TOWN OF NANTUCKET

MADAKET SEWER PROJECT
Frequently Asked Questions

Note: these questions are a compilation of questions that have been submitted to the Town and/or asked at public meetings or forums over the last several months
As of 10/11/16

GENERAL ITEMS

1. ***What is the sewer project that will come before the voters at the October 17, 2016 Special Town Meeting?***
   Article 2 of the October 17, 2016 Special Town Meeting seeks voter approval for an appropriation to fund one sewer project with two phases. Article 3 seeks voter approval to add the parcels proposed for sewer in this project to the Town Sewer District. The sewer project includes the following Needs Areas from the Comprehensive Wastewater Management Plan Update (http://www.nantucket-ma.gov/719/Sewer).

   - Phase 1 - Somerset
   - Phase 2 - Madaket and Warren's Landing

2. ***Will sewer be extended to homes west of Millie's Bridge?***
   This area was delegated as a Tight Tank District in 2015 through Board of Health Local Regulation 49.00 (http://www.nantucket-ma.gov/DocumentCenter/Home/View/11694) with approval from MassDEP due to the area being subject to active erosion and located within an established "Velocity Zone". A Velocity Zone, considered a high-hazard area prone to flooding and erosion is an area deemed by the Board of Health, Department of Public Works and MassDEP to be too unstable to construct municipal sewer.

3. ***What plans does the Town have in place to mitigate the expense for property owners who have installed Innovative Alternative septic systems?***
   The Board of Selectmen has adopted policy that will allow the Board to waive certain sewer-related fees for properties with Innovative Alternative systems installed within a certain timeframe. The Board of Health is also actively considering a policy to delay sewer connection requirements for a similar or the same timeframe and expects to adopt such a policy before the October 17, 2016 Special Town Meeting.

4. ***Does the EPA mandate that property owners remove their septic systems once connected to sewer?***
   No, EPA does not mandate removal of septic systems when sewer is available. There are, however, local requirements to abandon the septic system, which is generally accomplished by pumping out the system, cracking it and filling it with materials to completely eliminate use of the system. It is a property owner's choice whether to completely remove the system for another use on the land or to simply abandon it in place, as described.

5. ***Has the Town issued any fines or enforcement actions to property owners who have failed to meet septic system related mandates?***

Yes, to date, approximately $5,000 in fines has been assessed by the Board of Health.

6. ***How many parcels in the area to be sewered will require individual pumps in order to connect to sewer?***
   This will be identified during the design phase when a topographical survey is done and elevations are documented and evaluated. At present, no survey has been done, so this is an unknown; however, there will likely be areas where pumps will be necessary.

7. ***When was the last time Hither Creek was dredged?***
   2009.

8. ***What is the difference between a pressure sewer and gravity sewer?***
   - Gravity Sewer - A sewer pipe that is constructed with a constant down- hill slope so waste moves under its own mass-flows by gravity.
   - Low-Pressure Sewer - A small diameter sewer pipe that is constructed with the use of individual grinder pumps that help move waste through the system.

9. ***Why not wait to do this project until the water quality test results from sewering the Nantucket Harbor Shimmo area can be evaluated?***
   The Nantucket Harbor sewer project, while based on nitrogen pollution, is a totally different scenario than Madaket Harbor, so there is no comparison. Nantucket Harbor's TMDL is set at two locations, with Polpis Harbor being one and the outer Nantucket Harbor the second. Nitrogen pollution is coming from different sources and at different ratios. Both projects have independent solutions to meet the TMDL and eliminate the nitrogen pollution, so there is no comparative data.

10. ***If the Madaket sewer project is approved, when would the sewer be operational?***
    It is estimated that sewer will be operational in Madaket and Warren's Landing in approximately 2024.

11. ***Will the sewer project require expanding water service to Madaket and how can this be determined?***
    The position of Wannacomet Water is that the intrusion of salt or brackish water into private wells in the project area is not a given, but a very distinct possibility and is an issue that needs to be looked at as it could have an impact on the future extension of the water system. The Department of Public Works, Board of Health and Water Company will coordinate efforts at looking into this further. It has also been noted by the Water Company that the potential issue was delegated to the "Ram Pasture" area, which is due east of Long Pond, just west of Hummock Pond. There are no sewers for the Madaket Needs Area planned in the Ram Pasture location.

    Bob Gardner at the Water Company also stated, "As you know we have extended water to Madaket and have an appropriation to do another, and what we thought would be the last phase, extension. However, until I have a clearer picture of where the sewer is designed to run I am going to postpone that extension from this fall until the spring at the earliest." From this, it appears that there is an appropriation in place for the last phase extension with plans for coordination with the sewer.

    The Board of Health noted publicly at a Finance Committee meeting held on August 30, 2016, that there are wells in the Madaket area that are already impacted with salt water intrusion due to rising sea levels as a result of climate change. Therefore, the potential impact to wells is not specific to the sewer plan. With this knowledge, it is important for the Town Departments to coordinate efforts on this topic for this reason and not only as it may potentially relate to sewer.

WATER QUALITY ISSUES

12. **Is there a summary of what the nitrogen pollution contributions mean?**
    While numerous summaries have been written to present the results and recommendations, the science is very complex and not easily understood. The numbers and percentages refer to very specific items. What is most important to understand is that the largest locally controllable contributor to the Madaket Watershed is the

nitrogen pollution coming from septic systems at 58%, which is a very large amount. The landfill contributes 24%. Fertilizer and stormwater are 8% and 10% respectively.

13. ***Do the 2015 water quality test results for Madaket meet the Total Maximum Daily Load (TMDL)?***
    No, they did not meet the TMDL. While Station 6 (one of two stations) in Long Pond is showing improvement, the numbers are still above the established TMDL with the Pond classified as eutrophic (rich in the nutrients that support a dense plant population, the decomposition of which kills animal life by depriving it of oxygen). The Hither Creek and Long Pond stations are all above the TMDL. The 2015 Water Quality Report can be accessed here http://www.nantucket-ma.gov/DocumentCenter/Home/View/11246.

14. ***What happened with potential plans for a wastewater treatment facility at the former FAA land?***
    This option was eliminated after an engineering review resulted in the Town's Surfside Wastewater Treatment Facility being sufficiently able to accept the wastewater from Madaket and Warren's Landing. This is the highest and best use for the existing Surfside Wastewater Treatment Facility and saves the Town millions of dollars of construction and ongoing maintenance costs for a third major WWTF. The FAA land has since been purchased by the Nantucket Islands Land Bank for open space. Annual Town Meeting, April 2015, appropriated $8.8M to upgrade the existing Surfside Wastewater Treatment Facility to accept all of Madaket and Warren's Landing's wastewater. This project is currently on going.

15. ***Could we eliminate sewering and be more aggressive with other measures such as landfill mining, fertilizer reduction and stormwater management?***
    It is not reasonable to forego sewering in favor of these options. Sewering is the most definitive measure available to remove the largest, locally controllable pollution sources, which are the septic systems. The Town is and has been, aggressively working to reduce fertilizer use, manage stormwater run-off and continue with landfill mining, yet water quality results continue to exceed the TMDL. These contributions are not enough to meet the TMDL on their own.

16. ***Are there reassurances this plan will meet the TMDL?***
    The Town completed numerous, comprehensive studies with the science showing that the plan approved in the CWMP update will meet the TMDL. The Town has utilized the most up to date science and engineering to develop the project as it stands.

17. ***Is it a goal to reach 0 percent nitrogen?***
    No, the TMDL has set the percent based on the water quality standards for the water resource. It is not possible to reach 0 percent, as there are contributions, such as nitrogen from the atmosphere that is not a locally controllable source. The Clean Water Act mandates that the locally controllable sources be eliminated and/or reduced to meet the federal and state statutes.

18. ***If we meet the TMDL, do we negate those results by not reducing fertilizer and stormwater?***
    No, as the majority of the TMDL is concentrated on reducing the source of the largest load, which is septic systems.

19. **If we continue to use I/A systems west of Millie's bridge, will this cause issues with meeting the TMDL?**
    No, because the flow in the area over Millie's Bridge mostly runs towards the open ocean and not back in towards Hither Creek where it could impact overall results.

20. ***Has the septic system of every property in Madaket been inspected?***
    Yes, all properties (574) were inspected for Title 5 compliance. Of the total, 89 systems were found to be in technical failure and are awaiting confirmation of proposed sewer plan before having to proceed with any system upgrade.

21. ***If all septics were converted to I/A and we continued to mine the landfill, would that meet the TMDL?***

No, the science states that 100 percent of the wastewater must be removed to meet the TMDL and I/A systems only remove an average of 50 percent of the nitrogen they treat.

What about breeching Hither Creek-would that meet the TMDL?

No. Research and discussion with state and local officials conclude that this option is not feasible for several reasons. Hither Creek currently receives tides and flushing from inner Madaket Harbor. The water quality testing and resulting model runs took this into consideration when establishing the TMDL. With this flushing, Hither Creek water quality did not meet the TMDL requirements. The pure physics - in this case, the location of a potential breech on the open ocean of Hither Creek would not be possible because due to its location, the continually shifting sands in this area make it impossible to maintain an opening here. There are concerns for impacts to low-lying areas-Smith's Point and properties near the potential breech for flooding, etc. The environmental constraints are extensive, including difficulty in obtaining permits from regulatory agencies, including MassDEP, the Natural Heritage and Endangered Species Program, Mass Historical Commission, the Army Corps of Engineers, and Conservation Commission. Issues related to the dune habitat, the salt marsh habitat on the backside of the dunes, the shorebirds and the permitting mandates they would have to meet, not even considering the physics, make this option unfeasible.

22. ***Does the sludge or any other WWTF byproduct sent to the landfill for processing impact the water quality?***

    The total impact, including the compost, contributes 24% to the nitrogen load. Sludge, the waste that has been dewatered before leaving the WWTF and arriving at the landfill to be combined with solid waste through an intensive process for reuse, is processed at the landfill. The sludge is void of wastewater liquids, which contain the major portion of nitrogen-up to 90%. The process, which the resultant sludge goes through, is a decomposition/digestion process, which renders the resultant mulch free from public health issues. This process is under MassDEP Permit. The overall landfill contribution to the watershed is 24 percent and scenario runs completed as part of the estuary study show that completely removing the landfill-ALL contents, did NOT meet the TMDL.

23. ***Does the 60% of the nutrient load that is "not locally controllable" make it difficult to meet the TMDL?***

    No. The MEP studies completed for all embayment areas identified the TOTAL nutrient load to the resources. There are areas where contributions cannot be controlled, however, there are many areas where the loads are a direct result of land uses and the Clean Water Act mandates that these "locally controllable loads" be reduced and/or eliminated, as they are direct pollution to the water resources. The studies done resulted in the TMDLs that take into consideration that there are areas that cannot be controlled. The TMDLs are set on the "locally controllable" items, that when addressed will result in meeting the TMDL and restoring water quality.

24. ***Are birds or animals in the watershed be impacting the loads?***

    Animal contributions were evaluated in the overall MEP study and found contributions to be negligible. By and large, the biggest polluter in Madaket is septic systems with over 58% of the nitrogen contribution.

26. ***Why isn't the Madaket Marine boatyard property included in the sewer project area?*** There are several reasons for these parcels (four individual parcels that contain two bathrooms) being excluded from the sewer plan. The Town omitted these parcels from the project in 2004 due to its location from the proposed point of sewer connection (almost 2000 feet, which in today's dollars is approximately $1.4M), existing water use with two bathrooms and property usage, and a parcel that could be serviced with a tight tank. In 2013, a tight tank was approved and installed at this location. With a tight tank, these parcels present no impact to water quality in the Watershed.

ALTERNATIVE SOLUTIONS

27. ***Did the 2014 CWMP Update explore alternative on-site disposal options?***

    Yes. The 2014 CWMP Update evaluated all available alternatives that the area could support AND that would meet the established TMDLs. This was fully documented in all reports, as well as presented at multiple public outreach meetings. There is no available land in the Madaket area that could hydrogeologically support groundwater discharge within the Madaket Needs Area. There are many environmental, legal and physical constraints to the existing lands in this area. In addition, the science, which has been peer reviewed and

determined credible, drove the engineering alternatives. The science detailed that the wastewater needs to be removed from the Watershed to meet the water quality thresholds. The 2004 CWMP recommendation of a treatment facility on the former FAA land to service the Madaket area, was eliminated through engineering that determined the Town's main WWTF, with upgrades that are currently on-going, can address the Madaket area flows.

Comments have been made that there are other alternative systems used in Chesapeake Bay, but they have no bearing on Nantucket as we, as a Massachusetts community, are held to those I/A systems that hold approvals for general use from the Massachusetts Department of Environmental Protection. In addition, removal of up to 50 percent has been shown by the scientific models run to not remove enough to meet the TMDL. At present, there are no existing approved alternative systems in Massachusetts that can meet the nitrogen removal requirements to meet the TMDL. For example, the Nitrex™ System was mentioned at the Finance Committee meeting on August 30, 2016. First and foremost, the Nitrex™ is NOT approved for general use as of yet-it is currently in the testing stages, which is expected to take years before any type of state approval. This system would not work in the Madaket area due to the high groundwater conditions, which will inhibit the nitrification and denitrification process on which the nitrogen removal is based. A review of all approved alternatives was completed in 2004 and 2014 in the CWMP process.

A cost-effective analysis is also a consideration for all evaluations. The Board of Health has compiled a list of recent costs for I/A systems on Island and they range from $34,000 for an I/A retrofit (everything in the system is compliant other than separation to groundwater) to $64,000 for a new I/A system. These costs are for the installation only, and do not include landscaping, other engineering/surveying, electrical wiring, or permitting.

28. ***Why aren't all the properties in the Madaket Watershed included in the sewer plan?***
The Needs Area includes those parcels that are the largest contributors of nitrogen to the water resources and once removed will met the water quality threshold in the TMDL. This was detailed in the Massachusetts Estuaries Program (MEP) using the six sub-watersheds within the overall Madaket Watershed. The Needs Area encompasses parcels within sub-watersheds 1 and 2, Hither Creek and Madaket Ditch respectively, in Zone A. The nitrogen contribution from the other sub-watersheds was shown to be negligible and was not cost-effective to include in the sewer plan.

DEVELOPMENT CONCERNS

29. ***What is the possibility for additional development in Madaket if sewers are built?***
Madaket zoning was changed in 2009 for low-density development, as well as the enactment of more stringent Board of Health regulations. There are not many undeveloped parcels that can be more fully developed; there are likely no properties large enough to support large development such as 40Bs. Sewers do allow for the elimination of septic systems, which frees up room for possible expansion to ground cover as well as features such as pools.

30. ***What about the many "sliver" lots in Madaket that are owned by the Town - will the Town hold on to its lots?***
Based on the current zoning, there would have to be multiple "sliver lots" joined together to be able to initiate a Land Use Code change from undevelopable to developable. At present, Town has no plan to sell the lots in municipal ownership.

31. ***Has the Town updated the 2004 CWMP buildout?***
A full build-out analysis was completed as part of the CWMP Update in 2014 in order to calculate flows and loads for all Needs Areas. Please refer to Section 2, pages 2-57 and 2-71 (http://www.nantucket-ma.gov/719/Sewer). Another updated build-out was completed in 2016 by the Finance Department in order to calculate flows, secondary dwelling impacts and potential capital cost recovery options. This information is posted on the Town's webpage. Under zoning, build-out is build-out; it should not change unless the zoning does.

32. ***If sewer is installed, does more land on a lot become available to build on after the leach bed is de-commissioned?***
    No. Lot coverage remains 10% and is unchanged before and after sewering. No additional lot becomes "available".

33. ***If sewer is installed, do non-conforming but legal lots become buildable (1500 sq ft groundcover allowed)***
    No. The CWMP Update did not assign flows to any lots currently under the Massachusetts State Land Use Codes (LUC) as undevelopable. To change a LUC is not a given when sewer becomes available. There are multiple processes in place before this can happen including, but not limited to petitioning for LUC change, meeting all land use requirements, zoning, etc. The property owner would also have to petition to be included in the Town Sewer District and meet a host of other criteria.

34. ***If sewer is installed, will currently unbuildable lots will become buildable?***
    No. An unbuildable lot remains unbuildable, sewering has no impact on this. See response 33.

35. ***What is the potential for 40B developments both large and small?***
    40Bs can happen now with septics they are not dependent upon sewer.

36. ***Does any resulting increased density conflict with the approved Madaket Area Plan?***
    No. The zoning and therefore the density remains unchanged by sewer installation. Only zoning changes can change density, not sewer. The ground cover and density CURRENTLY limit the development and thus density. A property owner, under current regulations, could build up to the maximum ground cover (which is 10% in the VR District covering most of Madaket Village) with structures that do not contain many, if any, bedrooms.

37. ***Are there any major consequences of build-out not estimated or presented in the sewer plan?***
    None known at this time.

LANDFILL-RELATED ISSUES

38. ***What is the status of the landfill mining operation?***
    The landfill has been mined for the past 6 years. Each year, approximately 100,000 cubic yards of material has been removed. The removed material is separated, screened, baled and placed in the lined cell. The mining program is currently scheduled to continue for four more years. The total amount of acreage that is projected to be removed is 14 acres of the original 20 acres of historically filled area.

39. ***Will a new lined landfill cell affect water quality?***
    The Town will need to do some additional water quality testing specific to the location of a new planned cell and Long Pond to finitely determine the impact. At this time, prior to scientific evaluations, it appears that the mining is having a positive impact in Long Pond at Station 6.

40. ***What about capping the landfill?***
    At this time, mining is removing materials that potentially leach nutrients into the groundwater, which has been approved by DEP as more effective than capping.

41. ***Will the Town close the landfill?***
    At this time, the Town has no plan to close the landfill; however, over the next several years, we will be examining options regarding the future of the landfill.

42. ***Would a plan to accelerate the landfill mining, use of I/A systems, more tight tanks along Hither Creek, removal of compost at landfill and opening of Long Pond meet TMDL?***
No. The science and modeling confirm removal of septic systems with landfill mining as the solution. The recommended plan meets the TMDL, local and state regulations.

43. ***What is the status of the landfill mining per the 2011 MEP summary (http://www.nantucket-ma.gov/132/Water-Quality-Initiative), located on page 134?***
The mining program is on schedule. Six years of mining has been done at 100,000 cubic yards per year and four more years are left for a total of 1,000,000 cubic yards of fill removed. This will not remove all of the landfill. It will remove 14 of the 20 acres of historical fill.

44. ***Is there a published long-range solid waste management plan if landfill is closed and capped***?
Other than the continuation of the current landfill mining operation as described, no, not currently.

45. ***Is the new cell at the landfill going to be used for only plastic?***
The current landfill operation is for baled residuals, which do have a high percentage of plastic. The rest of the waste is recycled off island or goes through the digester where it is reduced to compost.

46. ***Does the sludge derived topsoil, compost and fertilizer contribute to the nitrogen pollution?***
The landfill overall is considered to contribute 24% to the nitrogen pollution.

FINANCING

47. ***Is the 0 percent State Revolving Fund (SRF) guaranteed?***
The Town has been approved for SRF for this project for the last two years and has reapplied for CY 2017. If this project is approved, the loan is currently virtually a guarantee.

48. ***If we do not get the zero percent loan, what will the project cost?***
Current estimates are that the project will cost approximately $44 million more over the life of the loan if we do not take advantage of the SRF.

49. ***Is the $80 million dollar cost estimate sufficient***?
Yes. The construction costs include all items below:
- Contingency for design development and bid process
- Legal fees
- Design fees
- Engineering reimbursable costs
- Payment and performance bonds
- Insurances
- Contractor general conditions and requirements
- Owners' rep or Town engineer or consultant to oversee the project
- Private road easements or takings will be fully determined during final design

50. ***Specifically, what are the project costs?***
The project costs are estimated below based on the proposed timeline for construction with Somerset proposed to start in 2017 and Madaket and Warren's Landing to follow in 2019. These costs will be further refined during the design and construction phases.

Phase 1 – Somerset (2017 estimate)	Phase 2 – Madaket and Warren's Landing (2019 estimate)
Design - $ 1,753,430	Design - $ 6,109,648
Construction - $15,780,867	Construction - $54,986,828
Total - $17,534,297	Total - $61,096,475

NOTES:
This document incorporates the following previously issued documents, which are each posted on the Town website at: http://www.nantucket-ma.gov/719/Sewer

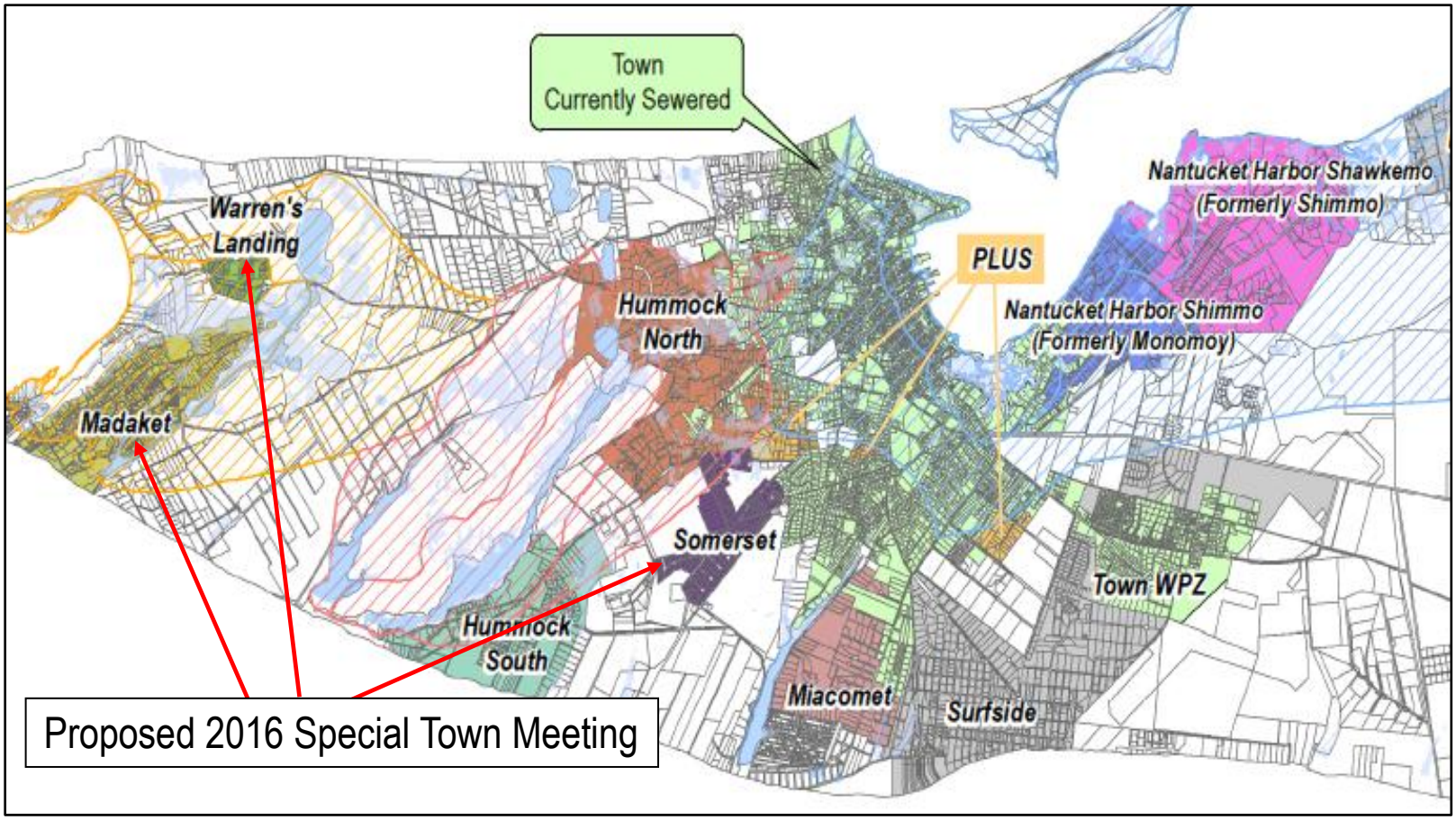
- FAQs from Madaket Public Outreach Meeting, Sponsored by Nantucket Civic League, Wednesday, July 13, 2016
- FAQs Updated August 29, 2016 Town Responses to Bill Grieder (Sponsor of October 17, 2016 Special Town Meeting Warrant Article #1)
- FAQs Updated September 14, 2016 Town Responses to August, 2016 Finance Committee Request for Information
- FAQs Updated October 2016

Please also see FAQs dated March 25, 2016 prepared for Nantucket Harbor Project public outreach for additional information (posted on Town website)

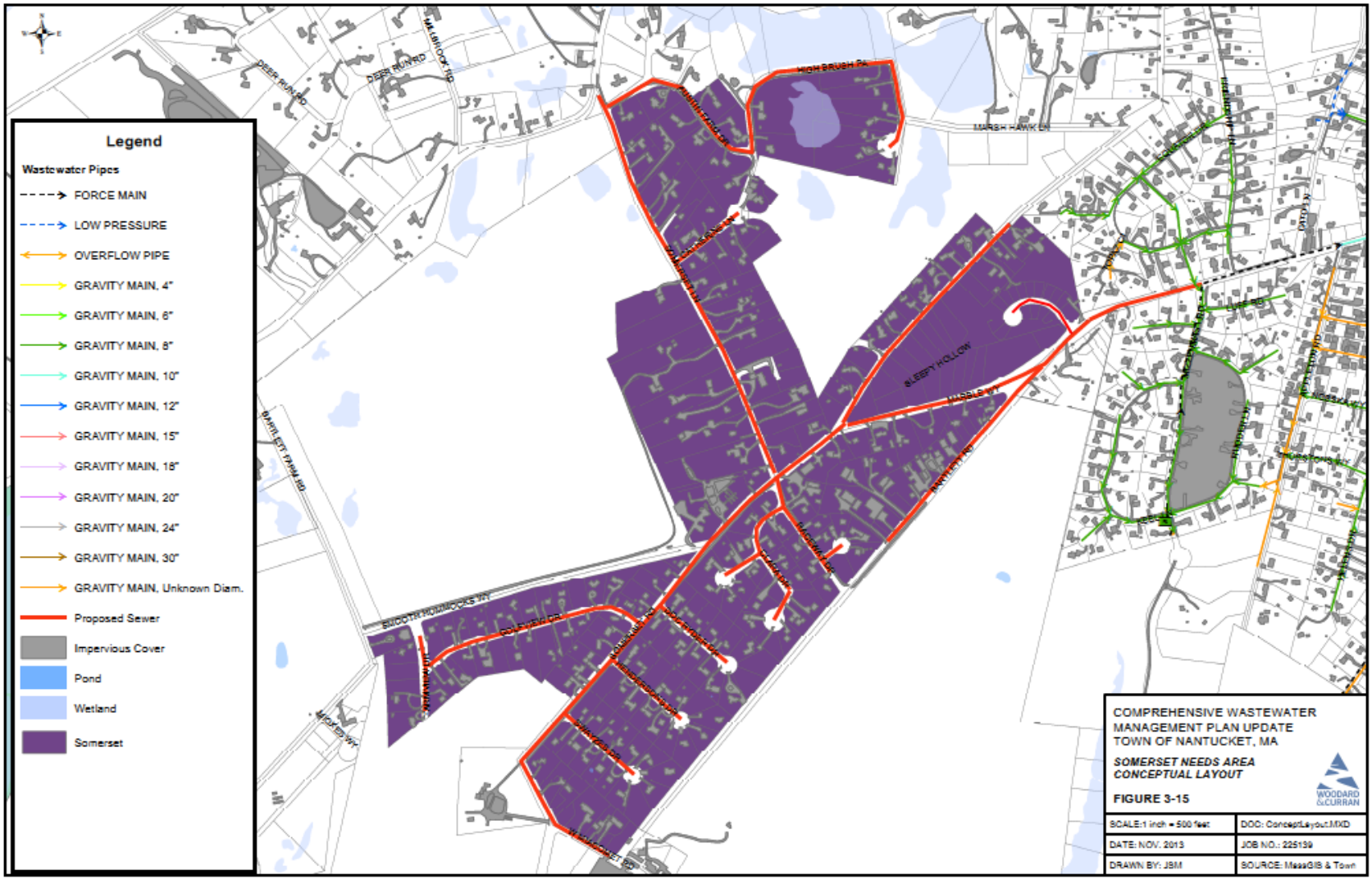
Have a question? Email: *Sewerproject@nantucket-ma-gov.com*

www.acksewer.com

Geographical Areas of Sewer Projects for Fall Special Town Meeting October 17, 2016



Phase 1 – Somerset Needs Area Conceptual Map



Phase 2 – Madaket and Warrens Landing Needs Area Conceptual Map