed stormwater management system, including the StormTech system and the drywells.

#### EROSION & SEDIMENT CONTROL

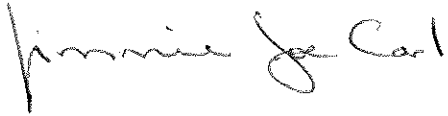
1. A detailed Erosion & Sediment Control Plan should be developed for this project, including the following elements.
  - Temporary erosion and sediment control measures, including (but not limited to) silt fencing, construction entrances, inlet protection, and sediment basins.
  - The location of concrete truck wash-outs should be shown on the plan.
  - Seeding and revegetation plan.
2. The Sequence of Construction, provided in the SWPPP, indicates that temporary sediment basins shall be constructed. Details of these, including size and location, should be provided.

#### MISCELLANEOUS ITEMS

1. In regards to the proposed entrance drives, the Owner's consulting engineer should contact the City of Elmira's Engineering Department for associated requirements, as well as their acceptance.
2. The proposed infiltration system (including the drywells) may possibly be considered to be Class V injection wells, as per EPA's definition. By definition, *a Class V injection well is any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sink hole, or a subsurface fluid distribution system.* As part of the federal requirements, the owner would be required to submit basic inventory data about the proposed dry wells to the EPA, if these are classified as injection wells. Refer to the attached fact sheet. The City and the Chemung County Stormwater Coalition shall be copied on any submitted information to EPA.
3. Upon completion of the proposed site construction, a licensed professional engineer shall provide a certification letter to the City of Elmira Code Enforcement Officer (copied to the Chemung County Stormwater Coalition), stating that the site work (including the excavation and installation of the proposed stormwater collection and infiltration system) for the project was constructed in conformance with the approved plans and specifications.
4. The Notice of Intent (NOI) form has recently been updated by the NYSDEC. This new form should be utilized and submitted for this project.

If you have any questions or comments, please do not hesitate to contact me. Furthermore, I would be happy to meet to discuss this project in greater detail.

Sincerely,

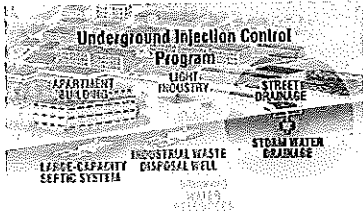
A handwritten signature in black ink that reads "Jimmie Joe Carl". The signature is written in a cursive style with a large initial 'J' and 'C'.

Jimmie Joe Carl, P.E.  
Stormwater Engineer

Cc: Rick Vary, City of Elmira  
Jessica Verrigni, Chemung County Stormwater



# WHEN ARE STORM WATER DISCHARGES REGULATED AS CLASS V WELLS?



**Audience:** This fact sheet is for storm water managers that implement the National Pollutant Discharge Elimination System (NPDES) program.

**Purpose:** To increase awareness that storm water drainage wells are regulated as Class V injection wells and to ensure that NPDES regulators understand the minimum federal requirements under the Safe Drinking Water Act (SDWA) for the Underground Injection Control (UIC) program.

## ARE STORM WATER DRAINAGE WELLS REGULATED BY THE UIC PROGRAM?

**Yes.** These wells are regulated by EPA and primacy states through the UIC program as Class V injection wells with requirements to protect underground sources of drinking water (USDWs). A USDW is defined as an aquifer that contains less than 10,000 mg/L total dissolved solids and is capable of supplying water to a public drinking water system.

Class V storm water drainage wells are typically shallow disposal wells designed to place rain water or melted snow below the land surface. By definition, a Class V injection well is any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system.

Storm water management strategies that include subsurface drainage must comply with UIC program regulations.

## WHY ARE STORM WATER DRAINAGE WELLS A CONCERN?

State and federal UIC program representatives are concerned that there may be a dramatic increase in the use of Class V wells as an NPDES Best Management Practice (BMP) to dispose of storm water. Infiltration through storm water drainage wells has the potential to adversely impact USDWs. The runoff that enters storm water drainage wells may be contaminated with sediments, nutrients, metals, salts, fertilizers, pesticides, and microorganisms.

## WHAT ARE SOME EXAMPLES OF STORM WATER DRAINAGE WELLS?

The broad definition of Class V wells covers a variety of storm water injection well configurations, including:

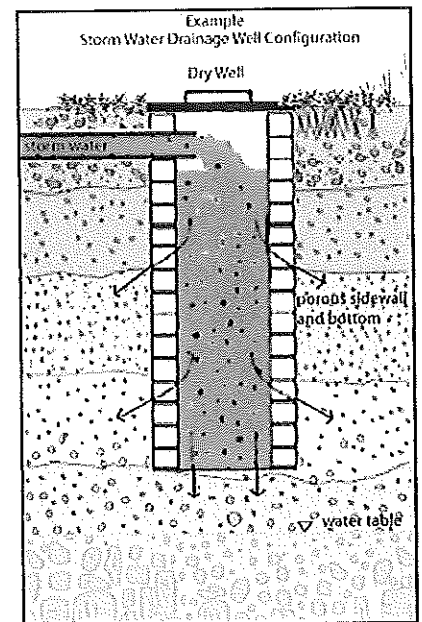
- Dry wells
- Bored wells
- Infiltration galleries

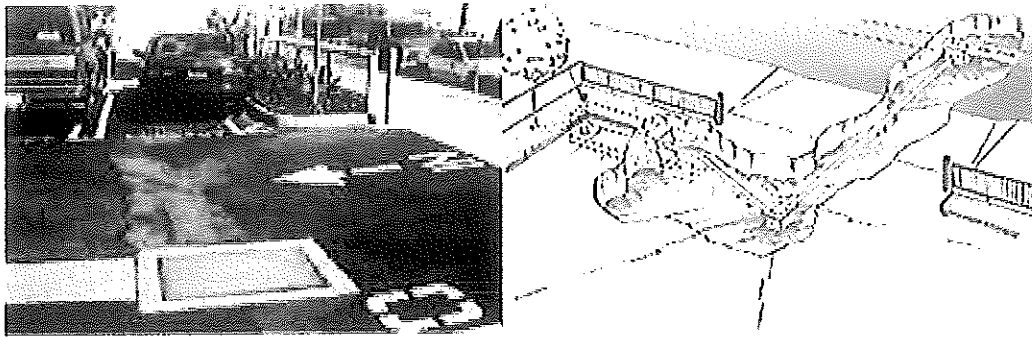
The underground injection well definition applies to any subsurface drainfields that release fluids underground. These can include French drains, tile drains, infiltration sumps, and percolation areas with vertical drainage. Improved sinkholes designed for storm water management are also considered Class V storm water drainage wells. These wells are natural karst depressions or open fractures that have been intentionally altered to accept and drain storm water runoff. The pictures on the back page illustrate an example of a Class V injection well that is subject to UIC requirements.

## WHAT INFILTRATION SYSTEMS ARE NOT STORM WATER DRAINAGE WELLS?

Two types of infiltration systems are not considered storm water drainage wells:

- **Infiltration trenches** are excavated trenches filled with stone (no piping or drain tile) to create an underground reservoir. They are usually wider than they are deep.
- **Surface impoundments or ditches** are excavated ponds, lagoons, and ditches (lined or unlined, without piping or drain tile) with an opened surface. They are used to hold storm water. These devices would be considered Class V injection wells, however, if they include subsurface fluid distribution systems.





Picture and schematic drawing of parking lot infiltration (Source: Louisiana Department of Transportation)

**Storm water drainage well designs can be as varied as the engineers who design them. A fluid distribution system that discharges underground through piping is typically the defining characteristic. If you are unsure about the classification of your infiltration system, contact your UIC program representative for clarification.**

### HOW ARE STORM WATER DRAINAGE WELLS REGULATED?

Under the minimum federal requirements, storm water drainage wells are "authorized by rule" (40 CFR 144). This means that storm water drainage wells do not require a permit if **they do not endanger USDWs and they comply with federal UIC program requirements**. The prohibition on endangerment means the introduction of any storm water contaminant must not result in a violation of drinking water standards or otherwise endanger human health. Primacy states may have more stringent requirements.

Federal program requirements include:

- Submitting basic inventory information about the storm water drainage wells to the state or EPA. (Contact your UIC program to learn what inventory information must be submitted and when.) In some cases, the information may be required prior to constructing the well.
- Constructing, operating, and closing the drainage well in a manner that does not endanger USDWs.
- Meeting any additional prohibitions or requirements (including permitting or closure requirements) specified by a primacy state or EPA region.

### HOW CAN I HELP PREVENT NEGATIVE IMPACTS FROM STORM WATER DRAINAGE WELLS?

As an NPDES storm water manager, you can help to ensure that current and future storm water systems using Class V wells meet regulatory requirements under the UIC program. You can also help identify storm water drainage systems that may affect USDWs, and recommend BMPs to protect USDWs. BMPs for storm water drainage wells may address well siting, design, and operation, as well as education and outreach to prevent misuse.

## FOR MORE INFORMATION...

EPA's Office of Ground Water and Drinking Water Web Site:

<http://www.epa.gov/safewater>

UIC Program Contacts:

<http://www.epa.gov/safewater/uic/primacy.html>

EPA's NPDES Web Site:

<http://www.epa.gov/NPDES/Stormwater>

Safe Drinking Water Hotline:

1-800-426-4791

Office of Ground Water and  
Drinking Water (4606M)

EPA 816-F-03-001

June 2003

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## CLASS V UIC STUDY FACT SHEET STORM WATER DRAINAGE WELLS

What is a storm water drainage well?

Storm water drainage wells are Class V underground injection control (UIC) wells used to remove storm water or urban runoff from impervious surfaces such as roadways, roofs, and paved surfaces to prevent flooding, infiltration into basements, etc. The primary types of storm water drainage wells are bored wells, dug wells, and improved sinkholes. In addition, "lake level control wells" are used to drain lakes to prevent overflow following heavy precipitation.

What types of fluids are injected into storm water drainage wells?

Primarily rain water and melted snow runoff.

Do injectate constituents exceed drinking water standards at the point of injection?

Available sampling data indicate that concentrations of antimony, arsenic, beryllium, cadmium, chromium, cyanide, lead, mercury, nickel, nitrate, selenium, and certain organics in storm water runoff have exceeded primary drinking water standards. Available sampling data also show that concentrations of aluminum, chloride, copper, iron, manganese, total dissolved solids, zinc, and methyl tert-butyl ether have exceeded secondary drinking water standards or health advisory levels. Water quality data from FL indicate that lake level control well injectate has exceeded primary drinking water standards or health advisory levels for turbidity, arsenic, pentachlorophenol, and fecal coliforms, as well as secondary drinking water standards for iron, manganese, pH, and color.

What are the characteristics of the injection zone of a storm water drainage well?

In general, the point of injection for most storm water drainage wells is into sandy, porous soils, a permeable coarse-grained unit, karst, or a fractured unit because these types of formations can readily accept large volumes of fluids.

Are there any contamination incidents associated with storm water drainage wells?

Contamination related to storm water drainage wells has been reported to various degrees in OH, KS, WI, CA, WA, AZ, OK, TN, NY, IN, FL, KY, and MD. Several studies, however, do not clearly distinguish contamination from storm water drainage wells versus more general, nonpoint source pollution. Lake level control wells have been associated with two documented contamination incidents in FL.

Are storm water drainage wells vulnerable to spills or illicit discharges?

Storm water drainage wells are generally vulnerable to spills or illicit discharges of hazardous substances, as they are often located in close proximity to roadways, parking lots, and commercial/industrial loading facilities where such substances are handled and potentially released.

How many storm water drainage wells exist in the United States?

There are approximately 71,000 documented storm water drainage wells and approximately 248,000 storm water drainage wells estimated to exist in the United States.

Where are storm water drainage wells located within the United States?

About 81 percent of the documented wells are in seven western states: AZ (14,857), CA (3,743), WA (22,688), OR (4,148), ID (5,359), MT (4,000), and UT (2,890). Five other states contain approximately 15 percent of the total wells: OH (3,036), FL (2,153), MI (1,301), MD (1,678), and HI (2,622). There are approximately 200-250 lake level control wells in FL.

How are storm water drainage wells regulated in states with the largest number of this type of well?

*Permit by rule:* IL, IN, MI, OH, WI (<10 ft. deep and constructed prior to 1994), MT, WY, ND, SD, UT, CO, ID (< 18 ft. deep), OR, WA, KS, TN, RI

*Individual permit/registration system:* AZ, CA, HI, ID (>18 ft. deep), AL, FL, TX, NH, MD, NE, NY

*Banned:* NC, GA, WI (any new well since 1994 and wells >10 ft. deep since the 1930's), MN (for "wells" that reach ground water)

Where can I obtain additional information on storm water drainage wells?

For general information, contact the Safe Drinking Water Hotline, toll-free 800-426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Standard Time. For technical inquiries, contact Amber Moreen, Underground Injection Control Program, Office of Ground Water and Drinking Water (mail code 4606), EPA, 401 M Street, SW, Washington, D.C., 20460. Phone: 202-260-4891. E-mail: [moreen.amber@epa.gov](mailto:moreen.amber@epa.gov). The complete Class V UIC Study (EPA/816-R-99-014, September 1999), which includes a volume addressing storm water drainage wells (Volume 3), can be found at <http://www.epa.gov/OGWDW/uic/c15study.html>.