



NJ HMD (Hydrologic Modeling Database)

Helping NJ Manage and Maintain its
Stormwater Infrastructure

Presented by:

John E. Showler, P.E.

NJ Department of Agriculture

I. A little (very little) Background...

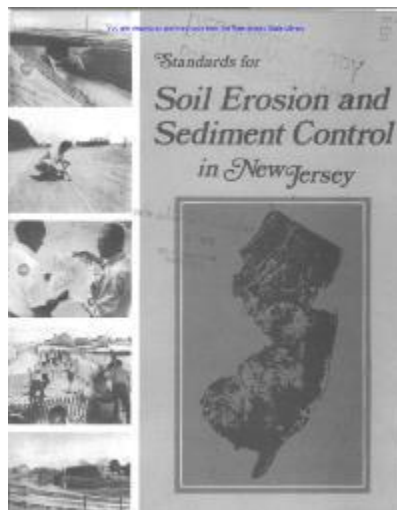


Pre-1976 – Erosion and Sediment Control was only the domain of agriculture.

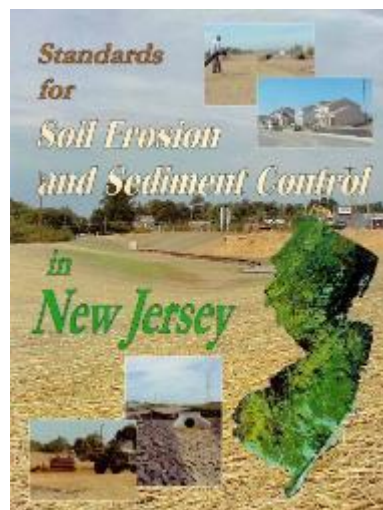
Little thought was given to emerging concepts of stormwater runoff-related erosion from new development



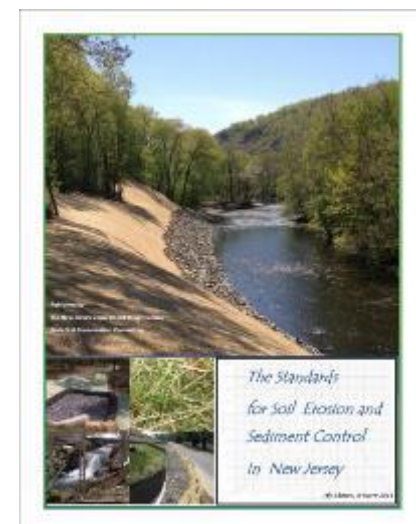
Erosion control on development sites became a priority in 1976 with the adoption of the **NJ Soil Erosion and *Sediment Control Act and Sediment and Erosion Control Standards***. 32 Design Standards – 10 vegetative, 22 engineering/structural



1972 -1987



1999

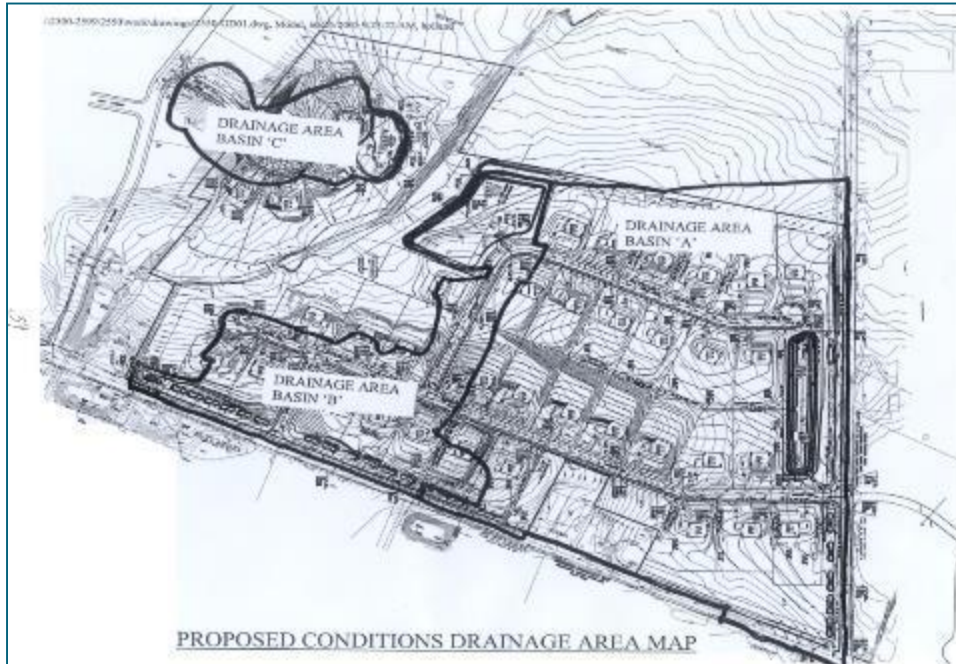


2017

Program Stats-

- *Since 1976:*
 - 168,000 applications
 - 978,000 acres of land
 - 4.4M staff hours
 - 2.4M physical inspections
 - 16,000 stormwater basins in the database

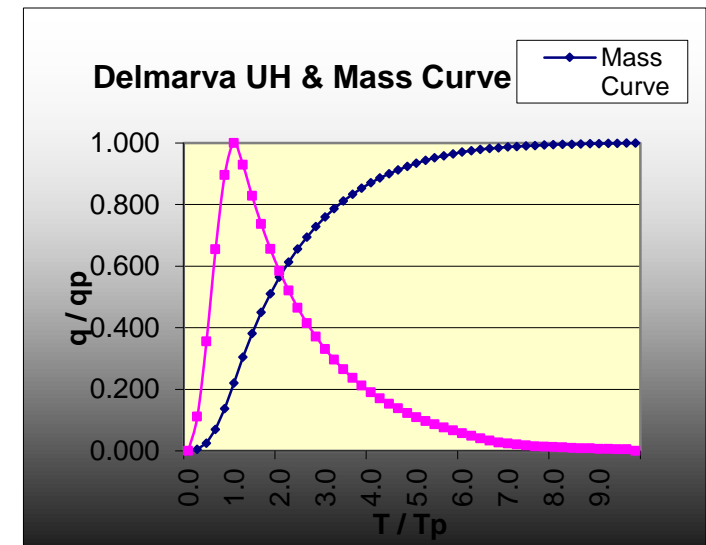
Erosion Control Evolution-



Basic, Temporary Controls:

- Filters
- Barriers
- Rip rap outlets
- Vegetative stabilization
- Inlet protection
- Grass waterways
- Diversions

However, over time, plan requirements became more sophisticated and expanded upon emerging engineering practices of detention basin design, watershed modeling, unit hydrograph theory etc.



E&S Stormwater Design

In 1986, Hunter Birckhead, P.E. State Erosion Control Engineer (ret.) instituted the collection of hydrologic and hydraulic site and basin design information which was being submitted to Districts for plan approval.

Post-development stormwater basin and site hydrology was captured on forms and site plans submitted to Districts for building complex models

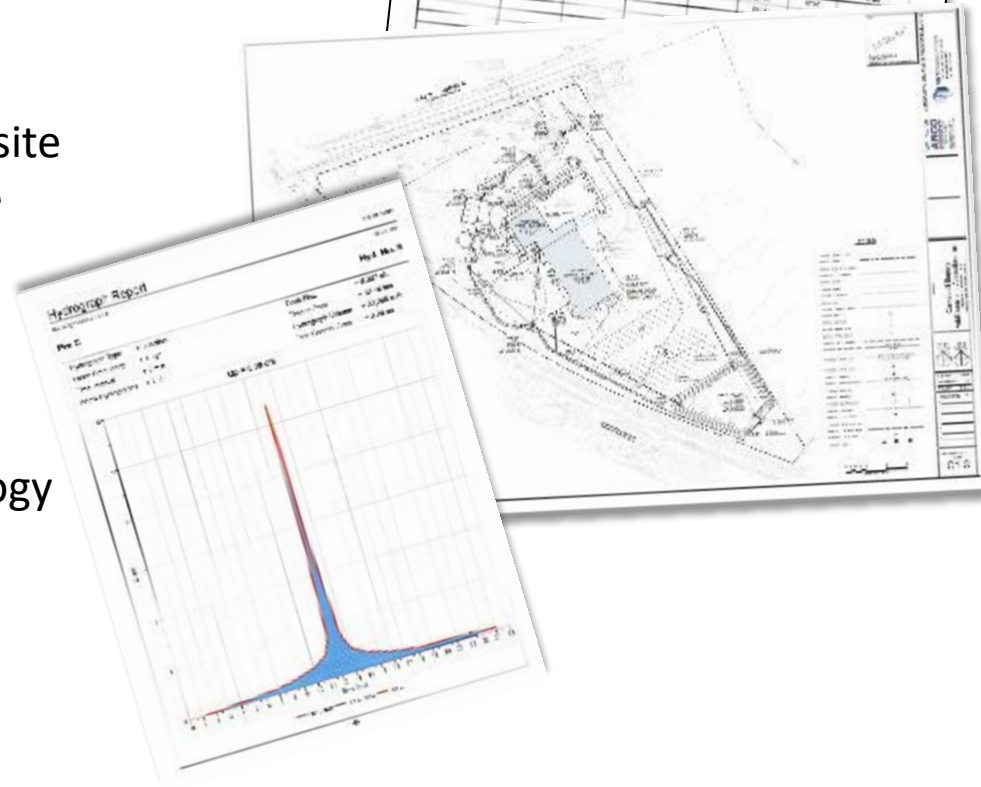
His vision preceded the available technology limits by about 20 years...

STATE SOIL CONSERVATION COMMISSION
HYDRAULIC AND HYDROLOGIC DATA BASE SUMMARY FORM FOR
STORMWATER BASIN DESIGN FRAMES

This form is to be completed by the designer and submitted to the District Engineer for review and approval. It is to be used for the design of stormwater basins and is to be submitted to the District Engineer for review and approval.

1. Project Name: _____
2. District: _____
3. Design Engineer: _____
4. Design Date: _____
5. Design Scale: _____
6. Design Sheet: _____
7. Design Title: _____
8. Design Description: _____
9. Design Notes: _____
10. Design Calculations: _____

Calculation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	



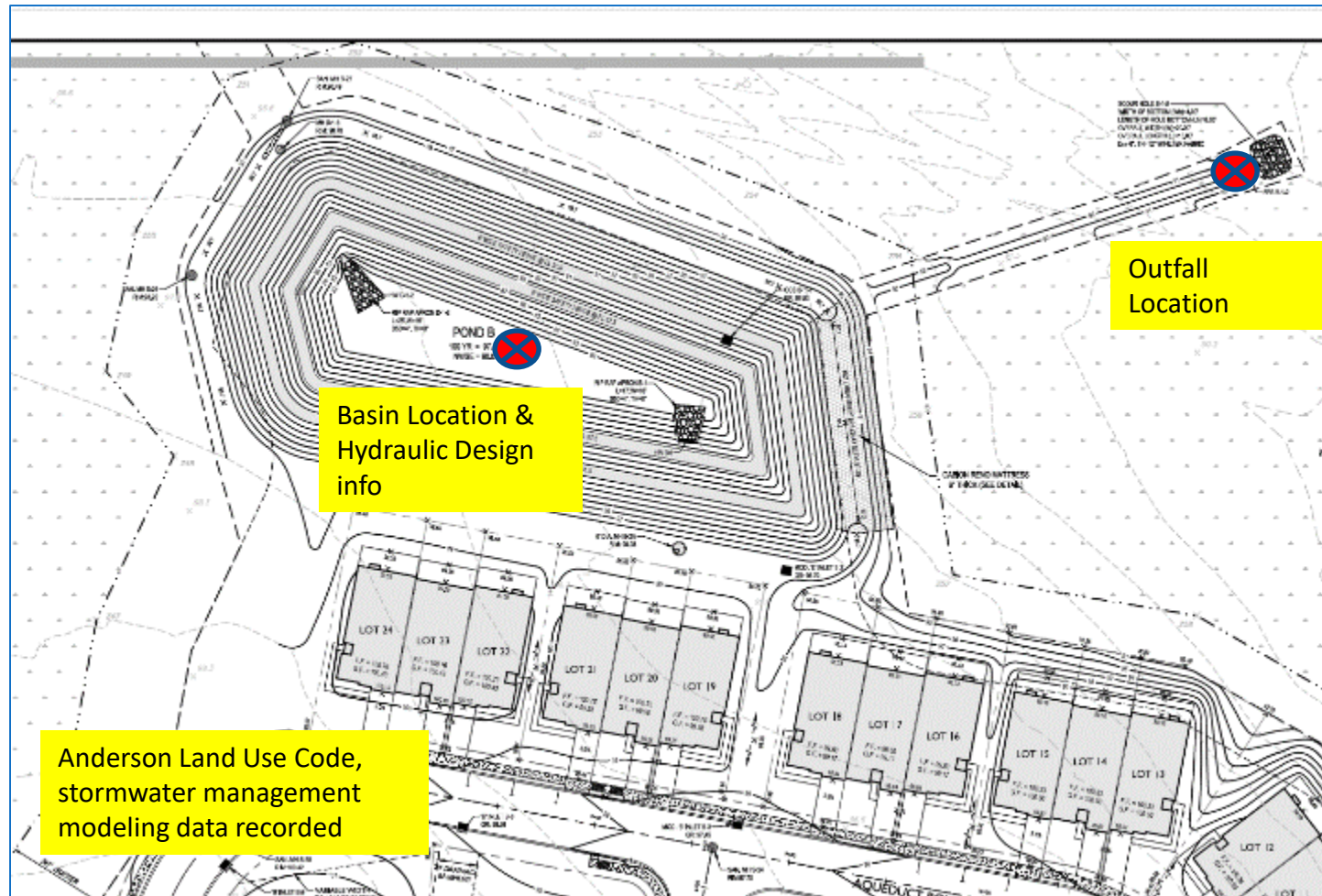
II. Fast-Forward 20 years: NJ Hydrologic Modeling Database

Publicly available database searchable by location:

<https://hydro.Rutgers.edu>

- Site hydrology and basin hydraulic design data uploaded
 - CN, Tc, DA, % impervious, rating tables, outlet hydraulics, SSD Tables
- Paper plans converted to electronic images and uploaded
- Locations of sites and basins geo-located by the application
- Land use (Anderson 4 digit code) change recorded
- Capability to record basin inspections with documents and images
- Everything needed to recreate the project in a hydrologic runoff model

New Jersey Department of Agriculture Hydrologic Modeling Database

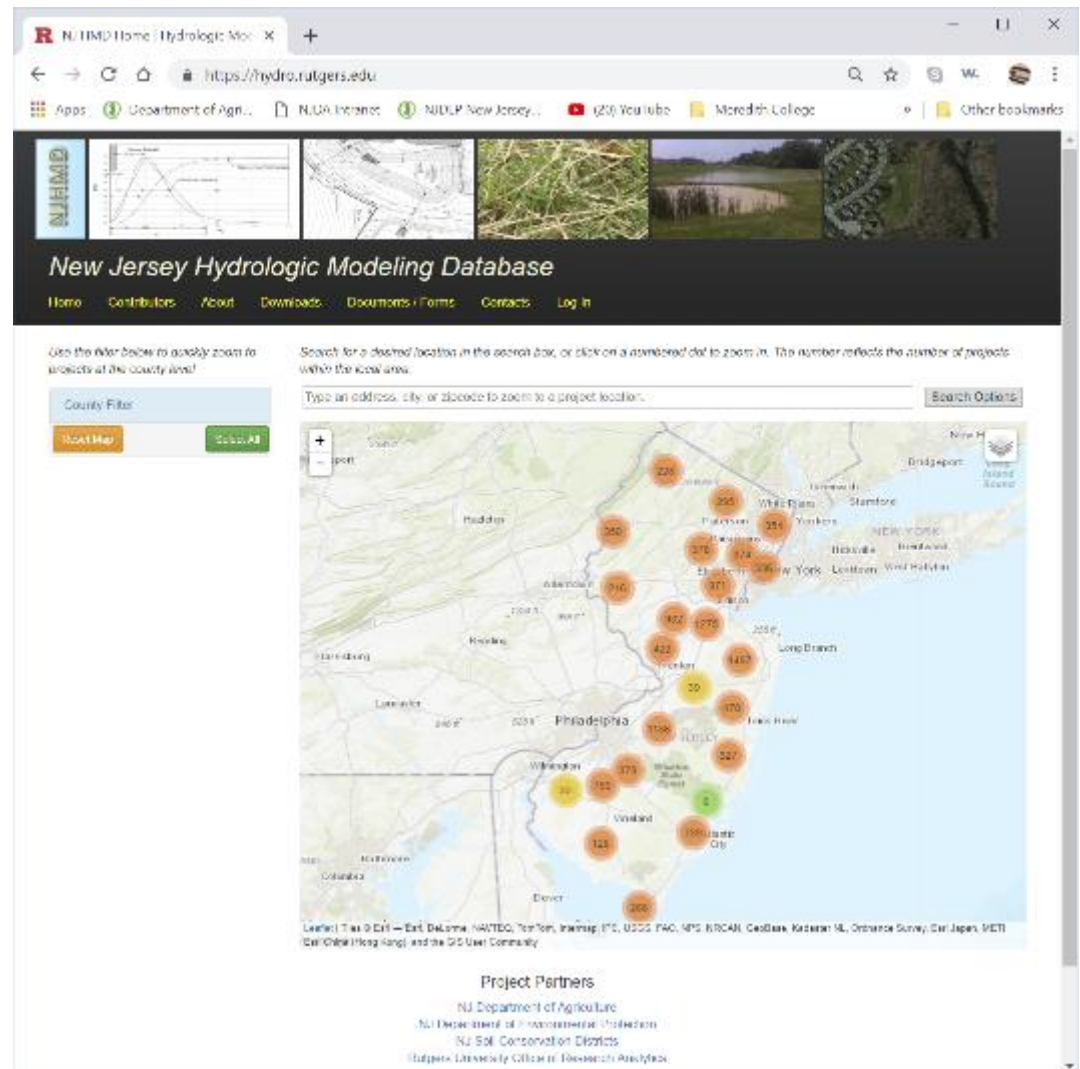


NJ Hydrologic Modeling Database – NJHMD

“H&H” as we call it – hydrology and hydraulics

- Searchable
- Zoom to location
- Turn on different layers
- “Find my location”
- Dots represent numbers of projects in that area
- Narrow map focus by county area

<https://hydro.Rutgers.edu>





Mobile-Friendly

- * Search by address
- * Search by current position
- * All data is accessible
- * Can be used to perform basin inspections on site

Viewing Records – Zoom and Click

- Clicking on a marker reveals a mini-window with project name and a button to open the data window for that project
- Administrators have an additional button for direct data editing

The screenshot shows the NJHMD web application interface. The browser address bar displays <https://hydro.rutgers.edu>. The page title is "New Jersey Hydrologic Modeling Database". The navigation bar includes links for Home, Contributors, About, Downloads, Documents / Forms, Contacts, and Log in. A search bar is located at the top right.

On the left sidebar, under "County Filter", the "MERCER" county is selected and highlighted with a red circle. The main map area shows a map of Mercer County with numbered markers (1-10) indicating project locations. A detailed project information window is open for the "McGraw Hill Solar Array" (2014-4883-FW). The window displays the following information:

- Address:** 158 Princeton Highway Road, 2001 Windsor Township, NJ 08520
- County:** MERCER
- Soil District:** MERCER
- WMA:** M34000
- Comments:** (empty field)

At the bottom of the project window, there are two buttons: "View Project Details" and "Click". The bottom status bar shows "basin project data...csv" and a "Show all" button.

Project Window

- Aerial View showing project, basin and discharge locations.
- Main data – ownership, land use, location


Project Window

https://hydro.rutgers.edu/view-project/119263/

New Jersey Hydrologic Modeling Database

Home Contributors About Downloads Documents / Forms Contacts Log In jshowler Your Portal Logout

"McGraw Hill Solar Array" Project ID# (119263)



Legend: Blue: Project Site | Red: Basin Centroid | Green: Outlet Discharge Point | Yellow: BMP

Application Project Data

Project Name	McGraw Hill Solar Array
Chapter 261 #	2014 4883 L-W
Start Date	2014-07-08
Street Address	159 Princeton Hightstown Road
Zipcode	08520
Block	88
Lot	8, 60J-arm, 6 01, 8, 9, 10, 48, 480J-arm, 51
Land Use Code (Proposed)	[1499] Stormwater Basins

Map Data

Ball Corporation Metadata

Scroll Down-

- Basin information
 - Design
 - Type
 - Dam class
 - Notes
 - Location
- Outlet information
- Drainage area information
 - CN
 - Tc
 - DA
 - % imp.

The screenshot shows the NJHMD web application interface. The browser tabs include 'NJHMD Home', 'Project Profile', 'Edit Project', and 'Add Maintenance'. The address bar shows the URL 'https://hydro.rutgers.edu/view-project/119263/'. The page header features a navigation menu with links: Home, Contributors, About, Downloads, Documents / Forms, Contacts, and Log In. There are also user links for 'jshowler', 'Your Portal', and 'Logout'.

Basins

Pond 10 Stone Storage (Basin ID#114883)

Type	Detention
Design Phase	As Built
Dam Classifications	Not Applicable
Height of Dam	0
Top Width of Dam	0
Construction Type	Subsurface
Centroid Latitude	40.274516249369
Centroid Longitude	-74.557728767395
Notes	The stone area flows into the Detention Pond 20. Elevations are base on stone thickness and not a specific datum.

Outlets

Edge of stone surface

Name	Edge of Stone
Type	User Defined
Notes	Flow through / across stone surface under the solar panels.

Discharge Latitude	Discharge Longitude	Discharge Northing	Discharge Easting
40.274205194740	-74.550619680196	524802.18139297	475685.74877908

Drainage Areas

Name	Post-DA2-Stone
Curve Number	90
Drainage Area	13.8 Acres
Time of Concentration	16.14 Minutes
Impervious Cover	100%

[R NJHMD Home](#) | [R NJHMD Home](#) | [R Project Profile](#) | [R Add New Project](#) | [R Add Maintenance](#)

[https://hydro.njders.edu/view-project/1192637](#)

[Apex](#) | [Department of Agriculture](#) | [NJHMD Home](#) | [NJHMD New Jersey](#) | [GDI YouTube](#) | [Meredith Stage](#) | [Other Bookmarks](#)

New Jersey Hydrologic Modeling Database

[Home](#) | [Contributors](#) | [About](#) | [Downloads](#) | [Documents / Forms](#) | [Contact](#) | [Log In](#)

[Joiner](#) | [Your Portal](#) | [Logout](#)

Stage-Storage-Discharge



Elevation (ft)	Storage (ac-ft)	Discharge (cfs)
100.4	0	0
102	0.001	1.17
104	0.125	6.62
106	0.425	9.71
108	1.021	17.88
109	2.225	33.38

Best Management Practices

No best management practices were added to this project.

Project Files

Name	Size	Comments
456AA.jpg	456B.jpg	

Project Partners

NJ Department of Agriculture
 NJ Department of Environmental Protection
 NJ Sea Grant Program

[NJHMD](#) | [Dashboard](#) | [View Projects / District Tools](#) | [NJDA Panel](#) | [NJDCP Reporting](#)

Stormwater Basin Project Editing "Tuscan Dr and Harrington St"

[Project Details](#) | [Basins](#) | [Attachments](#) | [BMPs](#) | [Open Maintenance](#) | [Validate Project](#)

Best Management Practices

[+ Add New BMP](#)

Type	Size	Units
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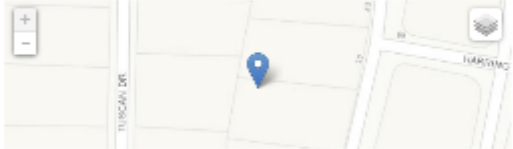
Best Practices Management Form

Type:

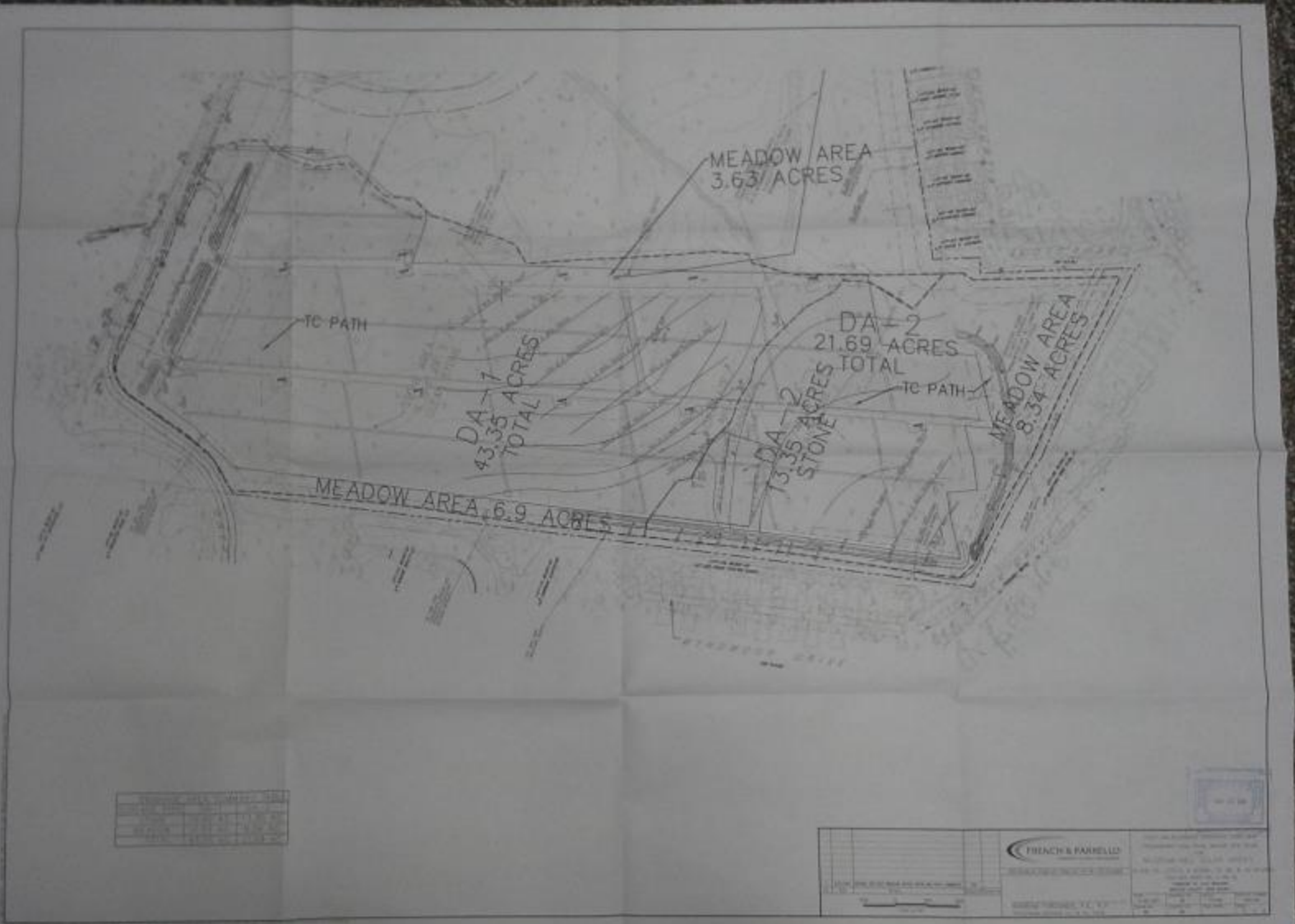
Size:

Size Units:

You can also click on the map or drag the red point to update the coordinates below



Latitude (Dec. Deg.)
 Longitude (Dec. Deg.)
 Northing
 State Plane ft. 593015.65
 Easting

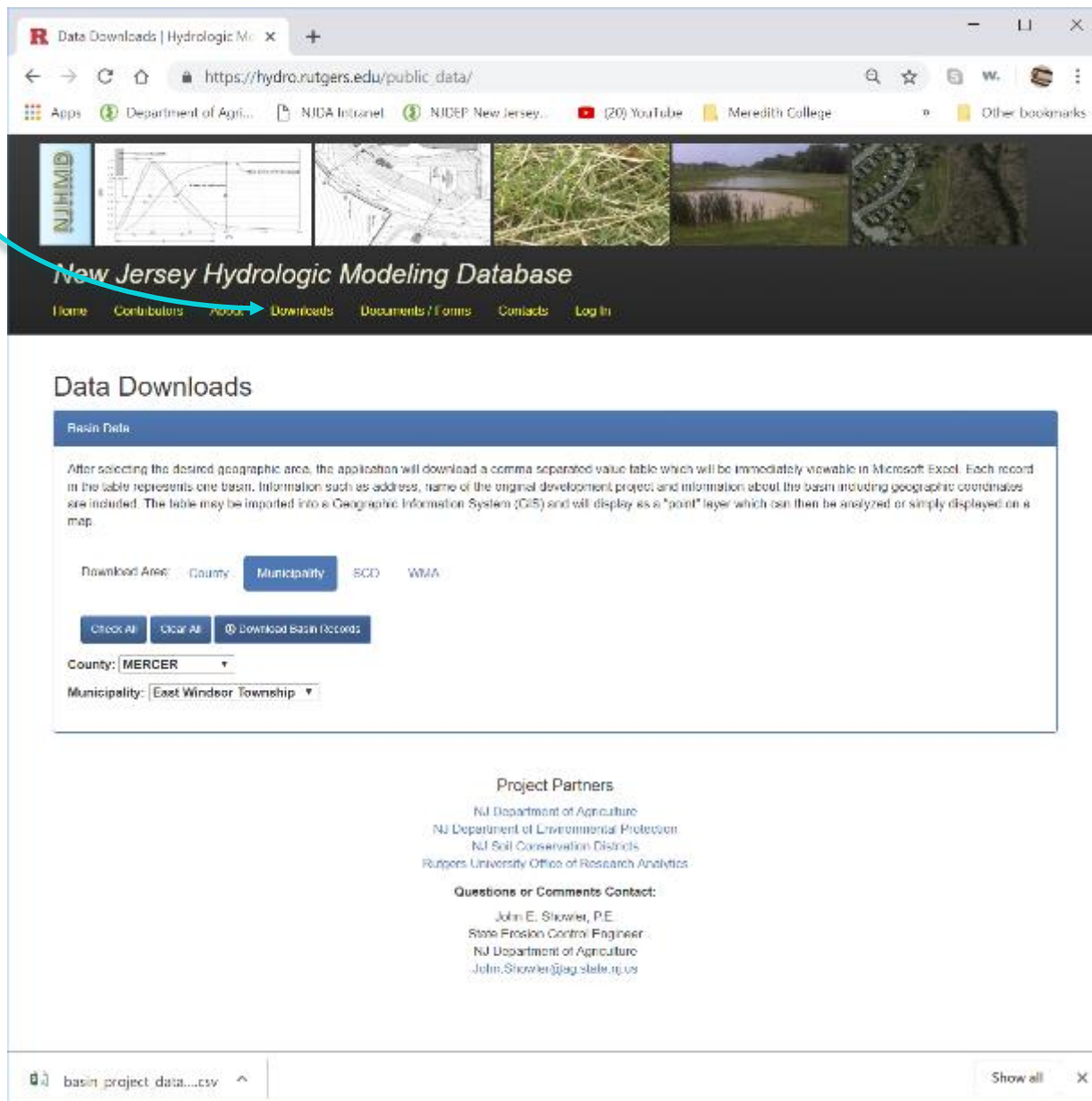


NO. 1	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 2	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 3	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 4	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 5	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 6	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 7	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 8	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 9	100' WIDE EASEMENT	100' WIDE EASEMENT
NO. 10	100' WIDE EASEMENT	100' WIDE EASEMENT

PROJECT INFORMATION	FRENCH & PARRELLS INCORPORATED 1000 N. 10TH ST. SUITE 100 DENVER, CO 80202 TEL: 303.733.1111 FAX: 303.733.1112 WWW.FRENCH-AND-PARRELLS.COM	DATE: 10/20/2011 BY: J. FRENCH CHECKED: J. PARRELLS APPROVED: J. PARRELLS
SHEET NO. 1 OF 1		

Downloadable Data

- Filter by geographic location
- 16,000 individual basin records on file
- Download spatial-tabular data (Excel)



The screenshot shows a web browser window with the URL https://hydro.rutgers.edu/public_data/. The page title is "Data Downloads | Hydrologic Modeling Database". The navigation bar includes links for Home, Contributors, Downloads, Documents / Forms, Contacts, and Log In. The "Downloads" link is highlighted with a blue arrow from the "Download spatial-tabular data (Excel)" bullet point in the list on the left. The "Data Downloads" section has a sub-header "Basin Data" and a paragraph explaining that users can download a comma-separated value table for a selected geographic area. Below this, there are buttons for "Download Area" (County, Municipality, SCD, WMA) and "Download Basin Records". The "County" dropdown is set to "MERCER" and the "Municipality" dropdown is set to "East Windsor Township". At the bottom, there is a "Project Partners" section listing the NJ Department of Agriculture, NJ Department of Environmental Protection, NJ Soil Conservation Districts, and Rutgers University Office of Research Analytics. A "Questions or Comments Contact:" section lists John E. Showler, P.E., State Pesticide Control Engineer, NJ Department of Agriculture, with email John.Showler@ag.state.nj.us. The browser's address bar shows the file "basin_project_data....csv" and a "Show all" button.

Data Downloads

Basin Data

After selecting the desired geographic area, the application will download a comma separated value table which will be immediately viewable in Microsoft Excel. Each record in the table represents one basin. Information such as address, name of the original development project and information about the basin including geographic coordinates are included. The table may be imported into a Geographic Information System (GIS) and will display as a "point" layer which can then be analyzed or simply displayed on a map.

Download Area:

County:

Municipality:

Project Partners

NJ Department of Agriculture
NJ Department of Environmental Protection
NJ Soil Conservation Districts
Rutgers University Office of Research Analytics

Questions or Comments Contact:

John E. Showler, P.E.
State Pesticide Control Engineer
NJ Department of Agriculture
John.Showler@ag.state.nj.us

basin_project_data....csv Show all

basin_project_data_2019_04_12														
Basin_ID	Basin_Name	Project_ID	Anderson_ID_Number	Anderson_ID_Name	Basin_Type_Name	Design_Phase_Name	Design_Class_Name	Height_of_Dam_Fee	Top_Width_of_Dam	Basin_Contract_Lst	Basin_Contract_Len	Construction_Type	Project_Comments	Basin_Misc_Note
1	102775 Basin 1	100801	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.27531	74.53555	Subsurface		NA
2	106896 Basin 2	100801	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.27541	-74.38442	Subsurface		NA
3	104561 Basin 1	100534	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25683	-74.49512	Excavated	NA	NA
4	103217 Basin 1.00	102911	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.26188	74.54149	Subsurface	NA	CH value is a Runoff CN value
5	104480 Basin 1.03	103402	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.26432	-74.33722	Subsurface	NA	Runoff CN value
6	103277 Basin 4	103676	1110	Residential (High Density or Retention) / Wet Pond Design	Detention	Design	Not Applicable	0	0	40.27138	-74.51387	Excavated	NA	NA
7	105130 Basin 2	103676	1110	Residential (High Density or Retention) / Wet Pond Design	Detention	Design	Not Applicable	0	0	40.27568	74.51151	Excavated	NA	NA
8	106129 Basin 3	103676	1110	Residential (High Density or Retention) / Wet Pond Design	Detention	Design	Not Applicable	0	0	40.27516	-74.51211	Excavated	NA	NA
9	107364 Basin 1	103676	1110	Residential (High Density or Retention) / Wet Pond Design	Detention	Design	Not Applicable	0	0	40.27319	-74.51035	Excavated	NA	NA
10	102429 Basin 1	103835	1120	Residential (Single Unit, Medium Density or Detention) / Wet Pond Design	Detention	Design	Not Applicable	0	0	40.24856	74.52966	Excavated	NA	NA
11	102234 Det 2	104616	1200	Commercial and Services	Infiltration	Design	Not Applicable	0	0	40.25838	-74.54781	Subsurface		NA
12	102901 Det 1	104616	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25884	-74.54803	Subsurface		NA
13	105963 Det 3	104616	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25915	74.54823	Subsurface		NA
14	110736 Basin 1	104775	1200	Commercial and Services	Infiltration	Design	Not Applicable	0	0	40.28538	-74.56538	Excavated	NA	NA
15	108540 Wet Pond A	104958	1300	Industrial	Retention / Wet Pond Design	Design	Not Applicable	4	10	40.27918	-74.50173	Excavated	NA	NA
16	113335 Underground Infil B	104958	1300	Industrial	Infiltration	Design	Not Applicable	0	0	40.27732	74.50481	Subsurface	NA	NA
17	102200 Wet Pond	111712	1200	Commercial and Services	Retention / Wet Pond Design	Design	Not Applicable	0	0	40.28535	-74.55882	Excavated	NA	NA
18	108125 Basin 1	111906	1110	Residential (High Density or Infiltration) / Detention	Design	Design	Not Applicable	0	0	40.27066	-74.53843	Excavated	NA	NA
19	106719 Basin 1	112173	1120	Residential (Single Unit, Medium Density or Detention) / Wet Pond Design	Detention	Design	Not Applicable	25.81	20	40.27872	-74.49375	Excavated	NA	NA
20	113419 Basin 1	113177	1200	Commercial and Services	Infiltration / Detention	Design	Not Applicable	0	0	40.26546	-74.48512	Subsurface	NA	NA
21	112800 Basin 1.00	114450	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.26331	-74.53049	Subsurface		Runoff CN value
22	102769 Ponds 1 & 2	114454	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.26687	-74.51135	Excavated	NA	Interconnected Ponds
23	112953 Pond 3	114454	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.26577	-74.51128	Excavated	NA	NA
24	102575 Basin 6	116304	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25932	-74.54785	Subsurface	NA	NA
25	102964 Basin 5	116394	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25959	74.54738	Subsurface	NA	Discharges into Basin 4
26	107450 Basin 3	116394	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25909	-74.54726	Subsurface	NA	NA
27	108376 Basin 1	116394	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25866	-74.54707	Subsurface	NA	Basin 1 discharges into Basin 4
28	111945 Basin 2	116394	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25889	74.54655	Subsurface	NA	Basin 2 connects to Basin 4
29	113510 Basin 4	116394	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.25988	-74.54531	Subsurface	NA	NA
30	106348 Wet Pond	117743	1200	Commercial and Services	Retention / Wet Pond Design	Design	Not Applicable	0	0	40.28002	74.52683	Excavated	NA	NA
31	102832 Basin B	117714	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.28044	-74.52443	Excavated	NA	NA
32	108984 Basin A	117714	1200	Commercial and Services	Detention	Design	Not Applicable	0	0	40.28040	-74.52452	Excavated	NA	NA
33	106903 Basin 1	117791	1200	Commercial and Services	Infiltration / Detention	Design	Not Applicable	0	0	40.26564	74.54683	Excavated	NA	NA
34	104808 Basin 2	117791	1200	Commercial and Services	Infiltration / Detention	Design	Not Applicable	0	0	40.26735	-74.54514	Excavated	NA	NA
35	104984 Basin A	118088	1200	Commercial and Services	Retention / Wet Pond Design	Design	Not Applicable	0	0	40.27174	-74.50001	Excavated	NA	NA
36	113202 Basin B	118088	1200	Commercial and Services	Retention / Wet Pond Design	Design	Not Applicable	0	0	40.25352	74.49732	Excavated	NA	NA
37	113750 Detention Basin 1	118490	1300	Industrial	Infiltration / Detention	Design	Not Applicable	8.5	15	40.27965129	-74.5647347	Excavated		
38	113751 Detention Basin #2	118490	1300	Industrial	Infiltration / Detention	Design	Not Applicable	8.5	15	40.280579	-74.56303900	Excavated		
39	113752 Outfall Structure A3	118490	1300	Industrial	Infiltration / Detention	Design	Not Applicable	7.5	15	40.281823	74.56248704	Excavated		

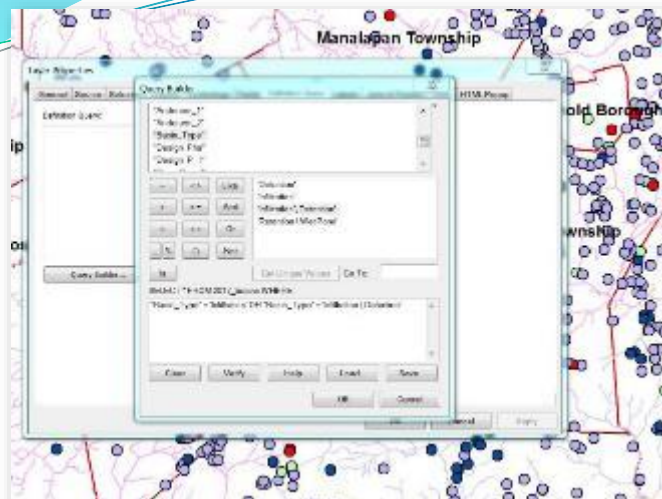
Each row is one basin record with parent site name & data with basin location & data



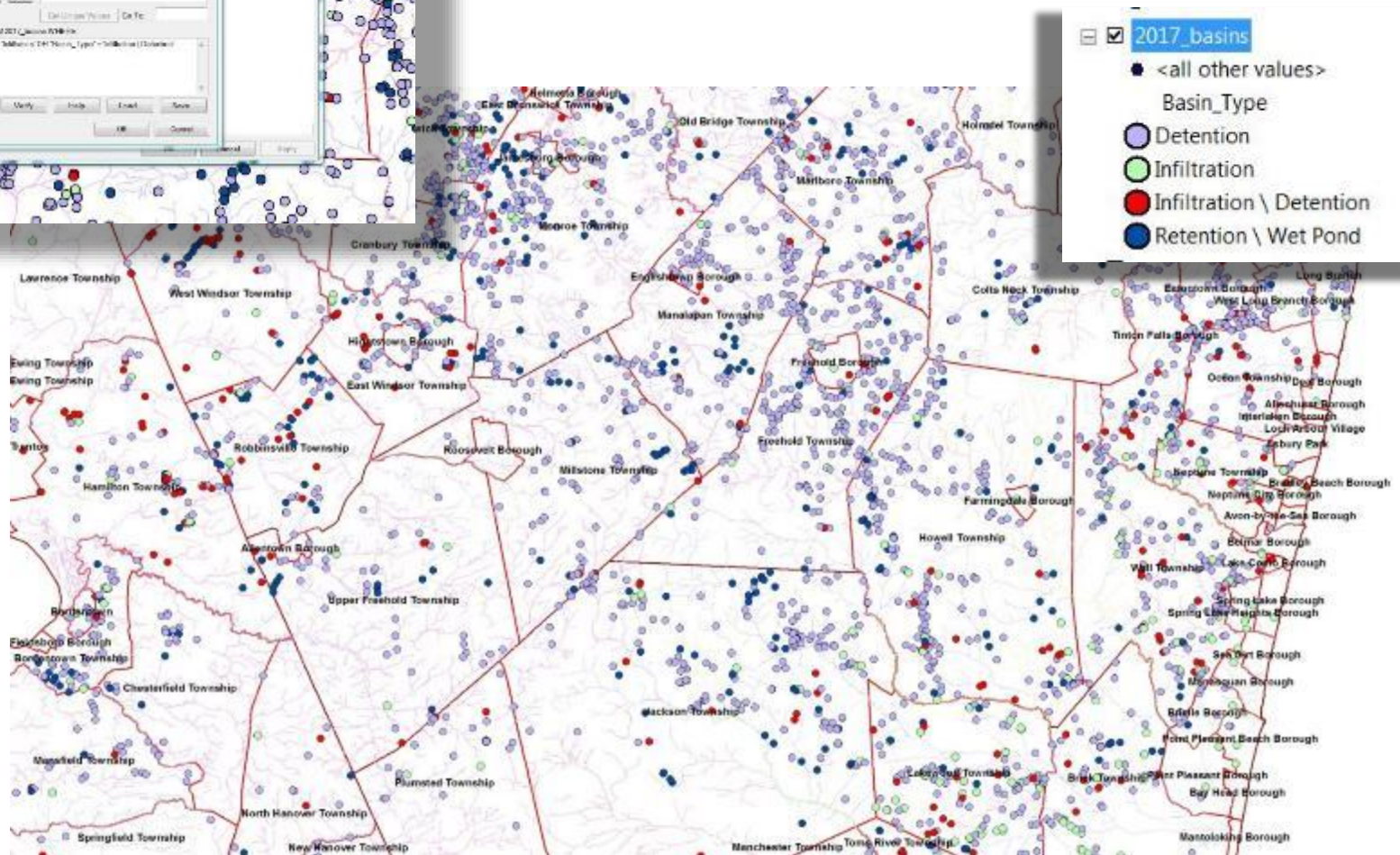
III. Example of Using NJHMD Basin Download Data in GIS

Goal:

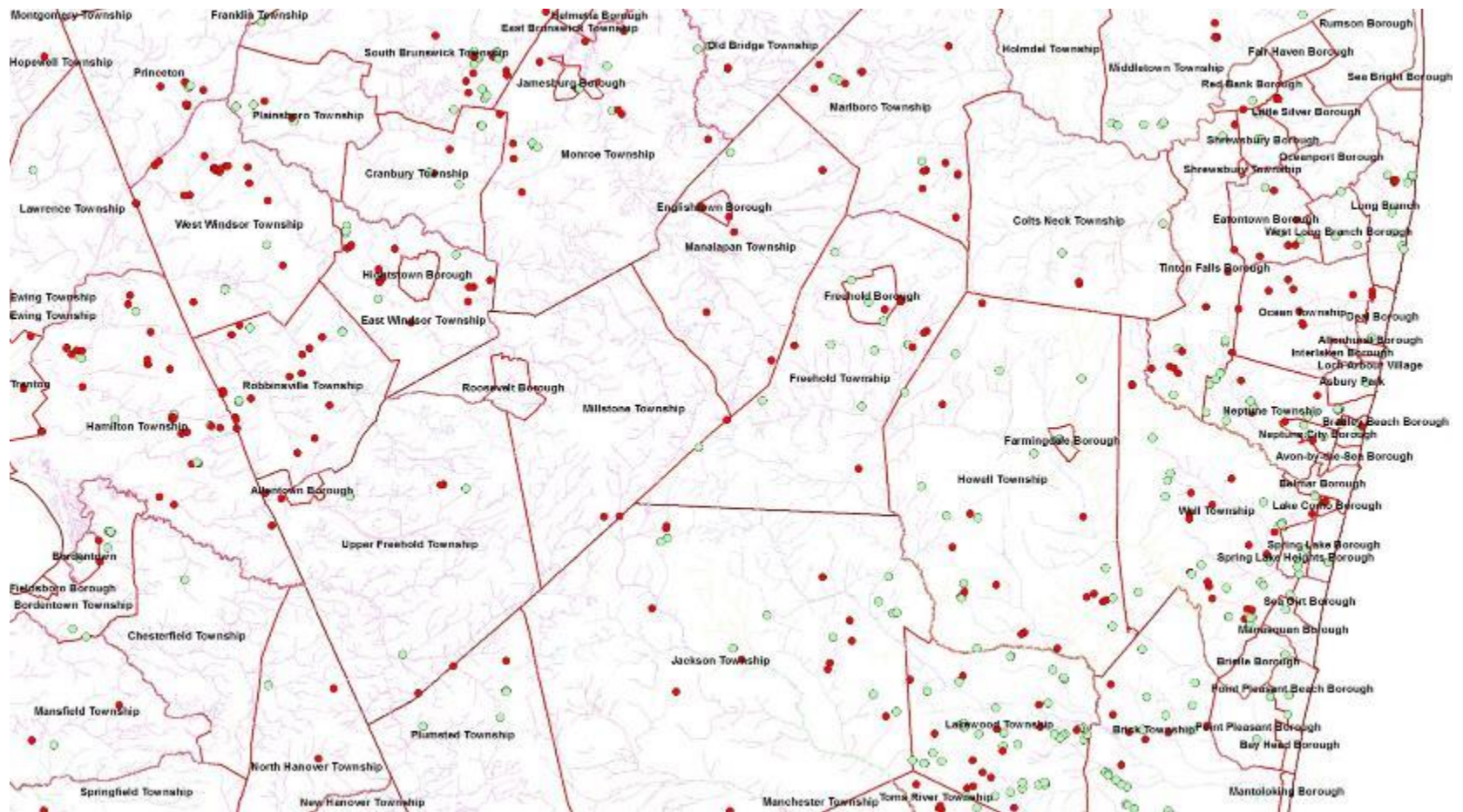
- download a basin table
- import to GIS
- identify infiltration basins in proximity to streams.



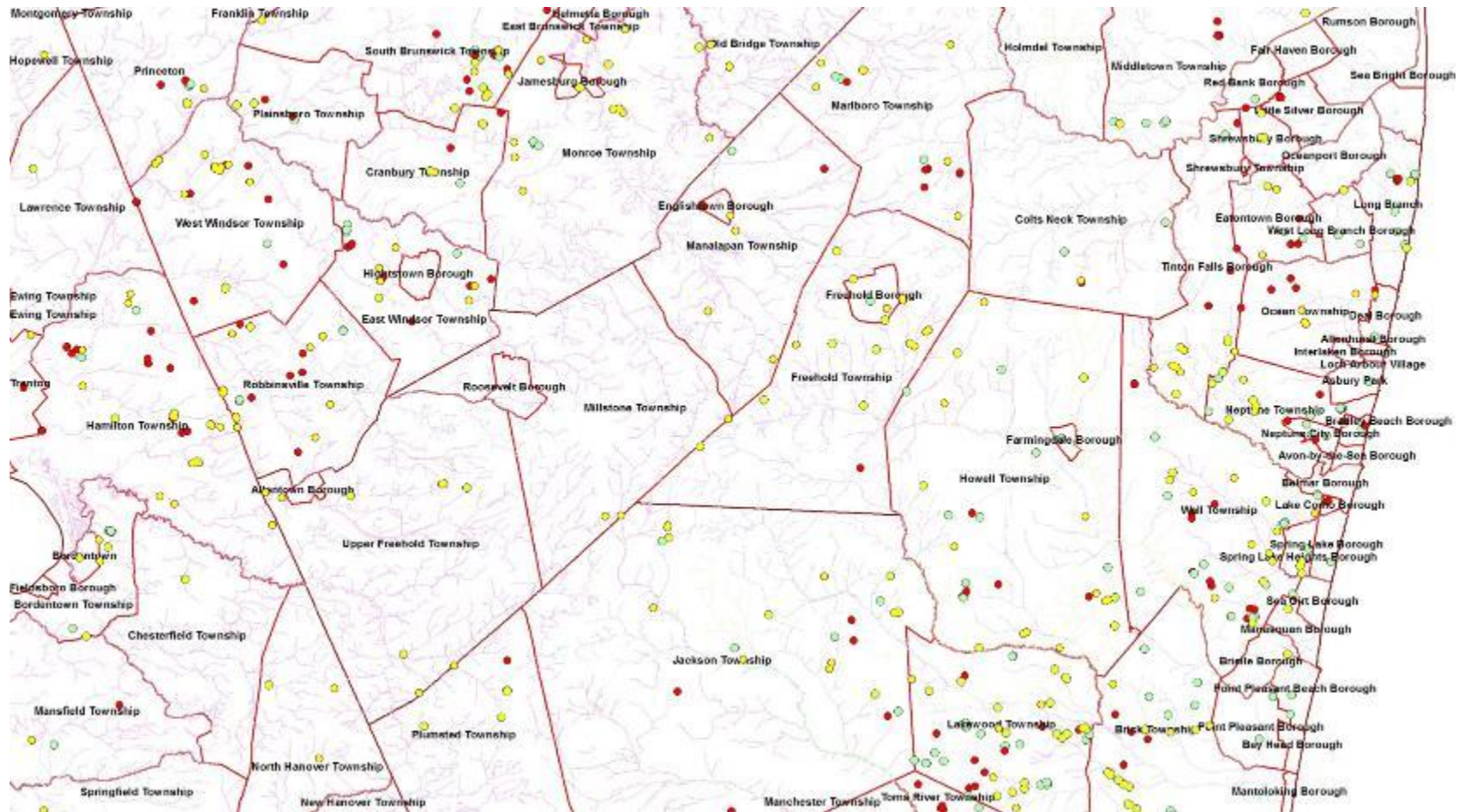
Filtering for Infiltration Basins from the entire basin layer (close up of the Freehold area)



Infiltration Basins Only after filtering



All Infiltration basins selected that are within 1000 feet of the Surface Water Quality Standards Stream Network



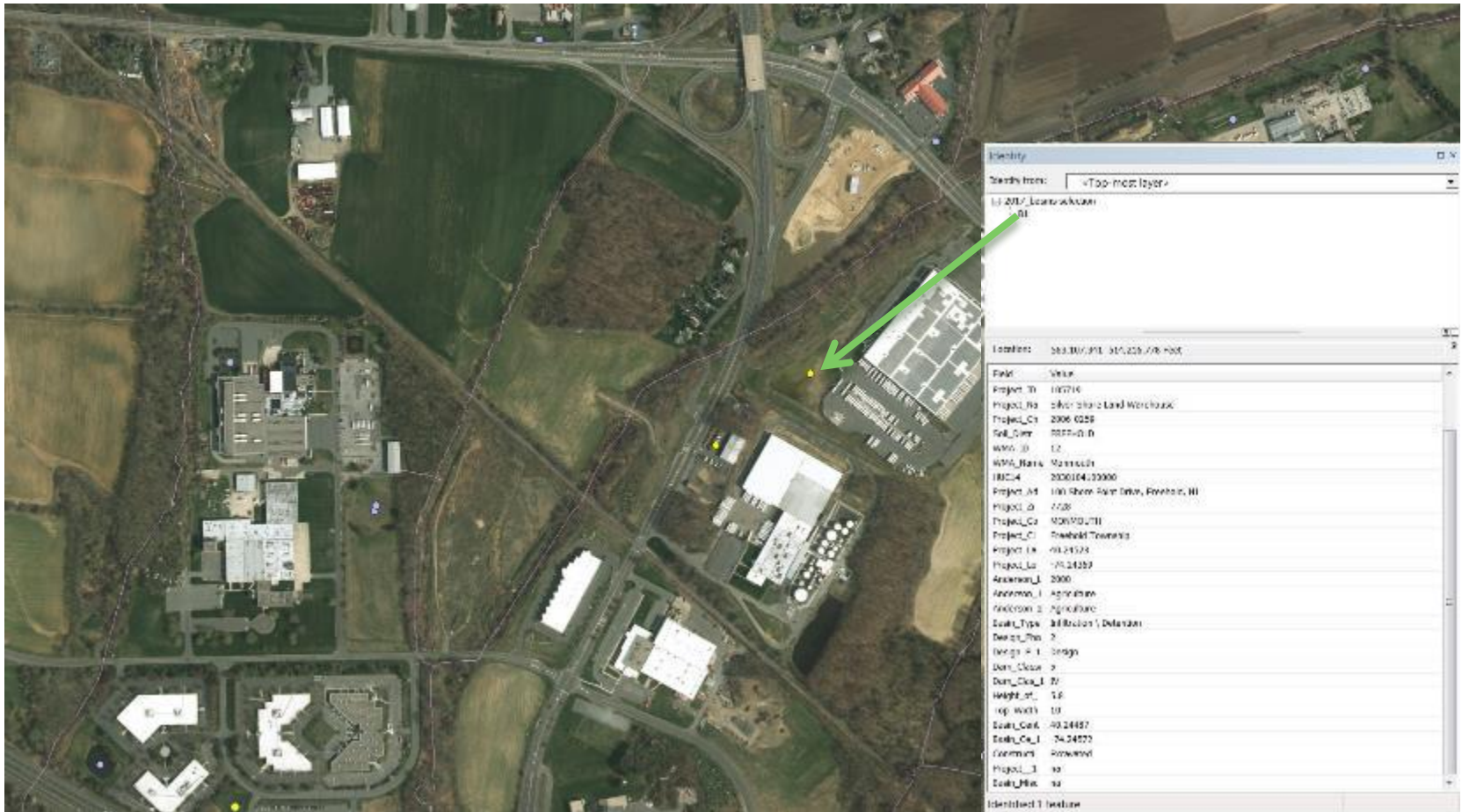
Statewide data table (entire table) of Infiltration basins with 1,312 basins selected within 1000 feet of the stream network.

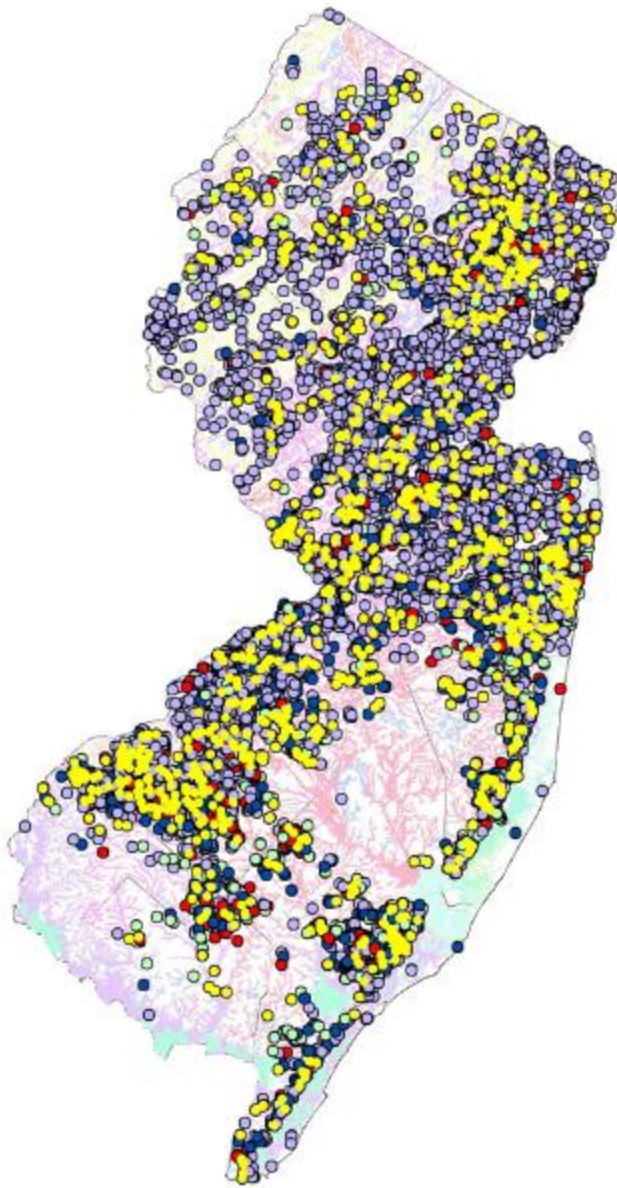
FID	Shape *	Basin_ID	Basin Name	Project ID	Project Na	Project Ch	Soil Distr	WMA ID	WMA Name
21	Point	100746	Basin L	100133	Becrell	13031	WARREN	1	Upper Delaware
22	Point	100900	Basin C	100133	Becrell	13031	WARREN	1	Upper Delaware
23	Point	100252	Basin B	100133	Becrell	13031	WARREN	1	Upper Delaware
85	Point	101275	B	100595	Hillsborough Estates	2007-0214	SOMERSET-UNION	10	Wiltone
89	Point	112278	Basin 1	100600	Altabex Building Addition	1985-0519	FREEHOLD	9	Lower Raritan, South River, and Lauren
138	Point	113072	Basin 1	100070	Discol Warehouse Development	214-P-4054	HUDSON-ESSEX & PASSAIC	4	Lower Passaic and Saddle
199	Point	111802	Basin	100222	Westampton Middle School	25107-007	BURLINGTON	19	Rancocas
211	Point	102265	Basin	100247	Westampton Township	25108-110	BURLINGTON	19	Rancocas
212	Point	111352	Basin	100248	Ocean Pointe	13477	OCEAN	13	Barnegat Bay
247	Point	102220	A1	100317	Purshorn Village	25163-193	BURLINGTON	18	Lower Delaware
255	Point	111024	Basin 1	100347	IRFW	63-07AC	CAPPA-TI ANTIC	15	Great Egg Harbor
260	Point	113416	b63	100402	Interchange	6810	OCEAN	13	Barnegat Bay
265	Point	100379	basin	100418	TBS Landscape Supplies	6830	OCEAN	13	Barnegat Bay
290	Point	106808	Infiltration/Defention Basin	100428	CVS Pharmacy Store 5461	2005-0057	FREEHOLD	9	Lower Raritan, South River, and Lauren
300	Point	104675	A2	100447	North Village of Sparta, Roads & Drainage	SP602	SUSSEX	2	Watkill
301	Point	107299	B4	100447	North Village of Sparta, Roads & Drainage	SP602	SUSSEX	2	Watkill
302	Point	113005	B1	100447	North Village of Sparta, Roads & Drainage	SP602	SUSSEX	2	Watkill
303	Point	113012	A1	100447	North Village of Sparta, Roads & Drainage	SP602	SUSSEX	2	Watkill
306	Point	103308	Basin	100457	Edwards Estates	0770	OCEAN	13	Barnegat Bay
319	Point	105253	Infiltration Basin	100475	Old Tavern Plaza	2005-0122	FREEHOLD	20	Assunkunk, Crosswicks, and Doctors
324	Point	105672	Basin	100406	Old Bridge MUA	2007-0943	FREEHOLD	9	Lower Raritan, South River, and Lauren
336	Point	101575	Defention Infiltration Basin	100514	Federal Hill Apartments	200-P-2396	HUDSON-ESSEX & PASSAIC	3	Pompton, Pequannock, Wanaquo, Ham
344	Point	106397	Basin	100529	205 West Branch Avenue	4610-PH-04	CAMDEN	18	Lower Delaware
350	Point	101127	b1	100561	Robey's Lawnmower Sales & Service	25190-214	BURLINGTON	19	Rancocas
381	Point	103129	Basin	100632	Yeshiva Mayan Hatorah	9414	OCEAN	13	Barnegat Bay
401	Point	113080	Basin	100691	Harry Wright Blvd Reconstruction	5826	OCEAN	13	Barnegat Bay
407	Point	100732	Basin 8	100702	Crescside Affordable Housing	25106-035	BURLINGTON	19	Rancocas
408	Point	102900	Basin 2	100702	Crescside Affordable Housing	25106-035	BURLINGTON	19	Rancocas
409	Point	106320	Basin 1	100702	Crescside Affordable Housing	25106-035	BURLINGTON	19	Rancocas
410	Point	112326	Basin 4	100702	Crescside Affordable Housing	25106-035	BURLINGTON	19	Rancocas
413	Point	107685	Basin	100709	New Central Ave Subdivision	12856	OCEAN	13	Barnegat Bay
421	Point	102342	Large basin	100726	D&F Barnegat Developers, LLC	10847	OCEAN	13	Barnegat Bay
422	Point	107457	small basin	100726	D&F Barnegat Developers, LLC	10847	OCEAN	13	Barnegat Bay
426	Point	107310	Basin	100733	M&M Associates	25195-013	BURLINGTON	14	Mullica
449	Point	107083	Infiltration Basin	100084	Beachfront North	2000-0690	FREEHOLD	12	Woonmouth
458	Point	112831	Basin 1	100344	Waterford at Spring Lake Heights	1996-0568	FREEHOLD	12	Woonmouth
459	Point	106432	Basin	100524	Dunkin Donuts	2014-110	GLOUCESTER	18	Lower Delaware
464	Point	105016	B	100044	Colucci Site	2000-9357	SOMERSET-UNION	8	North and South Branch Raritan
466	Point	100491	Basin	100070	McGhee's Pub	214-L-4345	HUDSON-ESSEX & PASSAIC	6	Upper Passaic, Whippany, and Rockaw
476	Point	110347	Basin	100160	Track & Text	213-L-3997	HUDSON-ESSEX & PASSAIC	7	Arthur Kill
495	Point	106705	Basin	100314	Holland Inn Express	2007-154	GLOUCESTER	18	Lower Delaware

(1312 out of 3044 Selected)

2017_basins

Zoom to area of interest – basin is an infiltration, class IV dam





Statewide Basin layer showing
basins with infiltration component

Possible Analyses:

- basin type
- Basin age (surrogate for retrofit)
- Land use (TMDL)
- SWQS
- Flooding potential
- groundwater impacts
- H&H research (CN's, PRF's Tc)
- identification of possible dams
- basin maintenance records

Basin maintenance inspection
services are now offered by
NJ Soil Conservation Districts -



IV. Basin Maintenance Inspection Services by NJ Soil Conservation Districts

In consultation with and support of NJDEP Municipal
Separate Storm Sewer System (MS4) Permit requirements
for inspection and maintenance of stormwater
management infrastructure

Basin Inspection Function

Locate project and
select 'edit'(admin only)

The screenshot shows the New Jersey Hydrologic Modeling Database (NJHMD) website. The browser address bar displays <https://hydro.rutgers.edu>. The website header includes the NJHMD logo and navigation links: Home, Contributors, About, Downloads, Documents / Forms, Contacts, Log In, jshowler, Your Portal, and Logout. A banner image shows various hydrologic modeling outputs, including a map, a graph, and a photograph of a wetland.

The main content area features a search bar and a map. The search bar contains the text "tuscany drive, freehold". Below the search bar, a map shows the location of the project. A pop-up window displays the project details:

Tuscan Dr and Harrington St
freeholdscd_1988_unknown

Address	Tuscan Drive Freehold Township, NJ 07728
County	MONMOUTH
Soil District	FREEHOLD
WMA	Monmouth
Comments	Adding project from field inspection. no original paperwork

Below the project details, there are two buttons: "View Project Details" and "Edit". A green arrow points from the "Edit" button to the "Basin Inspection Function" text on the left.

At the bottom of the page, there is a section for "Project Partners" listing the NJ Department of Agriculture and the NJ Department of Environmental Protection.

Edit mode allows the admin (SCD or NJDA only) to change, update or remove data as well as relocate positions of the site, basin and basin outfall.

Admins can also access the maintenance inspection window from the menu above

NJ HMD Home | Hydrologic Mod **Edit Project | Hydrologic Modelin**

https://hydro.rutgers.edu/edit-project/119259/

Apps Department of Agri... NJDA Intranet NJDEP New Jersey... (20) YouTube Meredith College Other bookmarks

NJ HMD Dashboard View Projects / District Tools NJDA Panel NJDEP Reporting jshower Public Page Logout

Stormwater Basin Project Editing "Tuscan Dr and Harrington St"

Project Details Basins Attachments BMPs [Open Maintenance](#) [Validate Project Application](#) Other Options ▾

Project Details

Details will save automatically as they are changed.

Application Project Data

Chapter 251	freeholdsod_1868_unknown
Project Name	Tuscan Dr and Harrington St
Start Date <small>Leave blank if date is unknown</small>	01/01/1988
Street Address	Tuscan Drive
Zipcode	07728
Block <small>Optional</small>	36.19
Lot <small>Optional</small>	19 (basin)
Land Use Code (Proposed)	[1120] Residential (Single Unit) ▾

Map Data

Click on the map, drag the marker, or type the coordinates in the textboxes below to specify the project site.

+ - Type an address, city, or zipcode to zoom to a project location.

Map showing Tuscan Dr and Harrington St. A blue location pin is placed on the map.

Leaflet | Tiles ESRI — Esri, DeLorme, NAVTEQ, TomTom, Intermap, Inc, USGS, FAD, NPS, NRCAN, GeoBrow, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

This data will automatically fill out when you place/move a point on the map.

Soil Conservation District	FREEHOLD ▾
Watershed Management Area	Monmouth ▾
County	MONMOUTH ▾

Applicant Contact Details

All fields listed in this panel are optional.

Name	Original project owner unknown
Address	

Maintenance Mode

- View
- Edit
- Add
- * field data
- *comment/text
- *images
- *pdf forms/docs

The screenshot shows a web browser with three tabs: "NJ HMD Home | Hydrologic Mod...", "Edit Project | Hydrologic Modelin...", and "Add Maintenance | Hydrologic M...". The address bar shows the URL "https://hydro.rutgers.edu/maintenance/119259/view-basin/114855/". The browser's bookmark bar includes "Apps", "Department of Agri...", "NJDA Intranet", "NJDEP New Jersey...", "(20) YouTube", "Meredith College", and "Other bookmarks". The application's navigation bar includes "NJ HMD", "Dashboard", "View Projects / District Tools", "NJDA Panel", "NJDEP Reporting", "jshowler", "Public Page", and "Logout".

Basin Maintenance for "Tuscan Dr and Harrington St"

[← Back](#)

Basin Name	Status	Last Inspection	Inspector	Organization	Code
detention basin	All Certified	04/21/2017	J. Showler	NJDA	Maintenance Needed

[View](#) [+ Add](#)

Maintenance Entries

[+ Add Maintenance Entry](#)

Maintenance 04/21/2017 [Report](#)

STATUS
Certified

Inspector Name
J. Showler

Inspector Organization
NJDA

Maintenance Code
Maintenance Needed

Repair Status
Satisfactory

Mosquito
None

Requires Retrofit
Yes

Comments
basin inspected while doing nearby basin inspections. clean, well vegetated. could be retrofitted with a water quality criteria plate and removal/replacement of the low flow channel to promote infiltration. Minor cleaning of the low flow channel needed at this time.

Reinspection Date
04/23/2018

[View Pictures](#) [+ Add/Edit/View All Files](#)

[Delete](#) [Edit](#)

Maintenance Mode

- View
- Edit
- Add
- * field data
- *comment/text
- *images
- *pdf forms/docs

Each image or file
can have its own
comment/text
descriptors

NJ HMD Home | Hydrologic Mod x | Edit Project | Hydrologic

https://hydro.rutgers.edu/maintenanc

Apps Department of Agri... NJDA Intranet NJDCP

NJ HMD Dashboard View Projects / District Tools NJDA Par

Basin Maintenance

← Back

Basin Name	Status
detention basin	All Certified

Maintenance Entries

+ Add Maintenance Entry

Maintenance 04/21/2017

STATUS
Certified

Inspector Name
J. Showler

Inspector Organization
NJDA

Maintenance Code
Maintenance Needed

Repair Status
Satisfactory

Mosquito
None

Requires Retrofit
Yes

Comments
basin inspected while doing nearby be inspections. clean, well vegetated. coe retrofitted with a water quality critica pl removal/replacement of the low flow or promote infiltration. Minor cleaning of channel needed at this time.

Reinspection Date
04/23/2018

View Pictures + Add Entry

Delete

Maintenance File/Picture

Please select the file you wish to upload.

You can click on the file or picture icon to view.

Note: You do not need to select a file if you are editing a comment

Browse Please Choose a File

Is this the Inspection Checklist (PDF ONLY)? No

NOTE: Only one inspection checklist is allowed. If two or more checklists are added, only the latest one will be used in the report

File Description or Comments (Optional):

Submit

Insp. Form	Filename	Comments	EDIT	DELETE
	IMG_20170420_140642.jpg	outlet structure. some leaf accumulation. little or no trash. outlet could be modified to better capture WQ storm event.	EDIT	DELETE
	IMG_20170420_140708.jpg	low flow channel showing some debris that could be cleaned out	EDIT	DELETE
	IMG_20170420_140622.jpg	full shot of basin looking upstream. neighborhood draining to basin in good shape. no trash, no erosion observed. low flow could be removed to promote water quality.	EDIT	DELETE
📎	Tuscan Drive Freehold Twp.pdf	inspection checklist	EDIT	DELETE

Close Window



Maintenance Mode

- View
- Edit
- Add
- * field data
- *comment/text
- *images
- *pdf forms/docs

The screenshot shows a web browser with three tabs: 'NJ HMD Home | Hydrologic Mod...', 'Edit Project | Hydrologic Modelin...', and 'Add Maintenance | Hydrologic M...'. The address bar shows the URL 'https://hydro.rutgers.edu/maintenance/119259/view-basin/114855/'. The browser's bookmark bar includes 'Apps', 'Department of Agri...', 'NJDA Intranet', 'NJDEP New Jersey...', '(20) YouTube', 'Meredith College', and 'Other bookmarks'. The application's navigation bar includes 'NJ HMD', 'Dashboard', 'View Projects / District Tools', 'NJDA Panel', 'NJDEP Reporting', 'jshowler', 'Public Page', and 'Logout'.

The main content area is titled 'Basin Maintenance for "Tuscan Dr and Harrington St"'. It features a '+ Back' button and a table with the following data:

Basin Name	Status	Last Inspection	Inspector	Organization	Code
detention basin	All Certified	04/21/2017	J. Showler	NJDA	Maintenance Needed

Buttons for 'View' and 'Add' are located to the right of the table. Below the table is a section titled 'Maintenance Entries' with a '+ Add Maintenance Entry' button.

A detailed view of a maintenance entry for 'Maintenance 04/21/2017' is shown. It includes a 'Report' button and the following fields:

- STATUS**: Certified
- Inspector Name**: J. Showler
- Inspector Organization**: NJDA
- Maintenance Code**: Maintenance Needed
- Repair Status**: Satisfactory
- Mosquito**: None
- Requires Retrofit**: Yes
- Comments**: basin inspected while doing nearby basin inspections. clean, well vegetated. could be retrofitted with a water quality criteria plate and removal/replacement of the low flow channel to promote infiltration. Minor cleaning of the low flow channel needed at this time.
- Reinspection Date**: 04/23/2018

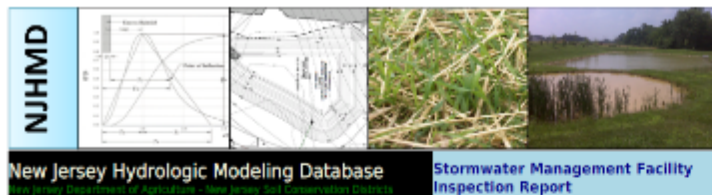
At the bottom of the entry view are buttons for 'View Pictures', '+ Add/Edit/View All Files', 'Delete', and 'Edit'.

A green arrow points from the 'Report' button to the detailed entry view.

A single maintenance entry has:

1. Key fields (shown at left)
2. Comments/narrative
3. Photos with comments
4. Formal inspection form

When all components are entered a pdf report can be generated to print, save or send



This report has been prepared by the FREEHOLD Soil Conservation District in accordance with requirements set forth in the New Jersey Department of Environmental Protection Municipal Separate Storm Sewer System (MS4) permitting requirements (N.J.A.C. 7:14A et seq.) for the inspection and maintenance of public and privately owned stormwater management facilities. This inspection report provides the necessary verification by a municipality that it is ensuring post-construction operation and maintenance of stormwater facilities under its authority.

The MS4 permit requires that an owner of a stormwater management facility (retention/detention/wet pond etc.) provide an annual inspection of the operating condition of the facility as well as ensure proper maintenance of the facility has taken place.

If maintenance or repair work is identified in this inspection report, the owner has the option of correcting the problems identified by the district and requesting a re-inspection by the district to verify that the outstanding issues have been corrected and that the facility is now in compliance with MS4 regulations for the current year.

Following the initial or secondary inspection, re-inspection of the facility will be scheduled for the following year.

Contact

FREEHOLD Soil Conservation District

4000 Kozloski Road, PO Box 5033

Phone: 732-683-8500

Notice: This report only identifies the condition of the facility. No offer of service to correct any deficiencies is made, expressed or implied. The report indicates the degree of compliance with respect to general maintenance practices and does not comment on nor constitute an analysis of any aspect of structural integrity of the facility. Only maintenance or repair issues which are detectable without the aid of specialized equipment are inspected and reported by the soil conservation district. Where appropriate, the district may suggest that further investigation of the facility be conducted by licensed professionals with experience in structural engineering be engaged for further study.

Stormwater Management Facility Inspection Report Ownership and Design Data

Project Development Information

Project Name: Tuscan Dr and Harrington St

District Application Number:
freeholdscd_1988_unknown

Street Address if known: Tuscan Drive

County: MONMOUTH

Municipality: Freehold Township

Zipcode: 07728

Build Date if known: 1988-01-01

Project Location Coordinates: (State Plane Feet)

North: 522354.56086144 **East:**
562958.59447851

Developed Anderson Land Use Code:

1120: Residential (Single Unit, Medium Density)

Stormwater Management Facility Information

Facility Database ID: 114855

Facility 'name': detention basin

Facility type: Detention

Construction: Excavated

Dam Classification: Not Applicable

Height of dam: 0

Width of dam at top: 0

Notes: adding basin from field inspection. no hxx data available. tax records show dev't built in 1988. basin located at block 38.19, lot 19

Facility Discharge Location Coordinates:

Name: os1, **North:** 521766.68808121, **East:** 562617.54738174

Ownership Information (if known)

Owner: Twp. of Freehold (basin)

Address: 1 Municipal Plaza

City: Freehold

State: NJ

Zipcode: 07728

Email: <http://twp.freehold.nj.us/contact-us>

Phone: 732.294.2000

Facility Location Coordinates SPF:

North: 521800.66857908

East: 562693.72634826

Maintenance Inspection Report

Facility Database ID: 114855

Date of Inspection: 04/21/2017

Inspector Name: J. Showler

Maintenance Status: Maintenance Needed

Inspector Organization: NJDA

Repair Status: Satisfactory

Retrofit: Yes

Mosquitos: None

Comments & Recommendations:

basin inspected while doing nearby basin inspections. clean, well vegetated. could be retrofitted with a water quality orifice plate and removal/replacement of the low flow channel to promote infiltration. Minor cleaning of the low flow channel needed at this time.

Interpretation of Inspection Status Codes and Comments:

Maintenance Needed: The facility was found to be below an acceptable level of maintenance. Examples of maintenance failure include: vegetation overgrown or barren, erosion present inside or outside of basin, basin appurtenance structures such as low flow channels, outlet control structures, trash racks and anti-scour (rip rap) protection damage, silted in or missing. Presence of accumulated trash, ponding water (unless designed as a wet pond) and/or visible presence of mosquitoes.

In the case of an infiltration basin which is holding water, the basin floor may require the removal of the surface layer of silt and sediment, followed by deep tilling with lightweight equipment to restore infiltration capacity. It is recommended that a licensed professional engineer be retained to evaluate continued ponding which may be the result of structural failure, soil failure, high groundwater tables etc. Additional inspection information may be found on the attached inspection checklist form.

Repair Needed: The facility or certain aspects of the facility were found to be damaged or broken where physical repair is needed to restore functionality. Examples of repairs needed include broken or missing trash racks, damaged outlet control structures, damaged or collapsed pipes or culverts, eroded or otherwise missing rip rap erosion protection at pipe outlets, damaged or failing headwalls at discharge points, etc. In such cases it may be necessary to retain the services of a licensed engineer or contractor familiar with construction techniques to restore the facility to properly functioning conditions.

Mosquitos: Presence of standing water, aquatic vegetation with water or actual presence of mosquitoes may be noted and will require immediate attention. Local and/or state mosquito control agencies should be contacted to ensure that no pathogenic species of mosquitoes are present and appropriate action is taken to eliminate current or future infestations.

Retrofit: Independent of other status determinations, a facility which is older may be a "candidate" for retrofitting outlet controls, appurtenance structures etc. to improve the functionality for flood control, water quality control or other environmental benefits (such as infiltration) etc.

Retrofitting is not a requirement and is noted for information only.

Stormwater Facility Photographs

Facility ID: 114855 Inspection date: 04/21/2017

Photo ID: 114855-44



outlet structure. some leaf accumulation, little or no trash. outlet could be modified to better capture WQ storm event.

Photo ID: 114855-45



low flow channel showing some debris that could be cleaned out

New Jersey Department of Agriculture – Soil Erosion and Sediment Control Program Stormwater Basin Inspection Program – Inspection Checklist

Date: 4/21/2017 Inspector: J. Showler Organization: NJDA Current Weather: sun/clouds, 60s
 hours: rain < 1" Basin Database ID: det basin Approximate basin Location: Tuscan Drive, Freehold NJ
 Basin Type: ☒ Detention ☐ Infiltration ☐ Infiltration/Detention combo ☐ Wet Pond ☐ Subsurface ☐ Other

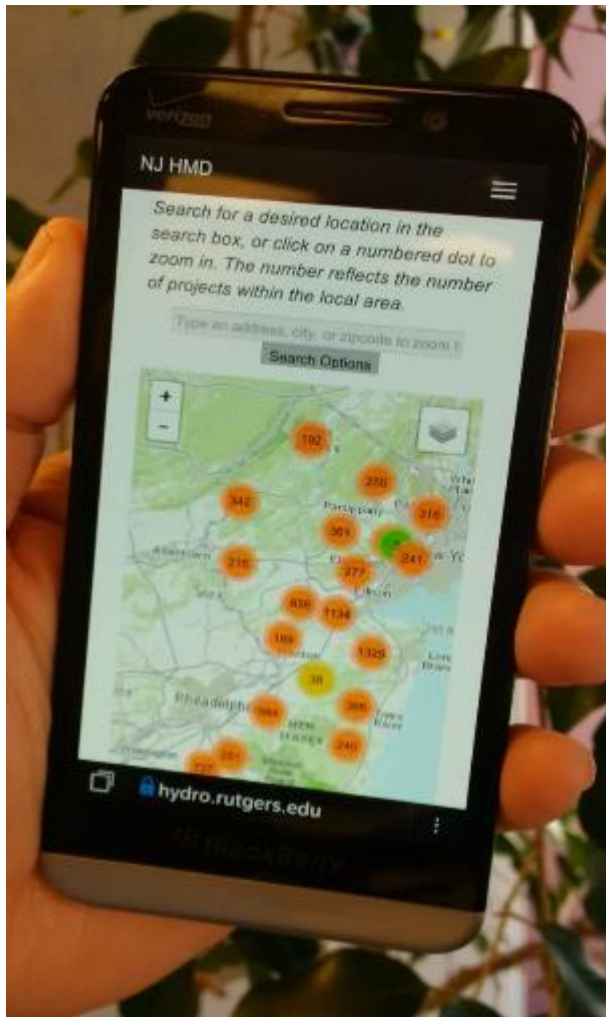
Weather, past 72

DSP Item #	Inspection Criteria		Comments
Forebay	Embankment failure, leakage, excessive deposits etc	<input type="checkbox"/>	
A1.1	Inlet scour or erosion	<input type="checkbox"/>	
A1.2	Clogged pipes or excessive sediment	<input type="checkbox"/>	
A1.3	Damaged outlet / overflow structure	<input type="checkbox"/>	
MTD (pretreat) A2	Inspect as able	<input type="checkbox"/>	
BMP (pretreat) A3	Inspect as able	<input type="checkbox"/>	
Pond Area	Note conditions for wet and dry ponds may differ		
B1	Standing Water / algae / floatables / mosquitos present	<input type="checkbox"/>	
B2	Sediment / deltas/emergent vegetation -function failure	<input type="checkbox"/>	
B3	Erosion / Channelization/Rip Rap damaged	<input type="checkbox"/>	
B4	Animal Burrows /wildlife/ waterfowl present	<input type="checkbox"/>	
B5	Uneven Bed (dry basin)	<input type="checkbox"/>	
B6	Sink holes or subsidence -dry or wet basin	<input type="checkbox"/>	
B7	Low flow channel damaged or needs cleaning	<input checked="" type="checkbox"/>	low flow channel has some sediment and organics not very bad but needs cleaning
B8	Basin liner or weir/dam damaged	<input type="checkbox"/>	
Vegetation	Note if vegetation is being maintained including desirable spp		
C1	Excessive bare soil = erosion and water quality problem	<input type="checkbox"/>	
C2	Overgrown /invasive / design vegetation present	<input type="checkbox"/>	
C3	Tree growth in basin	<input type="checkbox"/>	
C4	Are grass clippings collected or left?	<input checked="" type="checkbox"/>	unknown but doubt they are collected
Embankment D1	Basin side slopes – erosion, slides, seeps, bare soil etc	<input type="checkbox"/>	
Outlet	Note outlet structure and discharge point(s)		
E1	Outlet trash accumulation (20%+)	<input checked="" type="checkbox"/>	actually clean but an accumulation of leaves in front of rack (chain link fence enclosure, see pics)
E2	Damaged Trash rack	<input type="checkbox"/>	
E3	Outlet Crifi damaged or non-functioning/ retrofit?	<input type="checkbox"/>	
E4	Outlet COP damaged or erosion below outlet	<input type="checkbox"/>	
E5	Standing water in the outlet structure	<input type="checkbox"/>	
Emergency Spillway	Note condition of spillway and spillway lining		
F1	Trees on spillway	<input type="checkbox"/>	
F2	Damaged/failed/ obstructed /eroded spillway	<input type="checkbox"/>	
Misc.	Note condition of appurtenant structures etc.		
G1	Broken or missing security fence/gate	<input type="checkbox"/>	
G2	Damaged/missing sign	<input type="checkbox"/>	
G3	Access to basin blocked (vegetation growth, trash etc)	<input type="checkbox"/>	

Overall Condition: ☐ Satisfactory ☒ Maintenance Required ☐ Needs Repair ☒ Possible Retrofit Candidate

Comments: minor cleaning needed; could be retrofitted for better water quality treatment.

Future Enhancements...



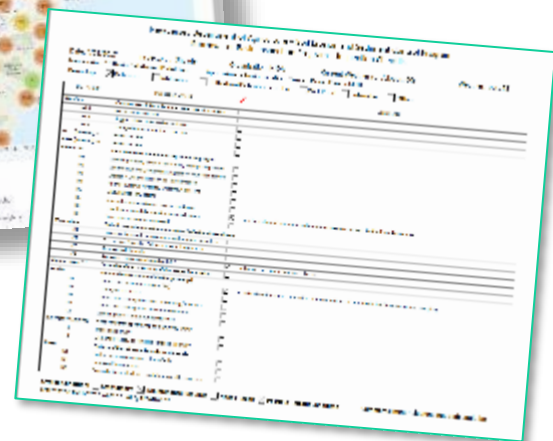
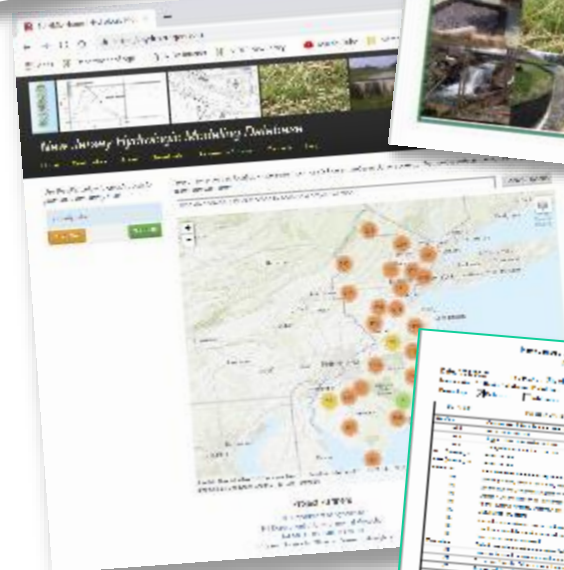
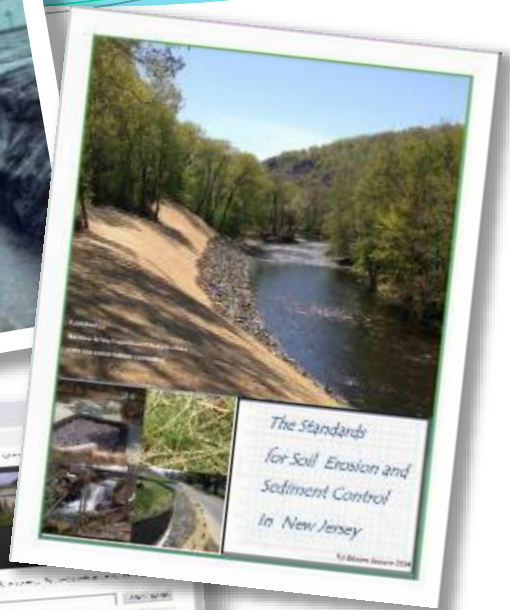
V. Recap & Questions-

- 1950s- SCD's were Ag-Only
- 1976- Still Ag, + Regulatory Non-Ag
- 1986 – Stormwater Data collection
- 2007- H&H Database online
 - <https://hydro.Rutgers.edu>
- 2019-
 - 16K basins uploaded
 - SCD Basin Inspections

*Thanks for
hanging in there!*

Questions may be addressed to:

John Showler, P.E. NJDA john.showler@ag.nj.gov 609.775.8203





NJ HMD

Designed and Built by:
NJ Agriculture Experiment Station
Office of Research Analytics
Rutgers University
New Brunswick, NJ
Lucas Marxen <ljmarxen@njaes.rutgers.edu>