

Municipality/Organization: Town of Marshfield, MA

EPA NPDES Permit Number: MA041048

MADEP Transmittal Number: W-036194

Annual Report Number

& Reporting Period: No. 15 March 2017–April 2018

NPDES Phase II Small MS4 General Permit Annual Report

Part I. General Information

Contact Person: Rod Procaccino

Title: Town Engineer

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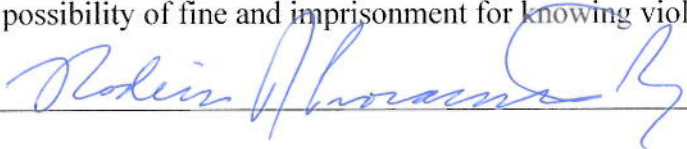
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Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:



Printed Name: Rod Procaccino

Title: Town Engineer

Date: April 30, 2018

Part II. Self-Assessment

The Town of Marshfield's stormwater management activities for the 15th year of the General Permit (March 2017 through April 2018) were consistent with the Notice of Intent (Massachusetts DEP form BRP WM 08A) and schedule, submission dated July 21, 2003, however the cuts in the Towns operational budget have significantly reduced the amount of street sweeping and catch basin cleaning required on an annual basis. Sampling was reduced to target problem areas. The following assessment of activities that were included in the plan is provided below:

Public Education: 1. Continue Partnership with North and South River Watershed Association (NSRWA) (BMP ID No.1)
The Town continues its support of NSRWA Greenscapes Program. Brochures and Reference guide are on display at the Town Hall and Marshfield's Stormwater Management Plan is referenced in the Town's CCR (Water Quality) Report.

(Website - <http://www.townofmarsfield.org>)

2. Develop Brochures: (BMP ID No. 2)

The Town added language to the Water Quality Report to emphasize Storm Water Management Plan. This information is sent out on an annual basis. The water quality report was sent out to all customers representing 98% of the Town.

The DPW contracts with the North and South River Watershed Association Greenscapes program to assist in Public Education. Presentations were made to Marshfield second Graders at the Eames Way School, featuring " Water All Around You Program." A rack card created by the Greenscapes Coalition "Pet Waste Education Program with hand out "Scoop it" distributed to Town Clerk. A face book page was set up featuring timely Greenscape information created on a weekly basis including Water Smart business Program, rain barrel sale and Gardening Green Expo. Information is provided on NSRWA website (www.nsrwa.org)

The CCR (Water Quality Report) is available at the DPW office.

3. Training Town Officials: As part of the new permit for beneficial reuse of catch basin cleanings, the Town's consultant provided a refresher training on requirements with key highway personnel

on-sight on 2-8-2018. The DPW staff reviewed online Good House Keeping from Westfield State College webinar.

4. Develop Web Site for Public Service Posting: (BMP ID No. 3)

The IT department has developed the Town wide website and is responsible for it's maintenance. Visit the Town's website at <http://www.townofmarshfield.org> Access is provided to the NPDES Phase II Small MS4 General Permit Annual Report.

Public Participation:

1. Water Quality Testing (BMP ID No. 4)

The water level measuring devices placed along the Green Harbor River were operational up until February 2017 and DPW monitors the collection of data through a website connection and is the subscriber of the website. The State Office of Coastal Zone Management (CZM) has access to this data along with NSRWA who have historically been monitoring water quality of Green Harbor River. The Bass Creek Improvement and Airport Expansion Project is being monitored by consultant as part of Order of Conditions. The salinity has been high enough to thwart the growth of invasive species Phragmites. The second year monitoring Report by GZA dated March 7, 2016 concludes similar salinity and no reported blockages. There is some Phragmite growth in channel north of the runway. The 3 annual report dated 2-8-2017 reports similar salinity but some encroachment. **The fourth annual report dated January 25, 2018 reports additional Phragmites encroaching north of the airport runway. The airport management is considering purchasing a piece of equipment (to cost share with other airports) to address the issue.**

Community Cleanup Days (BMP ID No. 5)

2. The Town conducted its annual **"Keep Marshfield Clean"** weekend on **April 28, 2018**. There were **3.77 tons of trash** collected, including **recyclables collected Town wide**. **There were approximately 200 people who participated in this event.** The Town's Solid Waste Transfer Station also supports

other neighborhood clean-up efforts. NSRWA participated with the Conservation Department through volunteer program and removed debris, trash from the river bank and select dead tree and brush from South River downstream of Cross St. (35 people), conducted litter and vegetative management along bridal path behind CVS (20 people), and the same over conservation land adjacent to Maryland Street (35 people).

3. The DPW, Town Assessors, and Conservation Commission and other volunteers from the general public developed an Open Space Plan. Watershed protection was the highest priority included in the evaluation criteria.

Open Space Committee through CPC funding program failed to obtain approval from Town Meeting to purchase 9 acre parcel (H16-01-27) YMCA property for open space and other uses.

4. **The DPW provides the general public handouts promoting water conservation, recycling, composting at the Town Hall and sponsors distribution of Rain Barrels.**

Illicit Discharge Detection and Elimination:

1. Catch basin/Outfall and Receiving Water Mapping (BMP ID No. 6)

The Town is in its 15th year developing GIS Mapping capabilities. The Town continues its contract with Maps Online for web accessible mapping. The Town has hired a new vendor and is in the process of developing new data management program for issuing work orders and tracking work.

No Sediment was removed from previous identified Detention Basins.

Approximately 200 feet of open drainage ditches were cleaned.

2. Potential Illicit Discharge locations previously identified through outfall screening process were reviewed for connectivity. Water Quality Testing (BMP ID No.4)

The Town hired a consultant to conduct outfall inspections and sampling, and to evaluate Riverside Circle Stormwater Sand Filter. Previous testing by Town personnel showed high level of fecal coliform entering and leaving the system. The Consultant reviewed connectivity in the field and sampled 8 structures with highest level detected in the filter at 240MPN/100ml. All samples were above DEP standard of 14MPN/100ml for Coastal Marine Classes. The effluent of this filter discharges to the North River (Marshfield Category 5 Waters). **The Town is considering options to replace media. Fecal Coliform testing was conducted again in April 2018 and the filters appear to be releasing higher levels of fecal Coliform (240CFU/100ml) than what is entering the filters (less than 20CFU/100ml). The Town will consider bypassing the filters.**

North River Drive drainage which historically has shown elevated Fecal Coliform levels requires investigation.

3. Regulatory Review (BMP ID No. 7)

A proposal was obtained from consultant to prepare MS4 Notice of Intent due in September 2017. The estimate included preparation of Stormwater Management Plan, written IDDE Plan, additional mapping, O&M planning for facilities, educational outreach for impaired waters, public participation, and training program and all shall be completed by July 2018. (The estimated total cost is \$87,000). There is \$50,000 appropriated to accomplish a portion of the required work. **The Town delayed pursuing consultants to prepare the NOI and Management Plan last year based on the rescheduling of the permit deadline and uncertainty of the final approved scope of work. The Town will solicit proposals from consultants in May 2018.**

Construction Site Runoff Control:

1. Regulatory Review (BMP ID No. 7)

Stormwater management measures are required by subdivision regulation. The revised Water Resource Protection Bylaw approved April 2011, requires all site plan approvals and special permit applications within the WRPD to be reviewed by the Planning Board, the Special Permit Granting authority. **The WRPD now covers 5932 Acres within the Town.**

2. Permit Enforcement (BMP ID No. 8)

The Town has issued enforcement orders on the following subdivisions and or building sites to address erosion control problems during construction: **None issued.**

The following roads that have had individuals with enforcement issues related to construction site runoff:

Addressed through Conservation Agent:

**Holly Road Chestnut Hill Subdivision uncontrolled erosion from construction near wetland
46 Preston Terrace- drainage issues unresolved requires significant structures on private property
and permitting of outlet discharge in resource area.**

SWPP 180 Enterprise Drive- monitoring no major issues

SWPP 1840 Ocean St. – monitoring no major issues

SWPP Webster Street – Pole work NSTAR (EVERSOURCE) – no major issues

Addressed through Zoning Officer:

Holly Road site construction erosion issues

Addressed through DPW Engineering Division:

**Forest St. Drainage between Valley Path and Storage Tank on site leaching under capacity requires
outlet structures and easements.**

The DPW will investigate the possibility of installing drainage outfall and pursue funding in the fall.

The following developments were under construction and inspected periodically for compliance which included inspection of all erosion control measures:

1. John Sherman Estates
2. Addelaide Subdivision
3. Horseshoe Farm

Intermittent Inspection (Subdivision or Street Improvement mostly complete):

4. Market Place (Proprietors Way)
5. Indiana St. – site conditions
6. Peregrine White Drive site development
7. Hingham Ave. site development
8. White Oak Farm
9. Chestnut Hill Subdivision
10. Highland Green Elderly Housing

Other Projects requiring inspection:

Rockwood Road Ball Fields

Senior Center - new stairs at ballfield and new parking.

3. Misconnection/ Illegal Dumping (BMP ID No. 9)

Illegal Dumping was reported:

Maryland Street - paint cans and construction debris found on roadside. The person responsible was discovered and agreed to community service.

Post Construction Site Runoff Control

1. Regulatory Review (BMP ID No. 7) The DPW hired a consultant to review the Town's Stormwater efforts and compliance with NPDES Permit. A meeting was held with the Town Planner, Town Administrator, DPW Director, Engineering staff, Town Building Officers and DPW hired consultant to discuss the upcoming new NPDES permit requirements, and past practice. Based on the review conducted by the consultant, draft Stormwater Management Regulations were developed and presented to the Board of Public Works on February 6, 2012 to address site plan review for new development and exemptions. The Board adopted the new regulations August 20, 2012. **No changes made in 2017.**
2. Permit Enforcement (BMP ID No. 8)

None

Municipal Good House Keeping:

1. Improved Street sweeping (BMP ID No. 11)

The DPW swept 80 miles of roads within the Town yielding 65 CY of sediment. (funding for hiring outside vendors to sweep the entire town was cut)

A Sediment Critical area was established within the Tributary area of Bass Creek requiring additional sweeping - Ditches were cleaned by Mosquito control in this area. Catch basins were cleaned on Foster Ave. after the January Coastal storm. There was extensive flooding and erosion in the area of Brook Street due to the breach in the seawall batter boards that required cleanup.

The Town removed over 1000 CY of sediment from the streets in Brant Rock, and from other streets adjacent to the coast and spent over \$350,000 in contract services to clean up the area due to the coastal storms in January 2018 and in March of 2018.

2. Improved Catch Basin Cleaning (BMP ID No. 12) **The Marshfield Highway Department cleaned only 100 catch basins (less than 10 CY sediment) in the Town (funds unavailable) during the period (non- storm related).**
3. Household Hazardous Waste Days: (BMP ID No. 13) **The Town conducted its Household Hazardous Waste Day on September 16, 2017.**
4. The Town accepts **waste oil and paint** from May to November at the Transfer Station.
5. The Town conducts **roadside clean-up with seasonal personnel** several times a week during the summer (16 Weeks)
6. Drain Stenciling: (BMP ID No. 14) **The Town has taken no action.**
7. The Town received final approval and permit for Beneficial Use Determination (BUD) to reuse catch basin cleanings from DEP in August of 2013. The Town's Consultant sampled a pile consisting of 750CY of CBC and analysis concluded elevated EPH, and SVOC's, and lead. No CBC was disposed of, no CBC was reused as soil amendment in public area or transfer station or utility project. **There was no reuse of accumulated material in 2017/2018 reporting period.**

BMP's for Meeting TMDL:

Water Quality Testing (BMP ID No. 4)

1. Sediment was retested in April 2010 as required by DEP to support Permitting of Bass Creek Dredging Phase I . The Bass Creek which is tributary to the Green Harbor River and is heavily obstructed by vegetation and sediment. The Town obtained Permits to conduct maintenance dredging of the Bass Creek and applied and obtained a Beneficial Use Determination in 2010 to dispose of the sediment. Approximately 250 CY of sediment was removed in January 2011 which represented about 20% of the total dredging required in Phase I. The dredge sediment was combined with yard waste and composted during the summer 2011 and winter 2012. The compost was retested for metals and salinity February 2012. The amended soil from compost was used on the RTR BMP and Dredge Spoils Area (DSA) to stabilize slopes with grass in June of 2012. **Dredge spoils from the** completion of phase I were brought to the transfer station (800CY) for composting in March of 2014. The compost was tested prior to beneficial reuse. The mix will require sand and loam mix in

order to render composite to meet bud standard. A loam source and sand source was identified and used to make composite sample. The sample was analyzed and it met the bud standard. No funding was available to mix and screen the material for beneficial reuse. **The material remains stock piled.**

Background: Water quality testing was performed in the Green Harbor River. The Town received the draft report on Green Harbor River Tidal Hydraulics Study, by Applied Coastal Research and Engineering, Inc. March 2007 and draft report on Hydrology and Ecological Analysis of the Upper Green Harbor River, by Dr. David S. White & Dr. Brian L. Howe's Coastal Systems Program February 23, 2007. Louis Berger Group Inc. is the Prime Contractor. This study was funded by a Grant obtained through CZM and the Gulf of Maine Council on Marine Environment. The Tidal Hydraulics portion of the study considered the impact of altering the flow through the tide gates for the purpose of improving the water quality of a severely degraded upper Green Harbor. The water quality portion of the project involved estimate of freshwater flow and nutrient discharge from the fresh water portion of the Green Harbor River, evaluate the nutrient loading from two tributaries Bass Creek and Wharf Creek, and evaluate sediment/ porewater constituents in restricted and unrestricted wetland habitats within the Green Harbor River. The DPW helped fund the project by providing Topographical Survey of the area with one foot contour accuracy. The DPW provided contract labor to support inspection and manipulation of the tide gates. The Town has purchased the adjustable tide gate for Dyke Rd. funded through a CZM grant program (\$20,000). The Tide Gate was installed in December 2009. The gate has been adjusted open on a gradual basis to observe its effectiveness. **Note: The Town applied and received a matching grant in the amount of \$71,250 from State EOEAA to assess alternatives for reducing flooding of abutting property within Green Harbor Estuary while still maintaining water quality. See drainage project listed below, " Green Harbor Tide Gate Study".**

2. 2009-05/ARRA 604 South River Bacteria Assessment Project, Town of Marshfield South River has history of being impaired by Pathogens. The Town hired consultant CEI and NSRWA to conduct a bacteria assessment study to determine areas of high bacteria contributing to the South River, and to recommend BMP's to provide removal of TSS and bacteriological treatment. A total of 30 sites tributary to the South River were tested. Sites were prioritized and three sites were selected. BMP's were brought to 30 % design for each of those 3 sites. NSRWA conducted follow up testing in 2011. **The 2 sites at 30% design involve taking easements and interfacing with plans to expand Library. These projects are on hold.**

3. South River NPS Implementation Coastal Pollutant Remediation Grant: The Town applied and in January 2012, the Town

received a grant (\$51,980) to prepare final design for two of the BMP sites and to permit and construct one of the sites. Final Plans were prepared and the NOI was submitted and the hearing was conducted the first week in April 2012. Construction of RTR Outfall and Bio-retention area was completed in June 2012. Punch list items were completed in 2013. The Town had Plymouth County Mosquito Control clean out the blocked RTR BMP outfall drainage ditch this past winter. A hole in the outfall pipe was detected upon inspection and the vegetation planted within the bio-retention area was found damaged by heavy equipment of unknown source. **Repairs were not made last spring.**

Implementation of other BMP's. :

The DPW plans on implementing a proposed drainage improvement at the Union St. Bridge. The bridge reconstruction was completed in fall 2009. The State Highway Dept. participated in the proposed improvement by constructing the low flow bypass within the drainage system within the paved areas and limit of work during the bridge reconstruction project in the summer of 2009 at DPW's request. The DPW will be working with the Conservation Agent and NSRWA to implement the proposal. **No progress has been made on this BMP.**

Storm Water Modeling (BMP ID no. 15)

1. The Town hired Amory Engineers to design BMP in Ferry St. at Medford St. – Modeling is underway to determine impact to wetland. The drainage structures have been sized and a plan has been prepared. The Town has met with the Conservation Commission and a NHESP representative and prepared and filed a MESA Review check list for consideration of proposed drainage structures and work within an area designated as Priority Habitat. Design modifications were required and was modeling adjusted in fall of 2010 to handle additional stormwater and to change outfall location. A notice of intent will be filed in Spring of 2011. **The model was created and design was completed, however the NOI application had to be withdrawn due to potential litigation. The Town is pursuing an alternative design.**

Status of the following drainage improvement projects:

Ferry St. (Drainage from Medford St.)

Notice of Intent was prepared, submitted and withdrawn.

Several options are being considered pending results of ongoing litigation. **A settlement was reached and conditions of agreement are being addressed. The Town obtained an easement for the drainage outlet. The situation is still unresolved and getting complicated by future development proposals.**

Summer St. Drainage

Obtained partial funding (\$100,000) ATM April 2009 Part of drainage modification was completed in 2009 and 500Lf of drainage system remain to be designed, permitted and constructed. The field survey has been conducted. The design is complete. A tree hearing is required prior to submitting the NOI. Work was scheduled for 2014. **The Murdock Pond outlet structure in Damons Point Road must be repaired prior to obtaining permission to outlet Summer St. drainage into the privately owned pond. The Town is responsible for maintaining the pond outlet structure. The DPW authorized use of CH90 funds in March 2017 to complete design and permitting. The consultant has presented an alternative design. The DPW will be considering alternatives before proceeding with final design. Upon completion of permitting and if progress is made on the outlet structure, the Town will commence work on Summer St. drainage. The Capital Budget Committee did not recommend funding the repair of the outlet structure at the April 2018 Town Meeting.**

Bass Creek dredging/channel restoration

Permits were issued in October 2013 and the FAA provided \$400K to dredge the remaining portion of Bass Creek. Bids were solicited and contractor selected. Dredging commenced in February and was completed by April 4, 2014. Final site restoration is substantially complete. Major blockages were removed allowing the area upstream to drain. The water levels upstream were lowered several inches as a result of the project. This work provided significant flood mitigation for the residential area located upstream. The Airport Management and hired consultants are monitoring the salinity and condition of the creek.

In April 2013, the Town voted to purchase 9.8 acres of Marshland abutting Bass Creek for additional access point to remove sediment. The Airport was used for access to Bass Creek for dredging Phase I while it was shut down and under construction. **The fourth annual post construction report dated January 2018 was received. There are signs of Phragmites encroaching on channel in a section upstream of the runway.**

Stormwater Management Plan

The Town prepared a SWMP to reduce the sediment entering Bass Creek and submitted it to DEP as required by the permit. Upon receiving comments a final plan was revised and re-submitted prior to receiving NTP to start dredging from DEP. The revised plan dated February 10, 2014 was reviewed with The highway Foreman. There was partial compliance evident including the construction of BMP at 715 Ocean St. The plan was reissued to the Asst. Supt. of Public Works (New Position) for enforcement. **The Asst. DPW Supt. is monitoring the area.**

Reduction of Sand in Sand-Salt Mixture to Treat Roads

Several trucks were outfitted with liquid applicators to make road salt more effective and the amount of sand used was reduced.

More trucks were outfitted in 2013. A new salt shed was constructed in summer of 2013 on Parsonage St. at the highway garage to reduce amount of salt storage on Clay Pit Road. The amount of sediment removed from catch basins was reduced by 50 %. **The reduced budget and therefore the reduction of catch basin cleanings collected and reduced amount of street sweepings collected make it impossible to see trends in reduction of sediment created by the use of liquid treatment in lieu of sand for winter season. In the surf Ave and Foster Ave Area, the 2 feet higher elevation of the seawall for over 4000LF has reduced overtopping and there has been some reduction of sediment transport into the sediment critical area during moderate coastal storms. However the January and March Storms were record setting storms and significant levels of sediment was transported to the drainage system.**

Other related projects:

EPA Phase II- SW Compliance Testing and Mapping

Drainage System Mapping and GIS Drainage Layer under way Design Contract issued (\$9,500). The map is partially complete. **Direction of flow is being added to the plan.**

Future BMP

The Town appropriated \$50,000 at ATM April 2013 to meet new permit requirements and for BMP construction. Conceptual designs for six BMP sites were identified in the Bass Creek Area.

BMP no. 1 was constructed at 715 Ocean Street and it appears to have addressed the issue.

BMP no. 2 FY2017 Bass Creek Area- Storm Drain Catch Basin filters 40 of 140 catch basins – Pilot Study \$10,000 Put on hold due to funding.

Integrated Water Resource Management Plan - Phase I

The Draft of Phase I of the IWRMP Report was prepared by hired consultant and submitted to DPW in January 2013. Final comments were prepared and provided to consultant and the consultant provided recommendations for Phase II Scope of Work.

The final Report was received in October 2014. The Sewer collection system model was developed as recommended in the IWRMP. Significant WWTF pump station upgrades including the Main Lift Upgrade, Central St. Pump Station Rehab., Avon Street Pump station Rehab. and a new WWTF screening and grit removal system were constructed and placed in service.(\$6.5M)

Sewer Model Calibration was completed. Funding was approved at the ATM April 2018 to install Flow meters in three sewer pump stations to help evaluate inflow and infiltration.

Sewer Needs Assessment Kent Park and Black Mount Area

The Draft Sewer Assessment prepared by hired consultant submitted in September to the DPW in September 2012. Comments were made and the report was finalized in 2013. **There has been no further discussion to sewer Kent Park or Black Mount area.**

New Vac Truck

The request for new a Vac Truck was denied by the Capital Budget Committee in April 2018. The Town spent over

\$100,000 repairing the Vac truck in 2017. The Vac truck is operated by the Wastewater Division and used by the Highway Division when available.

Stormwater MS4 Phase II Program Permit Compliance

The DPW is under contract with Consultant to do the following: Prepare Notice of Intent for submittal to EPA within 90 days of issuance of final permit.

The new MS4 permit will be issued in July 2018 pending result of lawsuit.

The Town will seek additional proposals from consultants based

on the revised scope of work. The NOI is due in September 2018.

Online Mapping, Field Verification, and Data Management **track work and to obtain and record field data**

The DPW is implementing a new data management system to

The system will be implemented by June 2018.

The Town continues to utilize Maps Online for web based mapping with annual cost of \$11,000.

Naomi Street Drainage System Upgrade

Reconstruct 300 feet of drainage and outfall with tide gate and water quality inlet. The design is complete permitting remains. Permitting was complete and the Town hired a contractor and constructed the drainage work in the fall of 2016. **Grading, paving, and site restoration was completed in 2017. The Conservation Dept. is considering requesting a modification to the armor stone currently used at the outlet pipe end and in**

favor of soft solution for the salt marsh.

Rockwood Road Ball Fields

Upper Ball fields and proposed drainage collection system was partially completed in the fall 2017. Temporary erosion control measures were put in place. The remaining drainage will be installed in spring of 2018. The out fall is being redesigned.

Green Harbor Tide Gate Study- Grant Funded

Consultant was hired to conduct hydraulic study of tide gates to assess alternatives for reducing flooding within Green Harbor River Estuary and abutting property while maintaining water quality achieved by introducing tidal movement and salinity upstream of the Dike. (\$95,000). This work was completed in June 2017. The consultant is recommending a larger structure to allow more flow out of the estuary or an additional structure to be constructed east of the existing structure. At this April 2018 Town Meeting, the DPW requested \$60,000 to dewater the structure, inspect, conduct evaluation, and conduct preliminary design of chosen alternative. The Capital Budget Committee did not recommend the funding. The project is on hold.

Riverside Circle Sand Filter Media

Filter Media was not removed from the sand filter in 2017 due to the Vac truck being out of commission in 2017. Work to be accomplished spring of 2018.

Foster Ave Seawall Replacement with higher wall

A 1200 LF section of Foster Ave seawall was completed in October 2017 (\$4.2M State and Town funded project) which significantly reduced waves from overtopping and sediment from impacting the backshore and street drainage system. Flooding was reduced in the low lying areas along Plymouth Ave.

Brant Rock Seawall Repair

Design and Permitting was completed in April 2018 to replace and repair a 550 LF section of seawall. The seawall design includes increasing the height of seawall by 3.5 feet in Brant Rock between 328 Ocean Street and North Street. The new seawall will reduce flooding in Brant Rock esplanade and reduce the amount of sediment impacting the street drainage system in the area. The Town received a \$1.8M grant in January 2018 from the state to construct the new \$2.5M seawall.

End of Report.