RANGER ENGINEERING GROUP, INC.
13 Red Roof Lane Suite 203
Salem, NH 03079
Tel: 978-208-1762
www.rangereng.com

September 30, 2021

Ms. Jacki Byerley,
Planner Andover Planning
Board Town Office
36 Bartlett Street
Andover, MA 01810

Re: 140 Haverhill Street Peer Review Response

Dear Ms. Byerley,

Please accept this letter, our revised plans, and additional documents being submitted as our response to the comments from the peer review engineer and the various town departments. Our responses are listed in bold italicized letters after each comment.

The following comments refer to the stormwater peer review:

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

    a. The proposed development will modify the existing stormwater drainage network to include subsurface detention chambers and structures to improve water quality (deep sump catch basin and hydrodynamic separator). The existing outfalls will not be altered, nor are any new outfalls proposed. HW recommends that the Applicant confirm that the existing outfalls are not causing erosion in the wetland resource areas.

    The existing outfalls do not appear to be causing erosion in the wetlands at the outlets however there is no rip rap existing at the ends of these culverts. The plans have been revised to include a new flared end outlet into the wetland with rip rap protection. The inlet on the opposite side of the wetland will also be cleaned and rip rap added.

    Additionally, the existing drain network out let is lower than the outlet that drains the wetland by at least 6" so the existing drain network will be replaced to correct this condition.

2. *Standard 2 requires that post-development runoff does not exceed pre-development runoff off-site.*

    a. The Applicant has provided Pre- and Post-Development Drainage Plans in the Stormwater Management Report (SMR). While HW follows the written descriptions of the proposed subcatchment areas, the plans do not appear to graphically show the different subcatchment areas. HW recommends that the Applicant revise the Drainage Plans for clarity.

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The existing site was modeled as one subcatchments while the developed site was one subcatchments for the ground areas and two separate subcatchments for the roof areas. The roof subcatchments have been added to the plans.

b. Section VIII of the SMR states that the 10-year precipitation depth is 5.10 inches. However, the NOAA Precipitation Frequency Table and the HydroCAD model indicate that the depth for this location is 5.00 inches. HW recommends that the Applicant clarify the precipitation depth associated with the 10-year storm event.

The precipitation depth has been adjusted to the 5.10 inches specified in the Andover SMR

c. The Applicant has provided a HydroCAD analysis to demonstrate that post-development runoff rates and volumes do not exceed those of pre-development conditions. HW has the following comments regarding the HydroCAD analysis:

i. It appears that the existing and proposed land coverage areas were not calculated directly from the plans. HW recommends that the Applicant confirm that the land areas are accurate.

The land areas have been taken directly from the plan. The subcatchments that was analyzed is smaller than the land area of the lot because much of the lot was not included in the analysis.

ii. The HydroCAD model includes 13,000 sf and 3,600 sf for proposed roof area. However, based on the plans, Building 1 has an impervious area of 13,000 sf (39,000 GSF/3 floors) and Building 2 has an impervious area of 4,590 sf (9,180 GSF/2 floors). HW recommends that the Applicant revise the calculation accordingly.

Building 2 is actually 3 floors with some of the basement space being used for utilities and lunch rooms. The 3,600 square feet represents its actual footprint.

iii. The Applicant has indicated time of concentration as 6 minutes (direct entry) for all existing and proposed subcatchments. HW agrees with this assumption.

No response required.

iv. On the plans and in the HydroCAD model, Pond 5P shows a top of chamber elevation of 83.83. It appears that the surface elevation above this chamber system ranges from approximately 90-94 feet, resulting in cover ranging from 6.17-10.17 feet. Per the StormTech requirements, the maximum cover on a SC- 310 chamber is 8 feet. HW recommends that the Applicant revisit the elevations of this chamber system to meet cover requirements.

This chamber has been moved closer to the building and raised to an invert of 87.50 which puts the top of the stone 1' below grade at the lowest elevation.

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

a. The Applicant has stated that test pits were not performed due to site layout. However,

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based on both aerial imagery and the plans, it appears that there is sufficient space in the lawn to complete preliminary test pits to confirm the estimated seasonal high ground water elevation (ESHGW) within or near the footprint of the detention systems. In addition, Section VI.B.1.f.2 of the Andover Stormwater Regulations requires an accurate determination of groundwater. HW recommends that the Applicant perform the required test pits.

Test pits were performed on September 28, 2021, and the results have been added on the existing conditions plan.

b. The Applicant has designed the underground chambers as a detention system, so no groundwater recharge is provided. As the project is considered redevelopment, this is reasonable. However, the Applicant has not conducted test pits to confirm the ESHGW beneath the detention systems. HW recommends that test pits are conducted beneath the systems and if it is determined that the detention systems are located within the water table impermeable liners are added around the subsurface systems. The concern is that groundwater will enter the system and the available storage modeled will be reduced.

The test pits indicate that the systems will be in the ground water so an impermeable 40 mil liner has been specified around the systems.

4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*

a. The Applicant has stated that the project achieves 81% TSS removal via deep sump catch basins and a hydrodynamic separator located just before the stormwater system discharges into the wetland. HW has the following comments on this calculation:

i. The Applicant has not provided a detail or manufacturer information for the hydrodynamic separator. HW recommends that the Applicant provide a detail, manufacturer information, and manufacturing calculations to take credit for the TSS removal. ***Two Jellyfish treatment systems manufactured by Contech have been added to the plan. A small unit replaces the manhole where the new catch basin will connect to the existing pipe on the Haverhill Street side of the project and a larger unit will be installed prior to the discharge location for the remainder of the project.***

ii. It appears that all new catch basins will have deep sumps. It is not clear which existing catch basins will be replaced with deep sump catch basins. HW recommends that any existing catch basin that is not a deep sump be replaced and that the plans are clarified and the TSS calculations are updated if applicable.

All catch basins are having new deep sump catch basins installed and they all have been identified on the grading and drainage plan.

CB 5 and the subsequent DMH do not include a hydrodynamic separator before discharge to the wetland. This is not required under Standard 7

(redevelopment), but HW recommends updating the TSS calculations to include a separate calculation for this area. If feasible HW encourages the Applicant to provide water quality measures at all discharge points and provide justification to the Planning Board if it is not possible.

A jellyfish filter has been added at this location so all existing and proposed pavement will flow to treatment systems.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

   a. The Applicant has noted that the proposed project is not considered a LUHPPL. The traffic assessment memo prepared by Bayside Engineering notes that daily trips would be reduced from 896 trips per day (existing) to 112 trips per day (proposed). Therefore Standard 5 is not applicable.

      No response required

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.*

   a. The site does not discharge to a critical area, therefore Standard 6 is not applicable.

      No response required

7. *Standard 7 is related to projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

   a. The proposed project is considered a redevelopment, therefore Standard 7 is applicable. Once the Applicant has addressed the other stormwater comments in this letter and raised by the Town it appears that the Applicant complies with Standard 7 and is improving existing conditions.

      No response required

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

   a. The Applicant has provided a Soil Erosion & Sediment Control Plan as well as a long-term pollution prevention plan. The Applicant has noted that a Stormwater Pollution Prevention Plan (SWPPP) is also included, but HW was unable to locate and review the SWPPP. The Planning Board may choose to require receipt of the SWPPP as a condition of approval.

      A preliminary SWPPP has been included

9. *Standard 9 requires a Long-Term Operation and Maintenance (O&M) Plan be provided.*

   a. The Applicant has provided a Stormwater Operation and Maintenance (O&M) Plan,

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which includes instructions for maintenance of stormwater control measures, an O&M budget, and an O&M log. HW has the following comments in relation to the O&M Plan provided by the Applicant:

i. Per MSH Volume 2, Chapter 2, HW recommends that the O&M Plan be revised to require catch basin inspection and maintenance four times per year.

The O and M plan has been revised with an inspection form that covers one calendar year of inspections.

ii. HW recommends that the Applicant include a simple sketch with the O&M Plan that clearly labels the various stormwater practices to be inspected.

The BMP plan has been attached to the O and M plan

iii. The Applicant refers to infiltration basins in the O&M Plan. As no infiltration basins are proposed, HW recommends clarifying as to whether this refers to the existing wetland areas, or something else.

This reference has been removed from the O and M plan

iv. Per Andover Stormwater Regulations Section VI.C.1.b.5, HW recommends that the Applicant provide a copy of the O&M Plan signed by the owner of the site.

The O and M plan has been signed by the owner of the site

10. Standard 10 requires an Illicit Discharge Compliance Statement to be provided.

a. The Applicant has stated that there are no known or suspected illicit discharges. HW recommends that the Applicant provide an Illicit Discharge Compliance Statement signed by the property owner prior to any land disturbance.

An illicit discharge statement is being submitted herewith.

11. Andover Stormwater Regulations Additional Comments

a. Section IX (Design Criteria)

i. C - Pretreatment: The Applicant must size all pretreatment practices (deep sump catch basins) to accommodate one-years' worth of sediment and debris using the calculation provided in Andover's regulations. HW recommends that the Applicant provide the required calculation. ***The sediment calculations with an area map are included as an attachment.***

ii. D – Pollutant Removal: As a redevelopment project, the design is required to remove 80% of TSS and 50% of Total Phosphorus (TP). The Applicant has not provided evidence of the hydrodynamic separator's removal rate, nor does it appear that the site achieves 80% TSS removal for all outfalls. See comments under Standard 4 for more. Furthermore, the Applicant has not calculated phosphorus removal rates. HW recommends demonstrating sufficient TP removal. ***The plan has been updated to include two Jellyfish filters as manufactured by Contech. Independent testing information outlining the results is attached. On page 17 of that study the executive***

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summary states the following.

"Median SSC and TSS removal efficiency results were 99% and 89%, respectively. Median removal efficiency was 59% for Total Phosphorus and 51% for Total Nitrogen. For Total Copper and Total Zinc, median removal efficiencies were 90% and 70%, respectively. The d50 for influent and effluent particle sizes were 82 and 3 □m, respectively."

The following comments are from the DPW review Letter

1.0 WATER COMMENTS

- Any water meter greater than 5/8 inches will need to be properly Right-Sized and the calculations should be submitted based on AWWA M22 standards to show that the existing or proposed water meter is sized properly. ***Note added to the plan on sheet 2.***

- The installation of the water meter should be installed in a location that is un-obstructed and easily accessible. ***Note added to the plan on sheet 2***

- Prior to the issuance of any utility permit, the Applicant must have their meter configuration diagram approved by the Department of Public Works. ***Note added to the plan on sheet 2***

- The applicant should apply to the DPW Office for approval of any backflow prevention device for irrigation systems, fire suppression systems, chemical injection systems or any other case which backflow prevention is required. ***Note added to the plan on sheet 2***

- All new water lines will need to be tested to the town of Andover standards, the applicant should install gate valves where the new water main is to be connected to the existing. All proposed watermain must be constructed to a depth of 5'. ***Note added to the plan on sheet 2. Valves shown on utility plan.***

- Plans should reflect any temporary water/bypass connections to buildings that will be disconnected when the watermain work is ongoing. ***See phasing plan added to the plan set for water main installation phasing.***

- Restraint joint table needs to be added to the construction detail sheet. *Comment remains to be addressed. The plan has a concrete thrust block table. DPW does not want concrete thrust blocks. DPW requests a restrained joint table rather than the thrust block table.* ***Restrained joint table added to the detail sheet.***

- Water service for Lots 1&2 should be constructed to provide redundancy. We suggest triple gating the connection on Haverhill St as well as looping the water main through

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to High St. *A 12x8 tee needs to be installed out on Haverhill Street. The old 6" main needs to be disconnected from the 12" main. With this, a new 12" gate valve needs to be installed on Haverhill Street. It is very difficult to determine what the intent is with the contour layer so prominently displayed. This should be addressed and displayed in a way that is easier to understand.* ***The utility plan has been revised and the contours turned off for clarity.***

- There should be dedicated shut offs for each building. ***Each building has its own water shut offs.***

- This plan does not show the construction of any additional hydrants. The Fire Dept should be consulted as to whether or not there is a need for additional hydrants. *DPW has attached a PDF of the hydrant detail for your use.* ***A new hydrant is shown on the interior of the property at the lot line between the new lots.***

2.0 SEWER COMMENTS

- Sewer material must be PVC SDR 35 and shown on the plans. ***Sewer pipe material is listed as being SDR 35 PVC or Cement Lined Ductile Iron in the notes on sheet 2 and on the utility plan and detail sheets.***

- Sewer easements and ownership must be properly established to account for location and responsibilities***. Sewer Easements have been shown and labeled on sheet CS 0202***

- A usage and capacity analysis shall be completed to compare existing sewer estimates against proposed. Additional I/I work may be required. *Projected flows and capacity analysis has not been performed.* ***Existing and proposed usage calculations are provided as an attachment to this letter.***

- The existing sewer line could potentially be repurposed. This will require displaying adequate capacity. It will also require a camera inspection of the line witnessed by DPW. ***The existing sewer line is a 6" VC pipe installed close to 50 years ago. The plans show replacing that pipe with a new 8" SDR 35 PVC pipe.***

- Backwater valves and cleanouts are required for all building connections. (See Health Dept comments for additional requirements). *Label on plan as backwater valves as well as cleanouts, not just cleanouts.* ***The plans and details have been labeled as backwater valve and cleanout.***

- Any proposed sewer should have an accompanying profile showing any and all utility crossings. ***A sewer profile is included on the plans.***

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- *Sewer mains proposed with 3' of cover or less are to be cement lined ductile iron. This pipe material is to be from manhole to manhole. There is to be no change of pipe material within sewer reaches.* ***Where the sewer line is proposed with less than 3'of cover, CLDI pipe has been specified.***

3.0 STORMWATER COMMENTS

- The project's stormwater management system shall comply with the Department of Environmental Protection's (DEP) Stormwater Management Policy and requirements of Town of Andover Department of Public Works Street Opening/Utility Connection Rules and Regulations. *Comment remains.* ***Note added to sheet 2. A separate stormwater review was received and addressed.***

- All storm water BMPs will be inspected by design engineers and certified that built in compliance with plans. Also need documentation including photos, field books entries, and engineer's daily reports prior to the Certificate of Occupancy. *Comment remains.* ***A note has been added to the plans on sheet 2.***

- Material of drain lines listed as PVC must be either HDPE or RCP minimum of 12" and reflected on the plans. ***Note added to the plans on sheet 2. Pipe size and materials noted on the drainage plans and details.***

- A Drain line profile is required for any proposed drainage. ***Drain profiles have been included on the plans.***

4.0 DRAINAGE COMMENTS

- Existing drainage that outlets on the site from High St must be shown on the plan. ***The drain outlets from high street have been shown on the plan.***

- Ownership as well as O&M of all storm water systems and BMPs should be clearly stated on the plans to avoid confusion in the future regarding responsibility of the storm water management facility. The Property owner whom shall be responsible for owning the system as well as inspection and maintenance schedules. *Comment remains.* ***A note has been added to sheet 2 of the plans and a separate O & M documents have been submitted.***

- Infiltration field dimensions make and model and number of units should be stated on the plans. *Comment remains.* ***The infiltrator system details have been updated to show this information.***

- Drainage calculations containing soil information, percolation rates, and

seasonal groundwater elevations should be submitted as part of the drainage system design. The following supplemental information should be submitted
  - Narrative summarizing pre/post flow conditions, system design, and results.
  - Existing sub-basins plan.
  - Design points @ limits of property during pre/post conditions.
  - Time of Concentration flow path lines depicted on the sub-basin plan.
  - Comparison table of pre & post flows.
  - Percolation or soil permeability analysis as backup to drainage design. ***This information has been submitted in the drainage report. Comments regarding the report were addressed separately above.***

- *Label is needed for proposed CB located in small parking lot that has cul-de-sac type turn around.* ***The CB and MH have been labeled***

- *Label proposed DMH's in opposite order. This will allow for a less confusing schematic should an unanticipated DMH be needed.* ***The DMH numbering has been reversed and all DMH's have been assigned a number***

5.0 GENERAL COMMENTS

- As-built plans should be submitted on Mylar (no larger than 24" by 36," a D-size print) upon completion of the project, prior to the Certificate of Occupancy. ***A note regarding this requirement has been added to the plans on sheet 2.***

- All materials will comply with Town Standards regarding street opening/utility connections. ***A note regarding this requirement has been added to the plans on sheet 2.***

- All existing and/or proposed utilities should be clearly and accurately labeled (size, material, existing/proposed, rim, invert, etc.) on the drawing, reflecting the most updated utility connections and sizing. ***The plans reflect the proper size and material for all existing and proposed utilities.***

- During construction care should be taken to maintain separation of at least ten (10) feet, horizontally from the edge of sewer services to the edge of water services. Where a horizontal separation of ten (10) feet is not practical, both services can be installed closer to each other, but the water service must be eighteen (18) inches higher than the sewer service, per dep standards. (see Massachusetts water laws, chapter 9, section 9.8) ***The plans comply with this separation requirement and a note has been added to the plan on sheet 2.***

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- Provisions for an enclosed dumpster pad and dumpster should be depicted upon the plan sets. The long term and perpetual care of the dumpster, including the emptying, and the enclosure will be the responsibility of the property owner. ***A note has been added to the plan on sheet 2***

- Any work that takes place in the Town's ROW will require both a street opening and trench permit. ***A note has been added to the plan on sheet 2***

- Applicant must schedule preconstruction meeting with the DPW/Engineering Division prior to the start of work. ***A note has been added to the plan on sheet 2***

- *Certain layers need to be turned off on Sheet 8. It is difficult to decipher what is proposed.* ***Sheet 8 has been made easier to read***

Board of Health Comments

1. The facility will include a food service area that must be licensed by the Health Division; a plan review of the food preparation area must be completed before a building permit will be issued. ***A note has been added to the plans on sheet 2.***

2. Because there will be food service operations there, an exterior grease trap will be required. ***A grease trap has been added to the plans.***

3. The engineer is reminded that the state plumbing code requires the following:
   a. All piping from the structure through the grease trap must be cast iron. ***The pipe to the grease trap is specified on the plan as 6" cast iron.***
   b. The grease trap requires a separate chamber vent be brought back to the structure, also made of cast iron. ***A vent is shown on the plan***
   c. Backwater Valves are required to be located at least 10' from the foundation; I recommend that they be located near a sewer manhole, where the required downstream cleanout can be located. ***Backwater Valves are shown on the plan***

4. The applicant must provide estimated design flows for the existing structure, as well as the new structures. ***A flow calculation sheet for existing and proposed is attached to this letter.***

5. The sewer lines serving these two new buildings, as well as the remaining building on the adjacent parcel, will be privately owned. The applicant will need to establish a

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property owners' association of some type and detail who will be responsible for maintenance of those shared lines. ***A note has been added to the plan under general notes and we suggest that this be a condition of approval.***

A list of documents that accompany this response is as follows.

1. Revised plans
2. Revised Drainage Calculations.
3. Sewage flow calculations.
4. Illicit discharge statement.
5. Long term maintenance plan.
6. Annual inspection log.
7. Jellyfish filter evaluation
8. EPA Stormwater Pollution Prevention Plan
9. Catch Basin sediment calculations plan

We look forward to discussing these revised plans at the next planning board meeting. If you have any questions before that time please do not hesitate to contact this office.

Benjamin C. Osgood, Jr., PE
Senior Engineer

140 HAVERHILL STREET, ANDOVER, MA
SEWAGE FLOW CALCULATIONS

EXISTING BUILDING

The existing doctors park building was constructed in 1975 and houses 8 individual medical office units. Based upon conversations with the previous building owner, the building was 100% occupied by several different medical practices with over 30 doctors occupying the facility.

The best fit sewer flow estimate can be found in the Massachusetts Title 5 Regulations which govern the installation of subsurface sewage disposal systems. Section 15.203 established system flows and lists Doctor's Office as having a design flow of 250 gallons per day per doctor.

For this existing facility the daily sewage flow can be calculated as follows:

Number of Doctors x 250 gallons/day. = 30 Doctors X 250 GPD = 7,500 Gallons Per Day

PROPOSED BUILDINGS

The buildings being proposed include a 39,000 square foot overnight clinic with 64 beds and a 9,180 square foot clinic for day treatment. The day treatment clinic will have 4 Doctors providing group and individual treatment sessions.

The best fit flow rate found in Title 5 for the smaller building would be for a Doctor's office at a flow rate of 250 gallons per day per doctor which equals 1000 gallons per day.

The flow rate for the larger building can be determine from flow rates found in a publication entitled Wastewater Engineering which is published by Metcalf and Eddy. This resource is the most widely used guide for the design of sewer conveyance and treatment systems.Table 3-3 establishes a rate for "Institutions other than hospitals" which is 75 gallons per bed per day plus an additional 7.5 gallons per day per employee. The facility is expected to have 40 employees.

The flow rate for the larger building can be calculated as 75 GPD x 64 bedrooms + 7.5 gallons X 40 employees = 5,100 GPD.

CONCLUSION
The proposed uses for the site will have a smaller sewage flow rate than the existing use at the site.

ILLICIT DISCHARGE COMPLIANCE STATEMENT

SITE ADDRESS: 140 Haverhill Street, Andover, MA

OWNER: Medico, LLC

PLAN REFERENCE: Site Plan 140 Haverhill Street, Assessor's Map 18 Lot 104A, Andover, MA 01810, Date: July 9, 2021, Revised to September 29, 2021, Prepared By Ranger Engineering Group, Inc.

As required by Standard 10 of the Massachusetts Stormwater Standards, I, the undersigned, being the authorized owner/responsible party of the above referenced property do hereby certify that no illicit discharges exist on the site and that the stormwater management system, as shown on the above referenced plan, does not contain or permit any illicit discharges to enter the stormwater management system.

Included with this statement are site plans, drawn to scale, that identify the location of systems for conveying stormwater on the site and show that these systems do not allow the entry of any illicit discharges into the stormwater management system. The plans also show any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater systems.

Further, I certify that the stormwater management system ass shown on the referenced plan will be maintained in accordance with the conditions of the Long-Term Pollution Prevention Plan.

NAME: _____

SIGNED: _____

DATE: _____

LONG TERM POLUTION PREVENTION PLAN
140 HAVERHILL STREET, ANDOVER, MA

As part of the development of 140 Haverhill Street, Andover, MA a stormwater system is being constructed as required by State and Local Stormwater Regulations. It is the responsibility of the property owner to properly maintain the drainage systems and structures, including drain pipes. The current property owner is Medico 140, LLC, and therefore will oversee long term maintenance of the stormwater system and will be responsible for compliance with the Long-Term Pollution Prevention Plan upon completion of the construction.

Regular maintenance is to include the following:

1. **Pavement Sweeping**
   Pavement surfaces shall be swept a minimum of twice per year, preferably just after snow melt and late in the fall.

2. **Catch Basin Sumps, Drain Manhole and Outlet Control Structures**
   Inspect quarterly for the evidence of structural damage, silt accumulation and improper function. Remove accumulated sediments and debris from catch basin sump when sump is more than 25% full, minimum annually just after snow melt.

3. **Drain Pipes**
   Inspect annually for the evidence of structural damage, silt accumulation and improper function. Clean pipes when sediment occupies more than 20% of pipe diameter.

4. **Buried Detention System - 2**
   Inspect inlet and outlet structures quarterly for damage and silt accumulation. Remove silt buildup and debris.

5. **Jellyfish Treatment Systems - 2**
   Inspect quarterly per the attached Jellyfish System Owners Manual..

6. **Graded Slopes and Rip Rap outlets**
   Inspect every spring for erosion. Repair any erosion by placing rip-rap or loam and seed. Nurtured freshly seeded areas to ensure proper germination and establishment of turf.

Each of the stormwater structures listed above is shown on a plan attached as Attachment A.

Inspections shall be performed by a qualified person with knowledge of stormwater structures and conveyance systems A report of inspections shall be submitted to the Town of Andover on an annual basis within 30 days of the end of each calendar year.

The requirement and responsibility for the inspection and maintenance of the stormwater system will continue to any subsequent owners of the property.

Current Property Owner who will be responsible for the operation, maintenance, and emergency repairs of the stormwater system.

Medico 140, LLC
Paul Kneeland, Manager
355 Middlesex Ave, Suite 7
Wilmington, MA 01887

Signature Date

CATCH BASIN	AREA (AC)	CUBIC FEET OF SEDIMENT / YR	DEPTH OF SUMP (FT)	
1	0.235	19.608	1.561	
2	0.097	8.044	0.640	
3	0.111	9.284	0.739	
4	0.057	4.723	0.376	
5	0.129	10.782	0.858	
6	0.197	16.440	1.309	
7	0.158	13.168	1.048	
8	0.645	53.739	4.279	USE 5' DIA SUMP

HAVERHILL STREET
(PUBLIC - 60' WIDE - COUNTY LAYOUT)

HIGH STREET
(PUBLIC - 66' WIDE - COUNTY LAYOUT)

CB 1
CB 2
CB 3
CB 4
CB 5
CB 6
CB 7
CB 8

CB1
CB2
CB3
CB4
CB5
CB6
CB7
CB8

BLD 1
PROP. 3 STORY
39,000 G.S.F.
TOP OF WALL
ELEV = 100.0

BLD 2 PROP.
2 STORY
9,180 G.S.F.
SILL = 102.0
BF = 91.0

LEGEND

CB# — CATCH BASIN DRAINAGE AREA

SUB-CATCHMENT BOUNDARY

NORTH

0 40' 80'

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SITE PLAN
140 HAVERHILL STREET
ANDOVER MA, 01810

CATCH BASIN DRAINAGE AREA PLAN
MEDICO 140, LLC
355 MIDDLESEX AVE, SUITE 7
WILMINGTON, MA 01887

NO.	DATE	REVISIONS	BY

PROJECT	19-152
DATE	2021-07-09
DRAWING SCALE	1"= 40'
DRAWN BY	DJO
APPROVED BY	BCO

CS9302

SHEET 1 OF 1

Z:\KP\PROJECTS\CHBC - CHANNEL BUILDING\19-152 Doctors park Andover\DESIGN_PUBLISH\OTHER\PUBLISH SHEETS\CS9302.dwg PLOTTED: 10/1/2021 2:18 PM, BY: Civil PC PLOTSTYLE: TITEnv NCS - Half Size.stb PROJECT STATUS: —