Town of Kittery
Planning Board Meeting
October 13, 2016

91 Route 236 – Major Modification to an Approved Plan – Final Review

Action: Hold a Public Hearing approve or deny plan. Owner/applicant Arenhall Corp. requests approval for a plan modification to the 2014 approved plans to construct a single, 25,200 square foot building containing a self-storage business office and storage area located at 91 Route 236 (Tax Map 28, Lot 14-1) in the Commercial (C-2) Zone. Agent is Ken Wood, Attar Engineering.

PROJECT TRACKING

REQ'D	ACTION	COMMENTS	STATUS
YES	Determination of Completeness/Acceptance	7/14/2016	GRANTED
NO	Site Visit		NOT HELD
YES	Public Hearing	8/11/2016	HELD
YES	Preliminary review and approval	8/11/2016	GRANTED
YES	Final review and approval	Scheduled for 10/13/2016	TBD
Applicant: Prior to the signing of the approved Plan any **Conditions of Approval related to the Findings of Fact along with waivers and variances (by the BOA) must be placed on the Final Plan and, when applicable, recorded at the York County Registry of Deeds. PLACE THE MAP AND LOT NUMBER IN 1/4" HIGH LETTERS AT LOWER RIGHT BORDER OF ALL PLAN SHEETS.** As per Section 16.4.4.13 - Grading/Construction Final Plan Required. - Grading or construction of roads, grading of land or lots, or construction of buildings is prohibited until the original copy of the approved final plan endorsed has been duly recorded in the York County registry of deeds when applicable.			

Background

A three story 75,600 s.f gross floor area climate controlled storage facility is planned for 91 Route 236, just west of Fernald Road. The parcel, Tax Map 28 Lot 14-1, was part of a site/subdivision (Bartlett Hill), approved August 20, 2015 and amended November 12, 2015. Several conditions of that approval will impact the development of this parcel, including an easement along the property line of 89 and 91 Route 236 that serves to provide access to the two lots.

The Board previously reviewed the application and held a public hearing on August 11th. The following review is from the 8/11 meeting, with highlights in yellow.

Staff Review

The Town's peer review engineer CMA has completed an initial review summarized in their July 1 letter, attached again for your reference. The applicant responded to some of CMA's comments in their August 1 submittal, dated July 29 which includes revised plans, review of which CMA has not finalized.

As noted in the last review notes the applicant has provided a purchase and sale agreement between the property owner, Synergy Storage Structures and Camall, LLC. The application sites both Arenhall and Camall, LLC when referencing the applicant. Staff spoke with the agent who clarified Arenhall owns Camall, LLC, however Camall, LLC will proceed with the permitting and land acquisition for this proposal. The applicant has demonstrated a stake in the property under consideration.

In addition to the CMA comments Staff has the following comments:

1. *Parking: Applicant is requesting a waiver of requirement 16.8.9.4, off street parking standards, due to the nature and intensity of the proposed development. Per Warehouse and Storage parking requirements of 1 space per 500 s.f. of gross floor area (gfa) the development incurs 151*

parking spaces (75,600/500). The applicant is requesting a modification to this standard based on applicant's experience with the proposed use (self-storage facility) and a traffic assessment prepared by Eaton Traffic Engineering. The latter recommends 0.16 spaces per 1,000 s.f. of gfa which would yield 12 spaces. Only 8 are provided. An average parking supply ratio of 0.2 spaces per 1,000 s.f. gfa is recommended in ITE's Parking Generation, 4th Edition.

The site plan states the use of the travel way around the building for parking. The Fire Chief recommends that a Fire Lane be striped in this area so that there is sufficient space in the event of a fire. When considering this and in the absence of a compelling reason why the traffic engineer's recommendation is too excessive, the proposed number of spaces should be 12. **UPDATE:** The applicant has revised the plans to include 12 parking spaces to comply with the recommendations prepared by Eaton Traffic Engineering, as well as a striped fire lane. The applicant continues to request a waiver of Title 16.8.9.4 to reduce the required parking from 151 parking spaces to 12, due to the nature and intensity of the use.

2. *Wetland: It appears from the revised plans that the small wetland located adjacent to Route 236 has been re-defined and re-delineated by the applicant's agent to have an effective square area of less than 501 s.f. making it not subject to any wetland setbacks. The applicant's initial plan along with the original site plan and subdivision plans depict the wetlands with a 25-foot setback. This is misleading since at the time of the 2013 approval there were no buildings proposed, only clearing. That is the reason why the originally approved site plan (Sheet C-2, Civil Consultants) includes 25-foot rather than 50-foot wetland setbacks, the latter being the setback requirement for principal buildings adjacent to wetlands less than an acre in size.*

   The proposed building is closer than 50 feet to the existing wetland. A new plan note #6 describes the re-assessment, and that the conditions meet the definition of a drainage ditch per 16.2.2. The change to the plan is not mentioned in the July 29 submittal letter, but it is presumed the reason for the re-assessment is to maintain the proposed building location. After reviewing the definition and the plan note description it is not clear if the definition is applied correctly. Perhaps the applicant's agent can elaborate and explain why the "drainage ditch" denoted on the plan is wider than the 12 feet referenced in the definition. **UPDATE:** At the 8/11 Planning Board meeting, the Board requested the wetland be reviewed by an independent wetland scientist to determine the wetland fits the classification of "drainage ditch". In a report dated 9/22/2016 (attached), Gary Fullerton, Sebago Technics, reviewed the wetland and concurred the wetland does not meet the town definition of drainage ditch, as defined in 16.2.2. The applicant has submitted a wetland alteration application to impact the 231 square feet of the wetland necessary to maintain a 50-foot front yard setback to accommodate the principal building. The applicant revised the plan to depict this impact.

   In the wetland alteration application, the applicant expressly states their plans to *not* fill or disturb the wetland (Wetland alteration narrative notes B, C, D and E). Rather, the alteration is to impact the wetland setback, due to construction of the development within the 50-foot wetland setback, and the mitigation is based on the square footage of the wetland that does not meet the setback.

   The applicant must pay a total of $924 in wetland alteration fees ($4/sqft. * 231 sq ft altered wetland). In addition, as part of a mitigation plan (Title 16.9.3.9), an undisturbed upland buffer zone equal in size to the impacted area (231 square feet) must be preserved adjacent to the wetland boundary, and be depicted on the final plan.

3. *Building Height:* *The proposed building height as depicted on the architectural plans prepared by JD LaGrasse & Associates is 39 feet and 4 inches where the maximum permitted in the C-2 zone is 40 feet. The pertinent definition for Height of a Building in 16.2.2 requires that the height be measure from the average grade along the original ground. Staff has estimated this to be around 45 feet (lowest levitation contours shown are 43 and the highest are 47 as depicted on sheet 2, grading & utility). The proposed elevations for the base of the building appear to be 47.9 feet.*

   The plan should be revised to conform the requirements of the definition or request a special exception as allowed under 16.3.2.11.C.2.k. This seems reasonable since the proposed use Warehousing and storage is a special exception use (16.3.2.11.C.2.f). **UPDATE:** During a discussion at the 8/11/2016 Planning Board meeting, the applicant explained the topography used in the grading and utility plan was taken from a 2013 site plan application, as referenced in General Note 1 of the Grading and Utility plan. As part of the approval, the site elevation was regraded and leveled to an approximate elevation of 48 feet. The applicant stated there is not a definition for "original ground level" as it pertains to building height, and stated the proposed development is designed around the grade as it exists today, which is a higher grade than what existed prior to the 2/11/2014 site plan approval. During a discussion at the 8/11/2016 Planning Board meeting, the Board concurred with this and agreed the proposed building height conforms with the zone standards at the existing elevation, and "original grade" is in reference to what exists at the time of application submittal

   However, the grading and utility plan has not been revised and still reflects the old topography, rather than what currently exists. The applicant needs to revise the grading plan to show existing topography in order to demonstrate conformance with building height standards.

4. *Buffer:* *As per the original subdivision plan approval and per 16.11.3.D.2 and 16.9.1.7 the rear yard setback must be maintained as a 40-foot wide buffer. Though the buffer does not preclude the removal of existing trees and replanted with appropriate vegetation that is suitable to screen incompatible use, the propose plan depicts that a portion of the 40-foot setback permanently utilized by the proposed development. The 22-foot wide travel way adjacent to the building occupies this space. The plan needs to be revised to accommodate only vegetation and/or other installations aim to perform as a buffer.* **UPDATE:** The plan has been revised to alter the dimensions of the building (from 120' x 210' to 115 'x 220'), and the reduce the width of the travel way from 22-feet to 19-feet in order to maintain all front and rear setbacks.

   As to the planting proposed in the buffer depicted on sheet 6, staff recommends increasing the amount of canopy tree type vegetation. The shrubs proposed (Forsythia and Juniper) are not suitable for performing a screen of a three story building. A mix of deciduous trees tightly spaced would be more appropriate. **UPDATE:** The landscaping plan has been revised to address this comment.

5. *Planter Strip:* *per 16.3.2.11.D.4.c Landscape Site/Improvements requires landscaping standards to "achieve attractive and sound site design, and appropriate screening of parking areas." The proposed planter strip described in a plan note on sheet 6 appears to be inadequate to achieve the intent of the provision. The proposed parking is clearly visible from the public street, and with the removal of existing trees adjacent to the common entrance the parking of the adjacent development will be visible as well. Staff recommends this area, in the vicinity of the proposed wastewater system be appropriately planted to create an effective screen. Though the existing vegetation that is preserved may function as an effective planter strip, staff recommends more*

than grass where existing trees have been removed. **UPDATE:** The revised landscaping plan identifies the existing vegetation within the buffers that will be maintained, however the only proposed vegetation added from the previous submission appears to be the two red oak trees located to the southerly side of the structure. Staff maintains the previous recommendation of additional vegetation with the intent to effectively screen the parking area and replant any removed vegetation around the stormwater treatment pond. The landscape plan needs to be revised, see condition of approval #_6.

6. *Front Yard setback: A retaining wall (not called out on the plan but depicted as a bold fat line) is proposed in the front yard setback. Staff has discussed with the Code Enforcement Officer if this type of improvement is considered a structure and subject to yard setbacks. It was determined that it was which would be consistent with past determinations.* **UPDATE:** The plan has been revised to alter the dimensions of the building (from 120' x 210' to 115' x 220'), and the reduce the width of the travel way (from 22-feet to 19-feet) in order to maintain all front and rear setbacks.

7. *100' wetland setback: The other setback issue relates to the 100-foot wetland setback along the northern portion of the parcel and the vicinity of the proposed stormwater spillway and pond. The original subdivision and site plans depict a 100-foot non-disturbance setback from the wetland in this vicinity. The proposed plans do not reflect this restriction. In order for this restriction to be changed the subdivision plan needs to be revised and recorded as an amended plan, if the Board finds the change to be appropriate. The context of the initial restriction was associated with stream and associated wetland being an important natural resource and the appropriateness as being part of the open space for the cluster subdivision behind the parcel. In the end the area was not included in the open space and since it was proposed as a wooded stormwater buffer, it was decided to maintain it has a no-disturb area.* **UPDATE:** The Board agreed to allow the stormwater treatment pond to exist within the 100-foot setback. The applicant has submitted an application to amend the original subdivision plan to remove the no-disturb area restriction on the setback and include an explanation as a plan note. This comment has been addressed.

8. *Fire Safety: The Fire Chief has made an initial review and comments include that the building must be sprinkled (condition of approval) and a fire lane provided that ensures no parking around areas of fire department connections and all egress openings.* **UPDATE:** A plan note has been added to the plan to note the building will be sprinkled and include a stand pipe on each floor. A striped fire lane is depicted on the final plan. This comment has been addressed.

9. *General comments: The proposed development, though an attractive building design, appears to be somewhat too large for the site. Considering the encroachment on the front yard with the retaining wall and rear yard with the travel way, not providing the 12 parking spaces recommended by the traffic engineer, and the extent of the tree removal to accommodate site grading and drainage, it seems that the proposed design could benefit from being down-sized slightly. Also:* **UPDATE:** All previous comments, a – h, have been addressed. Staff has the additional recommendations i – m.
    a. *In plan note 1 on site plan remove the word 'sketch'*
    b. *It seems strange that such a large building with three stories doesn't have an elevator*
    c. *A note that references who delineated the wetlands and what plan they are depicted on is appropriate (i.e. plan ref 1)*
    d. *Existing vegetation in the right-of-way should be depicted on the plan*
    e. *No capacity letter has been provided from Kittery Water District*

f. *If Board concurs with the requirement of 12 parking spaces rather than the proposed 8, 16.8.9.4.G requires one tree per 8 spaces for parking areas 10 spaces or more in size.*
g. *The final site plan needs to reiterate in a plan note the condition and expectation that a public easement burdens the lot's front yard for a future walkway to be constructed at the expense of the lot owner per the 2/20/2014 subdivision approval.*
h. *Staff has been contacted by the agent for the adjacent lot owner, Rockwell Homes, Inc., and are aware of the proposal made by these plan to modify the stormwater water easement area benefiting their lot. As mentioned staff recommends that as part of this development approval the subdivision plan for both lots be amended and recommend the applicant engages Civil Consultant to make these changes since it is likely the most efficient method.*
i. Final plan must depict an undisturbed preserved buffer zone 231 square feet in size adjacent to the wetland boundary as part of a mitigation plan for the wetland alteration
j. Revise grading and utility plan to depict "original grade" as it exists at the time of application
k. The previously approved subdivision plan has been revised as recommended to address the utility easement and the no cut / no disturb wetland setbacks. With regard to the latter, Staff recommends that the remaining area outside the limits of constructing the Stormwater Treatment Pond be restricted to a no cut / no disturb buffer. Both the site and subdivision plans would be revised to reflect this. In addition, the subdivision plan should clearly identify those areas that have been modified using typical conventions (i.e. revision cloud).
l. A plan note explaining the revisions to the no cut / no disturb area should be added.
m. Revise subdivision plan title to read "Amended Subdivision Plan"

Recommendation

The final plan application has addressed all Staff and CMA previous comments, with the exception of landscape standards, specifically in relation to the parking screening. After reviewing the final application, the Board should discuss the requested modification to the parking requirements and the special exception factors (16.6.6) that the Board will need to consider for the proposed use. If the Board feels no further information is necessary, the Board may move to approve the final plan (suggested motion provided below).

Move to approve with conditions the final site plan for owner Synergy Storage Structures, LLC, and applicant, Camall, LLC located at 91 Route 236 (Tax Map 28 Lot 14-1) in the Commercial 2 Zone, upon the review and voting, in the affirmative, on the Findings of Fact.

<After an affirmative vote, proceed to reading and voting on the Findings of Fact>

FINDINGS OF FACT **UNAPPROVED**
For 91 Route 236
Major Modification to an Approved Site Plan Review

Note: This approval by the Planning Board constitutes an agreement between the Town and the Developer incorporating the Development plan and supporting documentation, the Findings of Fact, and all waivers and/or conditions approved and required by the Planning Board.

WHEREAS: Owner/applicant Arenhall Corp. propose a single, 3-story building with a total of 75,600 square feet of gross floor area containing a self-storage business office and storage area located at 91 Route 236 (Tax Map 28, Lot 14-1) in the Commercial Zone.

Hereinafter the "Development,"

And pursuant to the Plan Review meetings conducted by the Planning Board as noted ;*{in the Plan Review Notes prepared for 10/13/2016}*

Determination of Completeness/Acceptance	GRANTED	7/14/2016
Public Hearing	HELD	8/11/2016
Preliminary review and approval	GRANTED	8/11/2016
Final review and approval	GRANTED	10/13/2016

And pursuant to the application, plans and other documents considered to be a part of the plan approval by the Planning Board in this finding consist of the following ;*{ as noted in the Plan Review Notes prepared for 10/13/2016}* (hereinafter the "Plan"):

1. Major Modification to an Approved Site Plan application, dated 6/2/2016
2. Minor Modification to an approved subdivision plan, dated 9/28/2016
3. Wetland Alteration Application, dated 9/28/2016
4. Stormwater Management Plan, Attar Engineering, Inc. dated 6/1/2016, revised 9/28/2016
5. Site Plan Amendment, Attar Engineering, Inc, dated 6/1/2016, revised 9/28/2016
6. Subdivision Plan Amendment, Civil Consultants, dated 4/18/2013, revised 9/23/2016
7. Landscaping Plan, Attar Engineering, Inc., dated 6/1/2016, revised 9/29/2016
8. Grading and Utility Plan, Attar Engineering, Inc., dated 6/1/2016, revised 9/28/2016
9. Site Details, Attar Engineering, Inc., dated 6/1/2016
10. Original Site Plan, Civil Consultants, dated 4/18/2013, revised 2/20/2014

NOW THEREFORE, based on the entire record before the Planning Board as and pursuant to the applicable standards in the Land Use and Development Code, the Planning Board makes the following factual findings as required by section **16.10.8.3.4** and as recorded below:

FINDINGS OF FACT
Action by the Planning Board must be based upon findings of fact which certify or waive compliance with all the required standards of this Code, and which certify the development meets the following requirements:

A. Development Conforms to Local Ordinances.
The proposed development conforms to a duly adopted comprehensive plan as per adopted provisions in the Town Code, zoning ordinance, subdivision regulation or ordinance, development plan or land use plan, if any. In making this determination, the municipal reviewing authority may interpret these ordinances and plans.
Finding: The proposed storage facility conforms to the ordinances of Title 16, with the exception of Title 16.8.9.4, Off-Street Parking Standards. A traffic and parking analysis prepared by Eaton Traffic Engineering to support a reduction in the required parking from 151 parking spaces to 12, due to the nature and intensity of the proposed development. The planning board has reviewed the analysis, and concurs with the findings of Eaton Traffic Engineering. Conclusion: The requirement appears to be met.
Vote of __ in favor __ against __ abstaining
B. Freshwater Wetlands Identified.
All freshwater wetlands within the project area have been identified on any maps submitted as part of the application, regardless of the size of these wetlands.
Finding:Wetlands are identified along Route 236 and to the rear and side of the property. All wetlands and wetland setbacks are depicted on the plan. Conclusion: The requirement appears to be met
Vote of __ in favor __ against __ abstaining
C. River, Stream or Brook Identified.
Any river, stream or brook within or abutting the proposed project area has been identified on any maps submitted as part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in 38 M.R.S. §480-B, Subsection 9.
Finding:A stream to the northerly portion of the property has been identified. Conclusion: The requirement appears to be met
Vote of __ in favor __ against __ abstaining
D. Water Supply Sufficient.
The proposed development has sufficient water available for the reasonably foreseeable needs of the development.
E. Municipal Water Supply Available.
The proposed development will not cause an unreasonable burden on an existing water supply, if one is to be used.
Findings:The Kittery Water District provided a letter verifying its capacity to supply the proposed development with both domestic and fire protection water service. Conclusion: The requirement appears to be met
Vote of __ in favor __ against __ abstaining
F. Sewage Disposal Adequate.
The proposed development will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services if they are utilized.

Finding:The location of a subsurface wastewater disposal system and a reserve system have been located on the plan and a completed HHE-2000 application has been submitted. Conclusion: The requirement appears to be met
Vote of _ in favor _ against _ abstaining
G. Municipal Solid Waste Disposal Available.
The proposed development will not cause an unreasonable burden on the municipality's ability to dispose of solid waste, if municipal services are to be used.
Finding:The proposed development accommodates a dumpster. Conclusion: The requirement appears to be met.
Vote of _ in favor _ against _ abstaining
H. Water Body Quality and Shoreline Protected.
Whenever situated entirely or partially within two hundred fifty (250) feet of any wetland, the proposed development will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water.
Finding:The development is not situated within 250-feet of any regulated (non-forested) wetland. Conclusion:The requirement appears to be met
Vote of _ in favor _ against _ abstaining
I. Groundwater Protected.
The proposed development will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.
Finding:As referenced in F. Sewage Disposal Adequate, the proposed development will not adversely affect the quality or quantity of groundwater. Conclusion:The requirement appears to be met
Vote of _ in favor _ against _ abstaining
J. Flood Areas Identified and Development Conditioned.
All flood-prone areas within the project area have been identified on maps submitted as part of the application based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and information presented by the applicant. If the proposed development, or any part of it, is in such an area, the applicant must determine the one hundred (100) year flood elevation and flood hazard boundaries within the project area. The proposed plan must include a condition of plan approval requiring that principal structures in the development will be constructed with their lowest floor, including the basement, at least one foot above the one hundred (100) year flood elevation.
Finding: The development is not located within a flood prone area Conclusion:The requirement is not applicable.
Vote of _ in favor _ against _ abstaining
K. Stormwater Managed.
The proposed development will provide for adequate stormwater management.

Finding:The applicant has provided a stormwater management plan resulting in adequate stormwater management. Conclusion: The requirement appears to be met.
Vote of _ in favor _ against _ abstaining
L. Erosion Controlled.
The proposed development will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results.
Finding:The proposed development conforms to Title 16.8.8, Surface Drainage, and will provide adequate erosion and sediment control measures on site. Conclusion: The requirement appears to be met.
Vote of _ in favor _ against _ abstaining
M. Traffic Managed.
The proposed development will: *1. Not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed; and* *2. Provide adequate traffic circulation, both on-site and off-site.*
Finding: A review of traffic generation and sight distances has been completed. The proposed development will create a minimal impact on highway or public road congestion. A traffic and parking analysis prepared by Eaton Traffic Engineering to support a reduction in the required parking from 151 parking spaces to 12, due to the nature and intensity of the proposed development. The planning board has reviewed the analysis, and concurs with the findings of Eaton Traffic Engineering. Conclusion:The requirement appears to be met
Vote of _ in favor _ against _ abstaining
N. Water and Air Pollution Minimized.
The proposed development will not result in undue water or air pollution. In making this determination, the following must be considered: *1. Elevation of the land above sea level and its relation to the floodplains;* *2. Nature of soils and sub-soils and their ability to adequately support waste disposal;* *3. Slope of the land and its effect on effluents;* *4. Availability of streams for disposal of effluents;* *5. Applicable state and local health and water resource rules and regulations; and* *6. Safe transportation, disposal and storage of hazardous materials.*
Finding: 1. The development is located outside of a Flood Hazard Area. 2 An competed HHE has been submitted for subsurface wastewater disposal systems 3 thru 6. Not applicable to the proposed development. Conclusion: The requirement appears to be met
Vote of _ in favor _ against _ abstaining
O. Aesthetic, Cultural and Natural Values Protected.

The proposed development will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the department of inland fisheries and wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline.

Finding: There is no significant change proposed in the use of the property that would have an undue adverse impact on aesthetic, cultural or natural values

Conclusion: The requirement appears to be met

Vote of _ in favor _ against _ abstaining

P. Developer Financially and Technically Capable.

Developer is financially and technically capable to meet the standards of this section.

Finding: The developer will provide an inspection escrow in an amount suitable to cover the costs of on-site inspection by the Peer Review Engineer to ensure the proposed development is constructed according to the approved plan.

Conclusion:The requirement appears to be met

Vote of _ in favor _ against _ abstaining

16.6.4.4 Special Exception Use Request.

B. The Planning Board will review, decide and may approve an applicant's Special Exception Use request where the proposed project requires Planning Board review as defined in Section 16.10.3.2 or is located in a Shoreland or Resource Protection Overlay Zone. The Planning Board must find the proposed project and use meets the criteria set forth in Section 16.10.8.3.4 and 16.6.6.

Finding:
The proposed use of a storage facility appears to have no adverse impact with consideration of the conditions and factors outlined in 16.6.6, including:

1. Proposed use will not prevent the orderly and reasonable use of adjacent properties or of properties in adjacent use zones;

2. Use will not prevent the orderly and reasonable use of permitted or legally established uses in the zone wherein the proposed use is to be located, or of permitted or legally established uses in adjacent use zones;

3. Safety, the health, and the welfare of the Town will not be adversely affected by the proposed use or its location; and

4. Use will be in harmony with and promote the general purposes and intent of this Code.

Conclusion:The requirement appears to be met

Vote of _ in favor _ against _ abstaining

Title 16, Chapter 9, Article III Conservation of Wetlands Including Vernal Pools

16.9.3.7 Wetlands Alteration Approval Criteria
A. In making the final determination as to whether a wetland application should be approved, the Planning Board will consider existing wetland destruction and the cumulative effect of reasonably anticipated future uses similar to the one proposed. *Preference will be given to activities that meet wetland setbacks, have a reasonable stormwater management plan (subject to Planning Board review and approval), and that dedicate easements for the purposes of maintaining the wetland and the associated drainage system. Approval to alter a wetland will not be granted for dredging or ditching solely for the purpose of draining wetlands and creating dry buildable land areas. An application for a wetlands alteration will not be approved for the purpose of creating a sedimentation or retention basin in the wetland. Increased peak runoff rates resulting from an increase in impermeable surfaces from development activities are not allowed.*
Findings: The 231 square foot wetland impact does not appear to have an adverse impact on the remaining wetland Conclusion: This requirement appears to be met.
Vote of _ in favor _ against _ abstaining
B. It is the responsibility and burden of the applicant to show that the proposed use meets the purposes of this Code and the specific standards listed below to gain Planning Board approval to alter a wetland. *The Planning Board will not approve a wetlands alteration unless the applicant provides clear and convincing evidence of compliance with the Code.*
Findings: The proposed use is a commercial storage facility and business office, which is a special exception use in the C-2 Zone. Conclusion: This requirement appears to be met.
Vote of _ in favor _ against _ abstaining
C. In evaluating the proposed activity, the Planning Board may need to acquire expert advisory opinions. *The applicant must be notified in writing, by the Town Planner at the Planning Board's request, that the applicant will bear the expenses incurred for the expert persons or agencies. The Planning Board will consider the advisory opinion, including any recommendations and conditions, provided by the Conservation Commission.*
Findings: Considering the extent of the impact, a wetland report does not appear to be warranted Conclusion: This requirement is not applicable.
Vote of _ in favor _ against _ abstaining
D. When the Planning Board finds the demonstrated public benefits of the project as proposed, or modified, clearly outweigh the detrimental environmental impacts, the Planning Board may approve such development, but not prior to granting approval of a reasonable and practicable mitigation plan, *(see Section 16.9.3.9) and not prior to the completion of all performance guaranties for the project, (see Section 16.10.8.2.2).*
Findings: Per condition of approval #4 and #7, the preservation of an undisturbed upland buffer zone adjacent to the wetland boundary equal in size to the wetland alteration (231 square feet) is depicted on the final plan. A wetland mitigation fee in the amount of $924.00

(231 sf x $4/sf) is required.

Conclusion: This requirement appears to be met.

Vote of _ in favor _ against _ abstaining

E. The applicant must submit applicable documentation that demonstrates there is no practicable alternative to the proposed alteration of the wetland. *In determining if no practicable alternative exists, the Board will consider the following:*
The proposed use:
1. Uses, manages or expands one or more other areas of the site that will avoid or reduce the wetland impact;
2. Reduces the size, scope, configuration or density of the project as proposed, thereby avoiding or reducing the wetland impact;
3. Provides alternative project designs, such as cluster development, roof gardens, bridges, etc., that avoid or lessen the wetland impact; and
4. Demonstrates that the proposed development meets or exceeds best management practices for stormwater management in the wetland areas.

Finding: Due to the building size and setback requirements, there is no practical alternative to the proposed alteration.
Conclusion: This requirement appears to be met.

Vote of _ in favor _ against _ abstaining

F. In determining if the proposed development plan affects no more wetland than is necessary the Planning Board will consider if the alternatives discussed above in subsection A of this section accomplish the following project objectives {described in 16.9.3.7.F}:
The proposed use will not:
1. *Unreasonably impair or diminish the wetland's existing capacity to absorb, store, and slowly release stormwater and surface water runoff;*
2. *Unreasonably increase the flow of surface waters through the wetland;*
3. *Result in a measurable increase in the discharge of surface waters from the wetland;*
4. *Unreasonably impair or diminish the wetland's capacity for retention and absorption of silt, organic matter, and nutrients;*
5. *Result in an unreasonable loss of important feeding, nesting, breeding or wintering habitat for wildlife or aquatic life; all crossings must be designed to provide a moist soil bed in culvert inverts and to not significantly impede the natural migration of wildlife across the filled area;*
6. *Result in a measurable increase of the existing seasonal temperature of surface waters in the wetland or surface waters discharged from the wetlands.*
7. *Result in a measurable alteration or destruction of a vernal pool.*

Findings: The 231 square foot wetland impact does not appear to have an adverse impact on the remaining wetlands or any vernal pools located on the property.

Conclusion: This requirement appears to be met.

Vote of _ in favor _ against _ abstaining

NOW THEREFORE the Kittery Planning Board adopts each of the foregoing Findings of Fact and, based on these Findings, determines that the proposed Development will have no significant detrimental impact, and the Kittery Planning Board hereby grants Final Approval, including approval for a Special Exception Use Request, Wetland Alteration Application and Minor Modification to an Approved Subdivision for the Development at the above referenced property, including any waivers granted or conditions as noted.

Waivers:

1. 16.8.9.4, Off-Street Parking Standards.

Conditions of Approval (to be depicted on the final subdivision plan):

1. No changes, erasures, modifications, or revisions may be made to the approved plan, including no further land division or additional dwelling units established prior to Planning Board-approval.
2. Applicant/contractor will follow Maine DEP *Best Management Practices* for all work associated with site and building construction to ensure adequate erosion control and slope stabilization.
3. Prior to the commencement of grading and/or construction within a building envelope, as shown on the Plan, the owner and/or developer must stake all corners of the envelope. These markers must remain in place until the Code Enforcement Officer determines construction is complete and there is no danger of damage to areas that are, per Planning Board approval, to remain undisturbed.
4. A wetland Preservation Fee per 16.9.3.9 Mitigation Plan to be paid to the Town prior to the start of construction or any earthmoving activities.
5. All Notices to Applicant contained in the Findings of Fact (dated: September 8, 2016).

Conditions of Approval (NOT to be depicted on the final plan):

6. Incorporate any plan revisions on the final plan as recommended by Staff, Planning Board, or Peer Review Engineer, and submit for Staff review prior to presentation of final Mylar. The amended subdivision plan must be submitted to Staff for review prior to recording with the York County Registry of Deeds within 90-days of approval.
7. Revise the final plan to depict an undisturbed upland buffer zone adjacent to the wetland boundary equal in size to the wetland alteration (231 square feet).
8. Prior to any earthwork and clearing, all required Maine Department of Environmental Protection permits must be approved and submitted to the Town for recording.

Notices to Applicant (NOT to be depicted on the final plan):

1. Prior to the release of the signed plans, the applicant must pay all outstanding fees associated with review, including, but not limited to, Town Attorney fees, peer review, newspaper advertisements and abutter notification.
2. State law requires all subdivision and shoreland development plans, and any plans receiving waivers or variances, be recorded at the York County Registry of Deeds within 90 days of the final approval.

3. One (1) mylar copy and one (1) paper copy of the final plan (recorded plan if applicable) and any and all related state/federal permits or legal documents that may be required, must be submitted to the Town Planning Department. Date of Planning Board approval shall be included on the final plan in the Signature Block.
4. This approval by the Town Planning Board constitutes an agreement between the Town and the Developer, incorporating the Plan and supporting documentation, the Findings of Fact, and any Conditions of Approval.
5. Where required the applicant must provide to the Town a performance guaranty and an inspection escrow to cover the construction of all improvements that will be utilized in common use or by the general public.

The Planning Board authorizes the Planning Board Chairperson, or Vice Chair, to sign the Final Plan and the Findings of Fact upon confirmation of compliance with any conditions of approval.

Vote of _ in favor _ against _ abstaining

APPROVED BY THE KITTERY PLANNING BOARD ON October 13, 2016

_____
Ann H. Grinnell, Planning Board Chair

Per Title 16.6.2.A – An aggrieved party with legal standing may appeal a final decision of the Planning Board to the York County Superior Court in accordance with Maine Rules of Civil Procedures Section 80B, within forty-five (45) days from the date the decision by the Planning Board was rendered.

ATTAR
ENGINEERING, INC
CIVIL · STRUCTURAL · MARINE

Ann Grinnell, Chairman, Planning Board
Chis DiMatteo, Town Planner
Rebecca Spitko, Assistant Town Planner
Town of Kittery
P.O. Box 808
Kittery, Maine 03904

September 28, 2016
Project No.: C022-16

Re: Kittery Storage
Kittery, Maine

Dear Chair Grinnell, Mr. DiMatteo and Ms. Spitko:

On behalf of Arenhall Corporation, I have attached a revised plan-set, a Wetlands Alteration application and a Minor Revision to an Approved Subdivision application for your review and consideration for the referenced project. The revisions also include landscaping additions and modifications to the drainage easement benefitting the adjacent parcel (Rockwell Homes/Aroma Joe's – Lot 14-2) and the stormwater buffer for the pervious approved project for this parcel (Paolucci Realty Trust). The subject 2.8 acre parcel is identified as Map 28, Lot 14-1.

Specific revisions, in response to Plan Review Notes memo of August 11, 2016 include;

1) 12 parking spaces are shown on the plan.
2) The wetland adjacent to Route 236 has been redelineated and classified by the town's peer review wetland scientist, Gary Fullerton, CWS of Sebago Technics. The proposed access drive and building encroach on a minor portion of this wetland (231 SF). Although there will be no actual filling or dredging of the wetland, the attached wetlands alteration application requests approval of this wetland setback impact.
3) The building height does not exceed the allowable height in the Commercial District from the existing contours (grades) which were approved for the Paolucci Realty Trust project, which the parcel has been mostly graded to prior to the sale to Camhall, LLC.
4) The size of the building and width of the access drives has been reduced to maintain the 40' wide, rear yard setback/buffer. Additional plant materials (3 Red Oaks) have been added to the buffer area. The Planter Strip has been revised to screen both the access drive and parking area with additional plant materials in the area adjacent to the wastewater disposal area.
5) The front yard retaining wall has been located outside of the front yard setback.
6) The 100' setback/buffer along the northern portion of the site was proposed for the Paolucci Realty Trust project. As explained at the last Planning Board presentation, stormwater treatment for Kittery Storage requires a bio-retention cell to address both the water quantity requirements of the Town and also the water quality requirements for the Maine Department of Environmental Protection under the Stormwater Law, CH 500, requirements. A Minor Modification to the approved subdivision plan and a revised plan prepared by Civil Consultants, are attached revising this buffer area.
7) Fire access lanes, as determined by the Fire Chief are shown on the plan.

1284 State Road, Eliot, ME 03903 ◇ tel (207) 439-6023 ◇ fax (207) 439-2128

8) General comments – Sketch has been removed from Note No. 1. The building contains an elevator. The wetland delineation note has been revised. A letter of capacity from KWD is attached. A note describing the public easement for a future walking path has been added. Revision to the stormwater drainage easement area benefiting the adjacent lot are also shown on the revised subdivision plan and were discussed with the design engineer, Ryan McCarthy, Tidewater Engineering and Surveying, LLC and the Owner of Rockwell Homes, Inc.

As noted in my original application, I am respectfully requesting that the Board consider one waiver request. Section 16.8.9.4, Off-Street Parking Standards requires 1 space per 500 SF. This would result in 151 required, on-site spaces. Due to the nature of the proposed business, there will only be 2 – 4 tenants on-site at one time. Twelve spaces are provided which will be more than sufficient to accommodate the peak number of tenants and the one employee/manager.

We look forward to meeting with the Board at their next available meeting.

Please contact me for any additional information or clarifications required.

Sincerely,

Kenneth A. Wood, P.E.
President

cc: Jon Hall, Arenhall Corporation

TOWN OF KITTERY

TOWN PLANNING AND DEVELOPMENT

200 Rogers Road, Kittery, ME 03904
Telephone: 207-475-1323 Fax: 207-439-6806

APPLICATION:
MINOR MODIFCATION TO AN APPROVED SITE OR SUBDIVISION PLAN

THIS REVIEW PROCESS REQUIRES APPROVAL FROM BOTH THE TOWN PLANNER AND THE CODE ENFORCEMENT OFFICER

FEE FOR REVIEW:	☑ $100.00	Amount Paid: $_____ Date: _____

PROPERTY DESCRIPTION	Parcel ID	Map	28	Lot	14-1	Zone(s): Base: Overlay: MS4	C-2 ___ YES X NO	Total Land Area	
	Physical Address	91 Route 236, Kittery, ME 03904							

PROPERTY OWNER'S INFORMATION	Name	ARENHALL CORP	Mailing Address	C/O Arenhall Corporation P.O. Box 158 Wells, ME 03904
	Phone	(207) 467-1778		
	Fax			
	Email			
APPLICANT'S AGENT INFORMATION	Name	Attar Engineering	Name of Business	
	Phone	207-439-6023	Mailing Address	1284 State Road Eliot, ME 04090
	Fax	207-439-2128		
	Email	ken@attarengineering.com		

PROJECT DESCRIPTION

Project Name: Kittery Storage Solutions

Existing Use: VACANT PARCEL

Proposed Amendment Please describe how the approved plan is to be amended. State any known areas of non-compliance to the Code and how this amendment will decrease or remove non-compliance, if applicable.

REVISIONS TO THE STORMWATER EASEMENT FOR LOT #2 (REAR PROPERTY LINE) AND 100' NON-DISTURBED STORMWATER BUFFER (NORTHERN PORTION OF PARCEL).

CERTIFICATION: To the best of my knowledge, all the information submitted on this plan amendment and with my application is true and correct.

Signature of Owner — Date: 9/28/2016

Signature of Applicant — Date: 9/28/2016

Minimal Plan Submittal Requirements

☐ 3 COPIES OF THE APPROVED SITE OR SUBDIVISION PLAN ☐ 3 COPIES OF THE AMENDED SITE OR SUBDIVISION PLAN

PRIOR TO COMMENCEMENT OF THE REVIEW PROCESS, THE TOWN PLANNER WILL DECIDE WHETHER SUFFICIENT INFORMATION HAS BEEN PROVIDED AND WILL *DETERMINE COMPLETENESS/ACCEPTANCE.*

THE APPLICANT IS RESPONSIBLE TO PRESENT A CLEAR UNDERSTANDING OF THE PLAN AMENDMENT.

A) Paper size:
- ☑ No less than 11" X 17" (reduced) or greater than 24" X 36" (full)

B) Scale size:
- ☑ Under 10 acres: no greater than 1" = 30'
- ☐ 10 + acres: 1" = 50'

C) Title block:
- ☑ Applicant's name and address
- ☑ Name of preparer of plans with professional information and professional seal
- ☑ Parcel's tax map identification (map – lot)
- ☑ Date of plan preparation

D) Clearly show and reference the area on the plan that is revised. Use lines and symbols to identify areas of change and the associated revision.

E) Describe the revision in a revision block (i.e. "moved elec. trans. box on sheet 3/12.) on the cover sheet and on the revised sheet.

F) Provide all associated reference material and or documentation that clarify and or supports the purpose of the proposed revision.

G) Revisions to the boundary, internal lots and or parcels must be made by a surveyor licensed in the State of Maine.

H) Significant revisions to the proposed site must be made by a professional engineer licensed in the State of Maine.

16.10.9.3.1 Modifications to an Approved Plan.
06.10.9.3.1 Minor Modifications.

Modifications to a Planning Board approved plan, that do not require Planning Board review per Section 16.10.3.2, may approved by the Code Enforcement Officer and Town Planner. Such approvals must be issued in writing to the developer with a copy to the Planning Board. The developer must provide a revised plan to the Town Planner and be recorded in the York County Register of Deeds when required.

SUBMITTALS THAT STAFF DEEMS SUFFICIENTLY LACKING IN CONTENT WILL BE RETURNED TO THE APPLICANT WITHOUT REVIEW.

REVIEW ACTION

____ Approved

____ Approved with conditions as follows:

_____

_____

_____

____ Denied

_____

_____

Town Planner _____ Date_____

Code Enforcement Officer _____ Date_____

TOWN OF KITTERY, MAINE
TOWN PLANNING DEPARTMENT

200 Rogers Road, Kittery, Maine 03904
PHONE: (207) 475-1323
Fax: (207) 439-6806
www.kittery.org

APPLICATION: WETLAND ALTERATION PLAN REVIEW

MITIGATION FEE TO BE DETERMINED BY THE PLANNING BOARD DURING THE REVIEW PROCESS AND PAID WITH PERFORMANCE GUARANTY.	**Application Fee Paid:** $_____ **Date:** _____ **Escrow Fee Paid:** $_____ **Date:** _____

PROPERTY DESCRIPTION	**Parcel ID**	**Map**	28	**Lot**	14-1	**Zone(s):** **Base** **Overlay** **MS4**	C - 2 / NA / __ YES X NO	**Total Land Area**	
	Physical Address	91 Route 236, Kittery, Maine 03904							

PROPERTY OWNER'S INFORMATION	**Name**	ARENHALL CORP	**Mailing Address**	C/O Arenhall Corporation P.O. Box 158 Wells, ME 03904
	Phone	(207) 467-1778		
	Fax			
	Email			
APPLICANT'S AGENT INFORMATION	**Name**	Attar Engineering	**Name of Business**	
	Phone	207-439-6023	**Mailing Address**	1284 State Road Eliot, ME 04090
	Fax	207-439-2128		
	Email	ken@attarengineering.com		

PROJECT DESCRIPTION

Existing parcel and wetlands:

Please see Site Plan Amendment 9/28/2016
Kittery Storage Solutions, 91 Route 236, Kittery, ME

Project Name Kittery Storage Solutions

Provide a brief summary of the proposed development, its impact on the existing wetlands and the proposed mitigation plan:

Please see attached narrative

I certify, to the best of my knowledge, the information provided in this application is true and correct and will not deviate from the plans submitted without notifying the Kittery Planning Department of any changes.

Applicant's Signature:	[signature]	**Owner's Signature:**	[signature]
Date:	9/28/2016	**Date:**	9/28/2016

Minimum Application Submission Requirements

☐ 15 COPIES OF THIS APPLICATION
☐ 1 PDF OF THE SITE PLAN SHOWING GPS COORDINATES
☐ 15 COPIES OF THE PLAN – 5 OF WHICH MUST BE 24"X 36"

IT IS THE RESPONSIBILITY OF THE APPLICANT TO PRESENT A CLEAR UNDERSTANDING OF THE PROJECT.

16.28.500 Submission requirements for a Request to Alter a Wetland.

Unless specifically waived by the planning board, all applications must contain the following information:

☑ A copy of the official documents showing legal interest of the applicant in the property to be affected;

A narrative describing:
☑ The purpose of the project,
☑ The type of alteration to the wetland (fill, culvert, dredge, etc.),
☑ Why there is no practicable alternative to impacting the wetland, and
☑ How the proposed activity has been designed to minimize the impact on the wetland

The block must contain:
☑ The name(s) and address(es) of the applicant or owner,
☑ The name and address of the preparer of the plan, with professional seal,
☑ name of plan, ☐ date of plan preparation,
☑ a revision number and date, if applicable,
☑ map and lot number(s) according to Kittery tax maps shown in the lower right-hand corner in bold lettering and ¼ inches high;

Site plan:
☑ minimum scale is 1" = 100' ☐ indicate the proposed activity
☑ location and size of all existing and proposed, structures, roads, parking areas, and sewage treatment facilities
☑ existing and proposed rights-of way, easements and parcels
☑ 2-foot contours ☑ wetland boundaries ☑ proposed buffers
☑ protective measures such as sediment control methods
☑ proposed boundaries and characteristics of the mitigation site, including elevation, sources of water, and proposed vegetation

Show the location (tied by measurement to identifiable structures or boundary points) of all proposed:
☑ property boundaries ☑ on site wetland boundaries
☑ offsite wetland areas significantly impacted by the project
☑ Sq Ft of Wetland areas (onsite area and offsite area, if applicable)
☑ shorelines ☐ flood plains ☐ vegetation removal
☑ drainage structures ☐ filling ☐ grading ☐ dredging,
☑ include specification for quantity of materials to be added or removed and procedures to be used

Show the direction of natural overland flow in the wetland, and in the proposed alteration area
☐ 100-year FEMA flood plain boundaries N/A
☐ number of CY, and type of material to be used as fill N/A.
☐ method of handling, and the location of fill and spoil disposal area, If dredge material is involved N/A.
☑ all owners of property within 150 feet of the proposed alteration together with their mailing addresses and map and lot designations from the assessor's records.
☑ a vicinity map utilizing a topographic map at a scale no smaller than one inch equals 600 feet <u>showing the boundary of the proposed activity</u>;

Submit:
☑ one set of photographs, taken during the growing season if possible, showing the wetland, adjacent water bodies if applicable, and the alteration area before development begins.

Drainage:
☑ Submit a hydrologic analysis in accordance with the requirements of Article IX of Chapter 16.32

Wetlands mitigation plan and report. A wetlands mitigation plan and report is required for activities which, in total, affect or fill more than 500 square feet of wetlands. Wetland Mitigation Plan And Report must contain the following:
☑ a plan at a scale of 1" = 100' with 2-foot contour intervals, existing wetland boundaries, the area of wetland to be altered, project dimensions and all offsite wetlands, being extensions of the wetland to be altered
☑ existing wetland characteristics including water depth, vegetation and fauna
☐ <u>a functional Assessment</u> conducted and prepared by a qualified wetlands scientist or a Maine Certified Soils Scientists

Maintenance Agreement:
☐ The agreement must be approved by the board and recorded in the York County Registry of deeds and must meet, or exceed, the criteria listed in subsection 16.28.500.C.3. parts d through i. N/A.

Conservation Easement:
☐ (for projects involving preservation of wetlands or adjacent uplands) a conservation easement must be conveyed or deed restriction imposed so that the parcel will remain undeveloped in perpetuity. N/A.

<u>Material not submitted in accordance with the above MUST acquire planning board approval of a Request for Waiver of the material per Section 16.28.180</u>.

Other materials the board may require are:
☐ cross-section drawings showing the nature of the construction, the depth of excavation or height of fill, if applicable, and surface water and groundwater elevations

The board may require a **narrative** describing:
☐ the specific goals in terms of particular wetland functions and values. These goals must be related to those of the original wetland;
☐ the available literature or experience to date (if any) for carrying out the mitigation work;
☐ the proposed implementation and management procedures for the wetlands work;
☐ the short-term and long-term sources of water for this wetland, including the water quality of these sources;
☐ plans for re-planting, including a description of plant species, sizes and sources of plant material, as well as how, when and where seeding or planting will take place;
☐ plans for monitoring the–wetlands work, showing capability for mid-course corrections
☐ plans, if applicable, for control of non-indigenous plant species.
☐ wetlands work involving creation, restoration and or enhancement of degraded wetlands,

Section 16.28.440-E. Abutter Notice. Owners of property within one hundred and fifty (150) feet, horizontal distance, of the proposed alteration must be notified by first class U.S. mail of any public hearing on the Request for Wetland Alteration.

The applicant must provide 2 sets of mailing labels with the submission of this request.

<u>APPLICATION SUBMITTALS SUFFICIENTLY LACKING IN CONTENT WILL NOT BE FORWARDED TO THE PLANNING BOARD.</u>

Town of Kittery, Maine – Town Planning and Development Department

Application: Wetland Alteration Addendum to the Major Modification to an Approved Plan

Narrative September 27, 2016

Property Description – Tax Map 28, Lot 14-1 at 91 Route 236, Kittery, Maine

WHEREAS: Owner, Synergy Storage Structures, LLC, and applicant, Camall, LLC. requests approval of a plan modification to the 2014 approved plan to construct a single, 25,200 square foot building containing a self-storage business office and storage area located at 91 Route 236 (Tax Map 28, Lot 14-1) in the Commercial (C-2) Zone hereinafter the "Modified Plan" that involves a wetland alteration with no filling or dredging.

NOW THEREFORE: The following are findings per Town Code Section 16.9.3.7 Wetlands Alteration Approval Criteria that substantiate that demonstrated public benefits of the project as proposed clearly outweigh possible detrimental environmental impacts including:

A. The purpose of the wetland alteration is to preserve the wetland while establishing a practical and publicly beneficial commercial building setback of 50 feet from a wetland that does not meet the Town Code definition of a "*wetland of special significance*" per section 16.9.3.1.C. Applicant proposes to delineate a wetland fill line that will include 231 square feet or 13% of a 1,832 square feet wetland, but not fill the wetland.

B. The wetland will not be altered. It will not be dredged or ditched or drained. It will be protected.

C. There is no practicable alternative to further protecting the wetland because of the building size requirements and the impracticability of designing the building in a horseshoe configuration to accommodate a non-altered and a wetland not of special significance. Further, the applicant does not want to dredge or fill the wetland.

The proposal site plan:

1. Protects the existing wetland since there will be no alteration.
2. Manages other areas of the site that will avoid or reduce the wetland impact as shown on the site plan.
3. Demonstrates the proposed development meets or exceeds best management practices for stormwater management in the wetland areas as shown on the site plan.

The proposed site use will not:

1. Unreasonably impair or diminish the wetland's existing capacity to absorb, store, and slowly release stormwater and surface water runoff since there will be no fill.
2. Unreasonably increase the flow of surface waters through the wetland since there will be limited water run off to the area.
3. Result in a measurable increase in the discharge of surface waters from the wetland since run off water will drain to other areas.

4. Unreasonably impair or diminish the wetland's capacity for retention and absorption of silt, organic matter, and nutrients since the wetland will not be altered or disturbed.
5. Result in an unreasonable loss of important feeding, nesting, breeding or wintering habitat for wildlife or aquatic life since there will be no fill, and there are no crossings to be designed to provide a moist soil bed in culvert inverts and to not significantly impede the natural migration of wildlife across the filled area;
6. Result in a measurable increase of the existing seasonal temperature of surface waters in the wetland or surface waters discharged from the wetlands since the over canopy is expected to regain.
7. Result in a measurable alteration or destruction of a vernal pool since the wetland is not a vernal pool

D. The development plan has been designed to not have any impact on the wetland; it will not be dredged or ditched or drained.

E. The demonstrated public benefits of the project as proposed, clearly outweigh the detrimental environmental impacts since the wetland will not be altered, the property land use is commercial and fronts on a major highway and the property's value will be increased for the Town's financial benefit.

F. The Planning Board may approve such development, but not prior to granting approval of a reasonable and practicable mitigation plan, (see Section 16.9.3.9) that the Planning Board may approve and comply with any performance guaranties for the project, (see Section 16.10.8.2.2).

G. The applicant is willing and proposes a reasonable and practicable mitigation plan including paying the Town Code prescribed wetland alteration fee as well as continuing protection of the existing wetland as part of the overall site water management plan per the following:

"16.9.3.9 Mitigation Plan.
B. Required Fees and Compensation.
2. For activities which in total alter or fill a five hundred and one (501) square foot to twenty thousand (20,000) square foot wetland, the mitigation plan must include the preservation of an undisturbed upland buffer zone adjacent to the wetland boundary equal in size to the area of the wetland to be altered. The undisturbed buffer zone from the wetland boundary must be placed in deed restrictions and be located and configured in a manner acceptable to the Planning Board."

Applicant shall pay a mitigation fee of $ 924.00 ($4 x 321 square feet of wetland area).

H. The applicant has provided necessary wetland and related storm water management information as part of the subject "Modified Plan" to warrant waiver of additional wetland alteration application submission information per Section 16.28.500.

End

SEBAGO
TECHNICS

September 22, 2016
11201

William A. Straub, P.E.
CMA Engineers, Inc.
3 Bow Street
Portsmouth, NH 03801

Wetlands Re-delineation – Route 236, Kittery, Maine:

Dear Bill:

I re-delineated the small wetland area at the site located off Route 236 near Fernald Road on September 8th per your request. The wetland edge appeared to be the same shape and size as originally delineated. There was some difference in the flag locations due to the inherent inaccuracy with mapping grade GPS equipment, but generally they looked the same. The Attar Engineering plan shows approximately the same wetland area, but included a small isolated upland within the limits of the wetland. It appeared to me that this area could be considered upland as it contained a few upland indicator species, specifically red oak and American beech. Typically this area would be too small to map, but I can understand why it would be mapped in this case.

As far as the drainage ditch is concerned, this wetland overflows to an excavated ditch to the north but there is no ditch to the south of the wetland draining water along Route 236. The road was built up above the wetland by several feet and there was no need to excavate a ditch along the side of the road in this area. There is an 18-inch culvert just north of the wetland which allows water from the wetland to drain under the existing access road and eventually to the stream. This ditch does not appear to be excavated in the wetland as the wetland bottom is relatively flat.

In my opinion, the drainage ditch as defined by the Kittery Land Use Development Code would only be the outlet ditch which starts at the north side of the wetland and travels to the 18-inch culvert. The drainage ditch does not appear to exist in the wetland itself.

I hope this information is helpful for your review of the project. If you have additional questions, please feel free to contact me.

Sincerely,

SEBAGO TECHNICS, INC.

Gary M. Fullerton, CSS, LSE,
Director of Natural Resources

GMF/llg

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

BERGEN & PARKINSON, LLC
Attorneys at Law JW
62 Portland Road - Suite 25
Kennebunk, ME 04043

3P

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, That **SYNERGY STORAGE STRUCTURES, LLC,** a limited liability company duly organized and existing under the laws of the State of New Hampshire, with a place of business at 401 Daniel Webster Highway, Suite 5, Merrimack, New Hampshire 03054, for consideration paid, grant to **ARENHALL CORP.**, a corporation duly organized and existing under the laws of the State of Maine, whose mailing address is Post Office Box 158, Wells, Maine 04090-0339, with **WARRANTY COVENANTS,** a certain lot or parcel of land, together with any improvements located thereon, situated on Route 236, in the Town of Kittery, County of York and State of Maine, and being more specifically bounded and described as follows:

See attached EXHIBIT A for a more specific description of the premises herein conveyed, which description is hereby incorporated herein by this reference.

Meaning and intending to convey and hereby conveying the same premises conveyed to Synergy Storage Structures, LLC by quitclaim deed with covenant from Peter J. Paul, Trustee of Paolucci Realty Trust, dated July 1, 2014 and recorded in the York County Registry of Deeds at Book 16847, Page 656.

IN WITNESS WHEREOF, Synergy Storage Structures, LLC, has caused this instrument to be executed this by its duly authorized Manager this 15 day of September, 2016.

SYNERGY STORAGE STRUCTURES, LLC

Wayne F Eldar
Witness

By: _____
Christopher Ross, Its Manager

ASSIGNMENT OF PURCHASE AND SALE AGREEMENT

CAMALL, LLC hereby assigns to **ARENHALL CORP**. all its right, title and interest in and to a certain a Purchase and Sale Agreement (Real Estate) dated March 9, 2016 between **SYNERGY STORAGE STRUCTURES, LLC** as Seller and **CAMALL, LLC** as Buyer for property described as 91 Route 236, Kittery, Maine.

Dated at Kennebunk, Maine this 1st day of September, 2016

CAMALL, LLC

By: _____

Jonathan Hall, its Manager
Thereunto duly authorized

EXHIBIT A

A certain lot or parcel of land, together with any improvements located thereon, situated on the westerly side of Route 236 in the Town of Kittery, County of York and State of Maine and being shown as "**LOT #1**" on a certain plan entitled "**SUBDIVISION OF LAND OF PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST U.S. ROUTE 236 KITTERY, MAINE** PREPARED FOR **PETER J. PAUL**", dated 18 April 2013, and most recently revised 02/20/14, and approved by Kittery Planning Board on 20 February 2014, which plan is recorded in the York County Registry of Deeds at Plan Book 366, Page 28.

Said lot is conveyed subject to the Development Conditions and Planning Board Conditions of Approval as set forth on the aforementioned plan.

Said lot is also conveyed subject to the Declaration of Conditions, Covenants and Easements for Property of Paolucci Realty Trust – Route 236 Kittery, Maine dated July 1, 2014 and recorded at the York County Registry of Deeds at Book 16847, Page 653.

Said lot is also conveyed subject to and with the benefit of the Easement from Peter J. Paul, Trustee of the Paolucci Realty Trust, to AMP Realty Holdings, LLC dated March 5, 2014 and recorded in the York County Registry of Deeds at Book 16787, Page 185. Included as part of the foregoing easement is the right of the grantor, its successors and assigns to use the portion of the easement area described in the easement deed that is located on the property conveyed herein for access and utilities as described in the easement deed, and the right of the grantee herein to use the portion of the easement area described in the easement deed that is located on Lot #2 as shown on the above plan for access and utilities as described in the easement deed.

STATE OF MAINE

COUNTY OF YORK September 1, 2016

Personally appeared the above-named **Christopher Ross, Manager of Synergy Storage Structures, LLC,** known to me or satisfactorily proven to be the person who executed the within document, and acknowledged the foregoing instrument to be his voluntary act and deed in his said capacity, and the voluntary act and deed of said limited liability company.

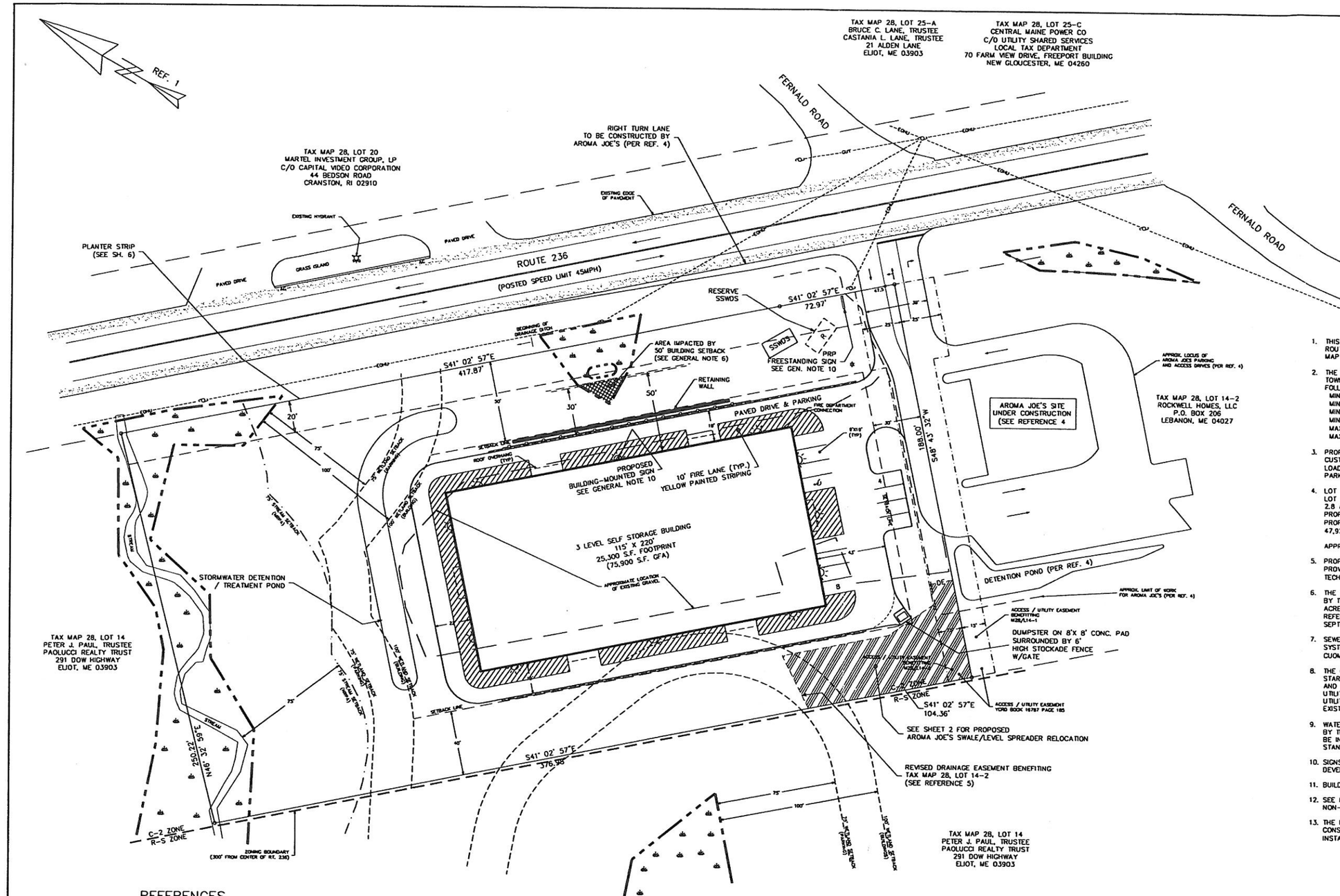
Before me,

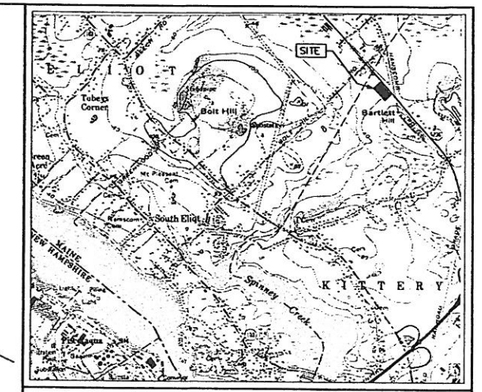
Wayne T. Adams
Notary Public

Print Name:_____

Wayne T. Adams
Notary Public, Maine
My Commission Expires Jan., 7, 2017

WETLAND ADJACENT TO RTE 236 – PHOTOGRAPH TAKEN 7/21/2016





SITE LOCATION MAP

APPROXIMATE SCALE 1" = 2000'

GENERAL NOTES

1. THIS SITE PLAN PROVIDES THE LAYOUT FOR A THREE-LEVEL SELF STORAGE BUILDING ON ROUTE 236 IN KITTERY, MAINE. THE PARCEL IS IDENTIFIED ON THE TOWN OF KITTERY TAX MAP 28 AS LOT 14-1. THE TOTAL PARCEL IS 2.8 ACRES IN AREA.
2. THE PROPOSED LOT IS IN THE COMMERCIAL (C-2) ZONE. THE LOT WILL BE SERVED BY TOWN WATER AND ON-SITE WASTEWATER. REQUIREMENTS FOR THE C-2 ZONE ARE AS FOLLOWS:
   MIN STREET FRONTAGE = 150'
   MIN LOT SIZE = 40,000 SF
   MIN FRONT YARD = 50'
   MIN SIDE AND REAR YARD = 30' OR 40' IF ABUTTING A RESIDENTIAL USE
   MAX HEIGHT = 40'
   MAX LOT COVERAGE = 50%
3. PROPOSED PARKING: 12 SPACES ARE PROVIDED, 1 OF WHICH IS ADA ACCESSIBLE (12%). CUSTOMERS WILL ALSO USE AISLE AREAS ADJACENT TO BUILDING ENTRY DOORS FOR LOADING. A WAIVER IS REQUESTED FROM THE KITTERY LUDC WAREHOUSING/STORAGE PARKING REQUIREMENT.
4. LOT COVERAGE CALCULATIONS (BUILDING AREA / LOT AREA) ARE AS FOLLOWS:
   LOT AREA:
   2.8 ACRES = 121,523 S.F. LOT
   PROPOSED BUILDINGS: 25,780 SF (21.2% OF LOT, INCLUDING 480 S.F ROOF OVERHANGS)
   PROPOSED PAVEMENT: 22,140 SF (19,940 SF ARENHALL, S.F. 2,200 AJ'S)
   47,920 SF / 121,523 SF LOT AREA = 39.4% LOT COVERAGE

   APPROX. DISTRURBED AREA = 76,000 S.F.
5. PROPERTY BOUNDARY PER REFERENCE 1. EXISTING CONDITIONS AND WETLANDS WERE PROVIDED BY REFERENCES 1 AND 2. WETLAND DELINEATION BY GARY FULLERTON (SEBAGO TECHNICS, INC.). SEE GENERAL NOTE 6.
6. THE SMALL ISOLATED WETLAND LOCATED TO THE EAST OF THE BUILDING WILL BE IMPACTED BY THE 50' BUILDING SETBACK REQUIRED FOR WETLANDS >501 S.F. AND LESS THAN 1 ACRE IN AREA. TOTAL WETLAND AREA = 1,832 S.F., IMPACTED AREA = 231 S.F. ALSO REFER TO "WETLANDS RE-DELINEATION – ROUTE 236, KITTERY MAINE" REPORT DATED SEPTEMBER 22, 2016 BY GARY FULLERTON, CSS, LSE OF SEBAGO TECHNICS, INC.
7. SEWER SERVICE SHALL BE PROVIDED BY PRIVATE SUBSURFACE WASTEWATER DISPOSAL SYSTEM (SSWDS). THE SYSTEM WAS DESIGNED BY LICENSED SITE EVALUATOR MICHAEL CUOMO (SE# 211).
8. THE CONTRACTOR MUST CONTACT DIG SAFE AND ALL LOCAL UTILITIES PRIOR TO THE START OF CONSTRUCTION TO VERIFY THE LOCATION OF EXISTING SUBSURFACE UTILITIES AND CONDITIONS. LOCATING AND PROTECTING ANY UNDERGROUND OR ABOVE GROUND UTILITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. EXISTING SUBSURFACE UTILITIES DEPICTED ON THE PLANS ARE IN APPROXIMATE LOCATIONS AND ADDITIONAL EXISTING SUBSURFACE UTILITIES NOT SHOWN ON THE PLANS MAY EXIST.
9. WATER SERVICE (DOMESTIC AND FIRE SUPPRESSION) SHALL BE PROVIDED TO THE BUILDING BY THE KITTERY WATER DISTRICT. ALL CONSTRUCTION RELATED TO WATER SERVICE SHALL BE IN ACCORDANCE WITH CURRENT KITTERY WATER DISTRICT REQUIREMENTS AND STANDARDS.
10. SIGNS SHALL MEET THE REQUIREMENTS OF SECTION 16.8.10 OF THE KITTERY LAND USE AND DEVELOPMENT CODE, AS APPLICABLE.
11. BUILDINGS SHALL BE SPRINKLERED. STANDPIPES ARE REQUIRED ON EACH FLOOR.
12. SEE REFERENCE 5 FOR REVISIONS TO THE DRAINAGE EASEMENT, STORMWATER BUFFER, AND NON-DISTURBED BUFFER.
13. THE FRONT YARD IS SUBJECT TO A PUBLIC EASEMENT TO THE TOWN OF KITTERY FOR THE CONSTRUCTION OF A PAVED WALKWAY AND ASSOCIATED STREET TREES, FURNISHED AND INSTALLED BY THE OWNER AND/OR DEVELOPER.

REFERENCES

1. "SUBDIVISION OF LAND OF PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST; U.S. ROUTE 236, KITTERY, MAINE; PREPARED FOR PETER J. PAUL". PREPARED BY CIVIL CONSULTANTS, SOUTH BERWICK, MAINE. REVISION 5 DATED 02/20/14, SHEET NUMBER "1". YCRD PLAN BOOK 366, PAGE 28.
2. "LAND OF AMP REALTY HOLDINGS, LLC AND PETER J. PAUL, TRUSTEE – ROUTE 236; TAX MAP 28, LOT 14; KITTERY, YORK COUNTY, MAINE" PREPARED BY CIVIL CONSULTANTS, SOUTH BERWICK, MAINE. REVISION 2 DATED 2/11/14, SHEET NUMBER "8". YCRD PLAN BOOK 366, PAGE 10.
3. PREVIOUSLY APPROVED SITE PLAN FOR SUBJECT PARCEL: "SUBDIVISION OF LAND OF PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST; U.S. ROUTE 236, KITTERY, MAINE; PREPARED FOR PETER J. PAUL". PREPARED BY CIVIL CONSULTANTS, SOUTH BERWICK, MAINE. REVISION 5 DATED 02/20/14, SHEET NUMBER "C2".
4. PREVIOUSLY APPROVED SITE PLAN FOR ABUTTING PARCEL (TAX MAP 28, LOT 14-2): "SITE PLAN AMENDMENT; MIXED-USE BUILDING; TAX MAP 28, LOT 14-2; 89 ROUTE 236, KITTERY, ME" PREPARED BY TIDEWATER ENGINEERING AND SURVEYING, INC., KITTERY, MAINE. PREPARED FOR ROCKWELL HOMES, LLC. SHEETS C1-C8, L1-L2 APPROVED BY THE KITTERY PLANNING BOARD ON 1/14/16.
5. "SUBDIVISION OF LAND OF PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST; U.S. ROUTE 236, KITTERY, MAINE; PREPARED FOR PETER J. PAUL". PREPARED BY CIVIL CONSULTANTS, SOUTH BERWICK, MAINE. REVISION 6 DATED 09/23/16, SHEET NUMBER "1".

APPROVED BY THE TOWN OF KITTERY
PLANNING BOARD ON:

DATE

PLANNING BOARD CHAIR DATE

SHEET INDEX

1. SITE PLAN AMENDMENT
2. GRADING & UTILITY PLAN
3. SITE DETAILS
4. SITE DETAILS
5. LIGHTING PLAN
6. LANDSCAPING PLAN
7. EXISTING APPROVED SITE PLAN

GRAPHIC SCALE

30 0 30 60 90 (FEET)

OWNER:
ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

APPLICANT:
ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

NO.	DESCRIPTION	DATE
C.	TOWN REVIEW REVISIONS	09/28/16
B.	REVISED BUILDING AREA.	08/11/16
A.	TOWN REVIEW REVISIONS.	07/29/16

REVISIONS

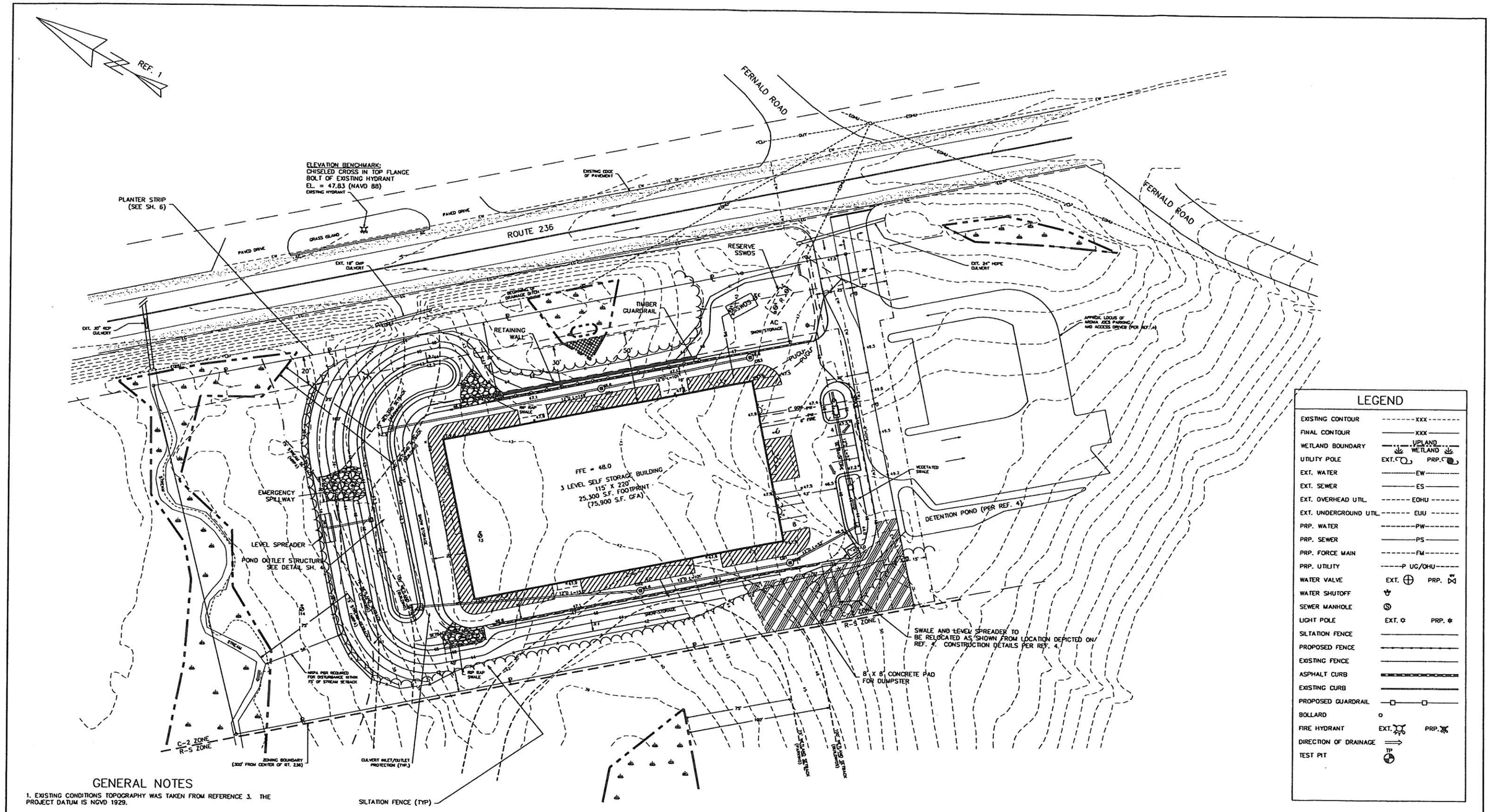
SITE PLAN AMENDMENT
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL ◆ STRUCTURAL ◆ MARINE
1284 STATE ROAD – ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1"= 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 06/01/16		REVISION : DATE C : 09/28/16
JOB NO: C022-16	FILE: KITTERY SELF STORAGE	SHEET 1

TAX MAP 28 LOT 14-1



LEGEND

EXISTING CONTOUR	XXX
FINAL CONTOUR	XXX
WETLAND BOUNDARY	UPLAND / WETLAND
UTILITY POLE	EXT. / PRP.
EXT. WATER	EW
EXT. SEWER	ES
EXT. OVERHEAD UTIL.	EOHU
EXT. UNDERGROUND UTIL.	EUU
PRP. WATER	PW
PRP. SEWER	PS
PRP. FORCE MAIN	FM
PRP. UTILITY	P UG/OHU
WATER VALVE	EXT. / PRP.
WATER SHUTOFF	
SEWER MANHOLE	
LIGHT POLE	EXT. / PRP.
SILTATION FENCE	
PROPOSED FENCE	
EXISTING FENCE	
ASPHALT CURB	
EXISTING CURB	
PROPOSED GUARDRAIL	
BOLLARD	
FIRE HYDRANT	EXT. / PRP.
DIRECTION OF DRAINAGE	
TEST PIT	TP

GENERAL NOTES

1. EXISTING CONDITIONS TOPOGRAPHY WAS TAKEN FROM REFERENCE 3. THE PROJECT DATUM IS NGVD 1929.

2. ALL STORM DRAINS SHALL BE ADS N-12 (HDPE) OR APPROVED EQUAL (UNLESS NOTED OTHERWISE). PROPER TRENCHING AND BACKFILLING ARE VITAL TO THE LONG TERM PERFORMANCE AND DURABILITY OF HDPE CULVERT INSTALLATIONS. SEE HDPE CULVERT TRENCH DETAIL.

3. 6" WATER MAINS SHALL BE DUCTILE IRON OR HDPE. 2" WATER SERVICES SHALL BE CTS POLYETHYLENE. ALL OTHER VALVES, FITTINGS AND CONNECTIONS SHALL MEET CURRENT KITTERY WATER DISTRICT (KWD) STANDARDS. COORDINATION WITH KWD IS NECESSARY PRIOR TO CONSTRUCTION TO DETERMINE FINAL PIPE TYPES AND INSTALLATION SPECIFICATIONS. ALL WATER LINES SHALL BE TESTED AND DISINFECTED IN ACCORDANCE WITH CURRENT KWD STANDARDS.

4. A MINIMUM OF 5.0' OF COVER SHALL BE MAINTAINED OVER ALL WATER LINES.

5. PROPOSED OVERHEAD/UNDERGROUND UTILITIES ARE APPROXIMATELY LOCATED. CONTRACTOR SHALL COORDINATE WITH CENTRAL MAINE POWER PRIOR TO CONSTRUCTION.

6. NO DISTURBANCE IS ALLOWED OUTSIDE THE DEPICTED CLEARING LIMITS (PROPOSED TREELINE).

DRAINAGE SCHEDULE

CB 1 RIM=46.6 INV IN=43.7 INV OUT=43.6	CB 2 RIM=46.6 INV IN=43.1 INV OUT=43.0
CB 3 RIM=46.6 INV IN=43.7 INV OUT=43.6	CB 4 RIM=46.6 INV IN=43.1 INV OUT=43.0

GRAPHIC SCALE

30 0 30 60 90 (FEET)

NO.	DESCRIPTION	DATE
B.	TOWN REVIEW REVISIONS.	09/28/16
A.	TOWN REVIEW REVISIONS.	7/29/16

REVISIONS

GRADING & UTILITY PLAN
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL ◆ STRUCTURAL ◆ MARINE
1284 STATE ROAD – ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1"= 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 6/1/16		REVISION : DATE B : 09/28/16
JOB NO: C022-16	FILE: KITTERY SELF STORAGE	SHEET 2

TAX MAP 28 LOT 14-1

EROSION & SEDIMENTATION CONTROL NOTES

1. SILTATION FENCE OR HAY BALE BARRIERS WILL BE INSTALLED DOWNSLOPE OF ALL STRIPPING OR CONSTRUCTION OPERATIONS. A DOUBLE SILT FENCE BARRIER SHALL BE INSTALLED DOWNSLOPE OF ANY SOIL MATERIAL STOCKPILES. SILT FENCES SHALL BE INSPECTED AFTER EACH RAIN EVENT AND DAILY DURING PROLONGED RAIN. SILT AND SOIL PARTICLES ACCUMULATING BEHIND THE FENCE SHALL BE REMOVED AFTER EACH SIGNIFICANT RAIN EVENT AND IN NO INSTANCE SHOULD ACCUMULATION EXCEED 1/2 THE HEIGHT OF THE FENCE. TORN OR DAMAGED AREAS SHALL BE REPAIRED.

2. TEMPORARY AND PERMANENT VEGETATION AND MULCHING IS AN INTEGRAL COMPONENT OF THE EROSION AND SEDIMENTATION CONTROL PLAN. ALL AREAS SHALL BE INSPECTED AND MAINTAINED UNTIL THE DESIRED VEGETATIVE COVER IS ESTABLISHED. THESE CONTROL MEASURES ARE ESSENTIAL TO EROSION PREVENTION AND ALSO REDUCE COSTLY REWORK OF GRADED AND SHAPED AREAS.

3. SEEDING, FERTILIZER AND LIME RATES AND TIME OF APPLICATION WILL BE DEPENDENT ON SOIL REQUIREMENTS. TEMPORARY VEGETATION SHALL BE MAINTAINED IN THESE AREAS UNTIL PERMANENT SEEDING IS APPLIED. ADDITIONALLY, EROSION AND SEDIMENTATION MEASURES SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.

4. ALL LAWN AREA, OUTER POND SIDE SLOPES AND SWALES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 2 LB/ACRE REDTOP AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 42 LB/ACRE. FERTILIZER AND LIME RATES SHALL BE DEPENDENT ON SOIL TESTING. IN THE ABSENCE OF SOIL TESTS, FERTILIZE WITH 10-20-20 (N-P205-K201) AT 800 LB/ACRE AND LIME AT 3 TONS/ACRE. MULCH WITH HAY AT 70-90 LB/1000 S.F. 4" OF LOAM SHALL BE APPLIED PRIOR TO SEEDING.

5. POND BOTTOMS AND INNER POND SIDESLOPES SHALL BE PERMANENTLY SEEDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 8 LB/ACRE BIRDSFOOT TREFOIL AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 48 LB/ACRE. SEE THE ABOVE NOTE FOR FERTILIZER, LIME AND MULCHING RATES.

6. TEMPORARY VEGETATION OF ALL DISTURBED AREAS, MATERIAL STOCKPILES AND OTHER SUCH AREAS SHALL BE ESTABLISHED BY SEEDING WITH EITHER WINTER RYE AT A RATE OF 112 LB/ACRE OR ANNUAL RYEGRASS AT A RATE OF 40 LB/ACRE. WINTER RYE SHALL BE USED FOR FALL SEEDING AND ANNUAL RYEGRASS FOR SHORT DURATION SEEDING. SEEDING SHALL BE ACCOMPLISHED BEFORE OCTOBER 1.

7. TEMPORARY SEEDING OF DISTURBED AREAS SHALL BE ACCOMPLISHED BEFORE OCTOBER 1. PERMANENT SEEDING SHALL BE ACCOMPLISHED BEFORE SEPTEMBER 15.

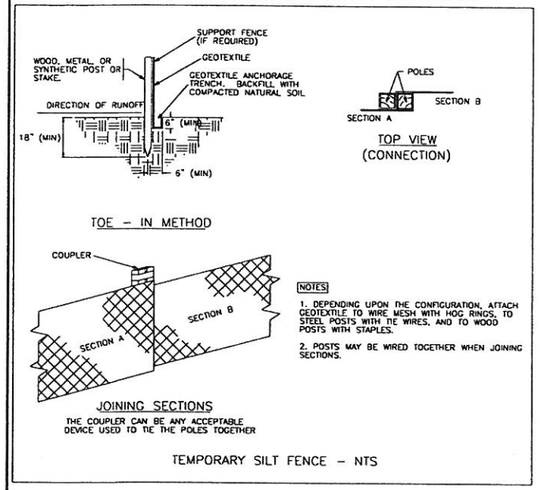
8. ALL SEEDED AREAS SHALL BE MULCHED WITH HAY AT A RATE OF 2 BALES (70-90 LB) PER 1000 S.F. OF SEEDED AREA.

9. SLOPES 2:1 OR STEEPER SHALL BE TREATED WITH POLYJUTE OPEN WEAVE GEOTEXTILE (OR EQUIVALENT) AFTER SEEDING. JUTE MATS SHALL BE ANCHORED PER MANUFACTURER'S SPECIFICATIONS.

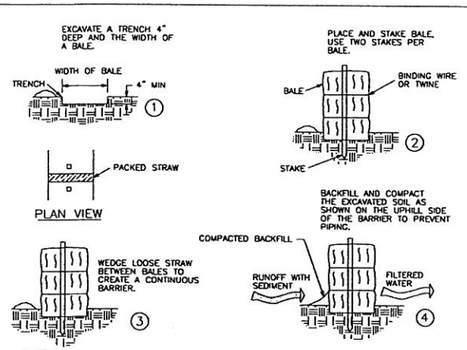
10. EXCESSIVE DUST CAUSED BY CONSTRUCTION OPERATIONS SHALL BE CONTROLLED BY APPLICATION OF WATER OR CALCIUM CHLORIDE.

11. THE CONTRACTOR MAY OPT TO USE EROSION CONTROL MIX BERM AS A SEDIMENT BARRIER IN LIEU OF SILTATION FENCE OR HAY BALE BARRIERS WITH APPROVAL FROM THE INSPECTING ENGINEER.

12. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.



TEMPORARY SILT FENCE - NTS



HAY BALE BARRIER
(NTS)

EROSION & SED. CONTROL NOTES (CONT.)

13. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

14. PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

15. PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROW'S. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

16. WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE ANY EXPOSED SOIL WITH MULCH, OR OTHER NON-ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.

17. REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILTATION FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

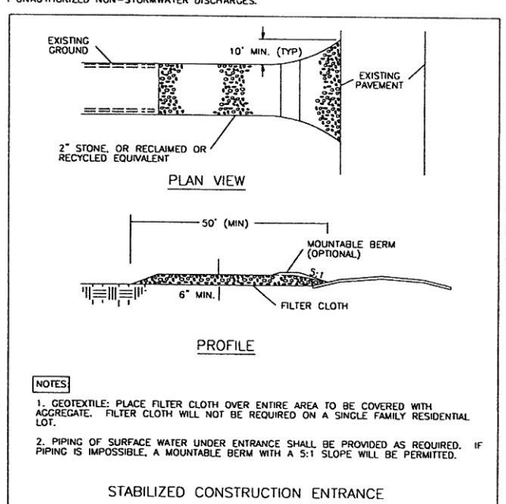
18. IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

19. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

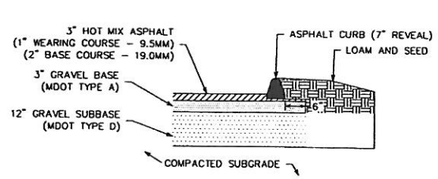
20. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

21. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT. THESE STANDARDS CAN BE FOUND IN THE FOLLOWING DOCUMENT: MDEP CHAPTER 500 (STORMWATER MANAGEMENT), APPENDIX C. HOUSEKEEPING. HOUSEKEEPING PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, SPILL PREVENTION, GROUNDWATER PROTECTION, FUGITIVE SEDIMENT AND DUST, DEBRIS AND OTHER MATERIALS, EXCAVATION DEWATERING, AUTHORIZED NON-STORMWATER DISCHARGES AND UNAUTHORIZED NON-STORMWATER DISCHARGES.



STABILIZED CONSTRUCTION ENTRANCE



PAVED DRIVEWAY
CROSS SECTION
(NTS)
GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR

ROAD CONSTRUCTION NOTES

1. DRIVEWAYS TO BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE CROSS SECTION DETAIL. GRAVEL FILL TO BE COMPACTED TO 95% MODIFIED PROCTOR IN ACCORDANCE WITH ASTM D 1557. LIFT THICKNESSES TO BE A MAXIMUM OF 6".

2. ALL STUMPS, ORGANIC MATERIAL, ROCKS AND BOULDERS TO BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW SUBBASE.

3. ALL STUMPS, LEDGE AND LARGE BOULDERS TO BE REMOVED FROM THE CONSTRUCTION AREA. THE CONSTRUCTION AREA SHALL BE CLEARED AND ROUGH GRADED.

4. ALL CULVERTS TO BE ADS N-12 (HDPE) OR APPROVED EQUAL. CULVERT INLETS AND OUTLETS TO BE PROTECTED IN ACCORDANCE WITH THE CULVERT INLET/OUTLET PROTECTION DETAIL.

5. THE CONTRACTOR MUST CONTACT DIG SAFE AND ALL LOCAL UTILITIES PRIOR TO THE START OF CONSTRUCTION TO VERIFY THE LOCATION OF EXISTING SUBSURFACE UTILITIES AND CONDITIONS. LOCATING AND PROTECTING ANY UNDERGROUND OR ABOVE GROUND UTILITY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

WINTER CONSTRUCTION NOTES

1. EXPOSED AREAS SHOULD BE LIMITED TO AN AREA THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

2. AN AREA SHALL BE CONSIDERED STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH HAY AT A RATE OF 100 LB/1000 S.F. OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SO THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.

3. FROM OCTOBER 15 TO APRIL 1, LOAM AND SEED WILL NOT BE REQUIRED. DURING PERIODS OF TEMPERATURES ABOVE FREEZING, DISTURBED AREAS SHALL BE FINE GRADED AND PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL PERMANENT SEEDING CAN BE APPLIED. AFTER NOVEMBER 1, DISTURBED AREAS MAY BE LOAMED, FINE GRADED AND DORMANT SEEDED AT A RATE 200-300% HIGHER THAN THE SPECIFIED PERMANENT SEEDING RATE. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, DISTURBED AREAS SHALL BE GRADED BEFORE FREEZING AND TEMPORARILY STABILIZED WITH MULCH. DISTURBED AREAS SHALL NOT BE LEFT OVER THE WINTER OR FOR ANY OTHER EXTENDED PERIOD OF TIME UNLESS STABILIZED WITH MULCH.

4. FROM NOVEMBER 1 TO APRIL 15 ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACK OR WOOD CELLULOSE FIBER. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 3%, SLOPES EXPOSED TO DIRECT WINDS AND FOR SLOPES GREATER THAN 8%. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15% AFTER OCTOBER 1, THE SAME APPLIES TO ALL SLOPES GREATER THAN 8%.

5. DURING WINTER CONSTRUCTION, DORMANT SEEDING OR MULCH AND ANCHORING SHALL BE APPLIED TO ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.

6. SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

7. FOR WINTER STABILIZATION, HAY MULCH SHALL BE APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE SHALL BE STABILIZED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW.

8. ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.

9. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, SHALL BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.

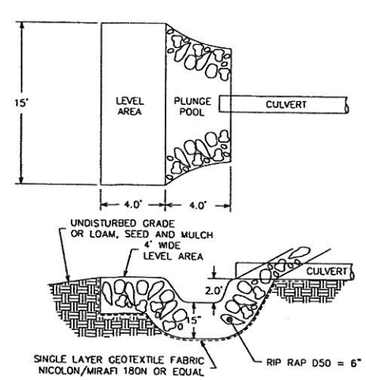
10. MULCH NETTING SHALL BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON SUCH SLOPES.

E&S INSPECTION/MAINT. DURING CONSTRUCTION

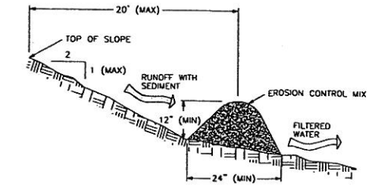
A. INSPECTION AND CORRECTIVE ACTION. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

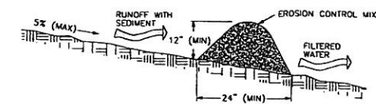
B. MAINTENANCE. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

C. DOCUMENTATION. KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.



LEVEL SPREADER
(NTS)

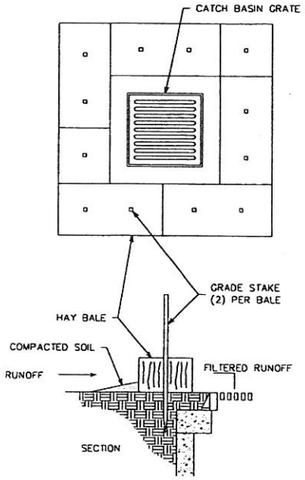




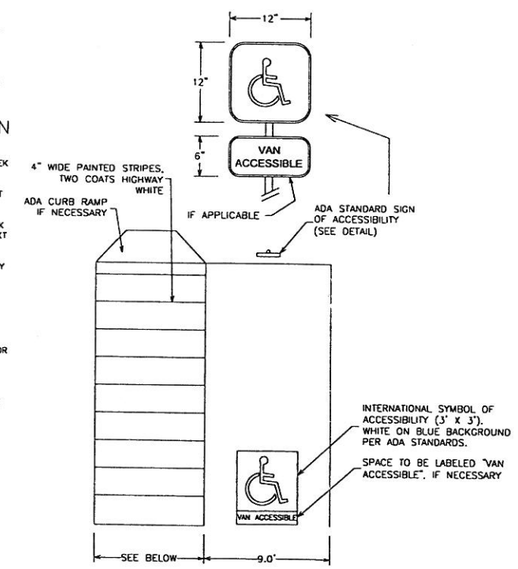
EROSION CONTROL MIX COMPOSITION STANDARDS:

- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
- PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85% PASSING A 0.75" SCREEN.
- THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- SOLUBLE SALTS CONTENT SHALL BE <4.0 mmhos/cm
- THE pH SHOULD FALL BETWEEN 5.0 AND 8.0

EROSION CONTROL MIX BERM
(NTS)



HAY BALE FILTER FOR CATCH BASIN
(NTS)



ACCESSIBLE PARKING SPACE DETAIL
AISLE SHALL BE 5' WIDE FOR AUTOMOBILES OR 8' WIDE FOR VANS
(NTS)

NO.	DESCRIPTION	DATE

REVISIONS

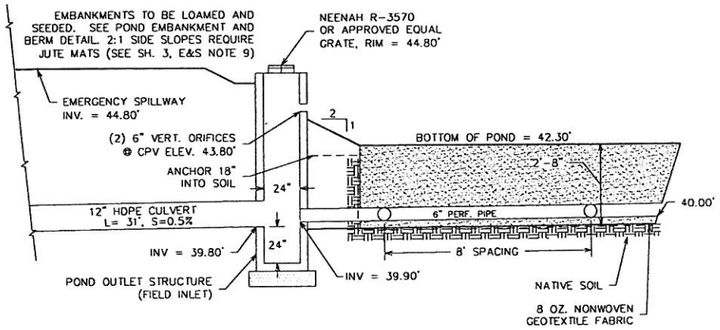
SITE DETAILS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL • STRUCTURAL • MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: AS NOTED	APPROVED BY:	DRAWN BY: MJS
DATE: 06/01/16		REVISION : DATE - : -
JOB NO: C022-16	FILE: KITTERY STORAGE DET.DWG	SHEET 3

TAX MAP 28 LOT 14-1

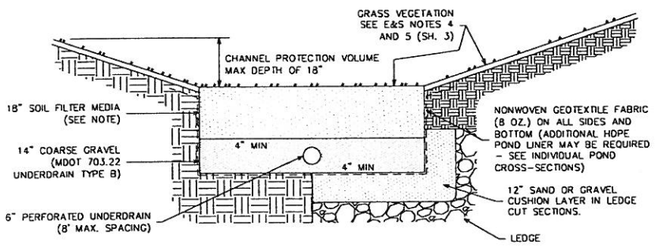


(UNDERDRAIN SOIL FILTER POND #1)

(NTS)

(SEE SH. 2 FOR PLAN VIEW)

APPROX. SHWT = 39.5 (42.5 EXT ELEVATION - 3' DEPTH TO SHWT [TP G] = 39.5
NO LINER REQUIRED



VEGETATED UNDERDRAINED SOIL FILTER FIELD CROSS SECTION

(APPLIES TO POND 1)

(NTS)

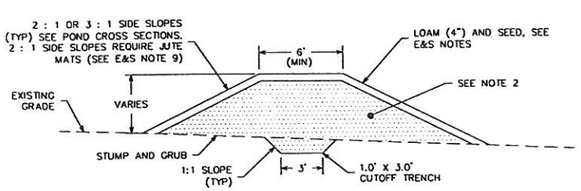
SOIL FILTER MEDIA NOTE:

THE SOIL FILTER MEDIA SHALL CONSIST OF A SILTY SAND OR SOIL MIXTURE COMBINED WITH 20% - 25% FINE SHREDDED BARK OR WOOD FIBER MULCH. THE MIXTURE MUST HAVE NO LESS THAN 8% PASSING THE 200 SIEVE, AND A CLAY CONTENT OF LESS THAN 2% PRIOR TO CONSTRUCTION. THE CONTRACTOR MUST CHECK WITH THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR UPDATED SOIL FILTER MEDIA SPECIFICATIONS.

CONSTRUCTION OVERSIGHT REQUIRED:

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

- AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED;
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA;
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED;
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS; AND
- ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.
- CONTRACTOR SHALL COORDINATE INSPECTION SCHEDULE WITH INSPECTING ENGINEER PRIOR TO CONSTRUCTION.



POND EMBANKMENT AND BERM DETAIL

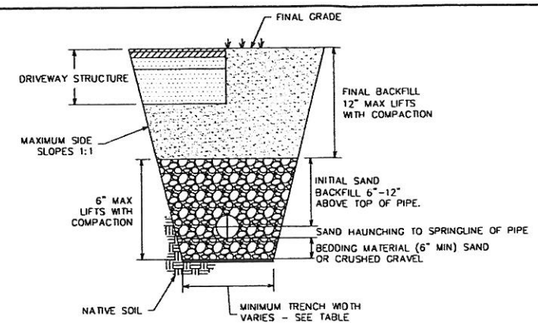
SCALE: 1" = 5'

EMBANKMENT CONSTRUCTION NOTES

1. ALL ORGANIC MATERIAL, STUMPS, ROCKS AND BOULDERS SHALL BE REMOVED TO A MINIMUM DEPTH OF 24" BELOW SUBGRADE OF THE BASIN EMBANKMENT. ALL EXCAVATIONS BELOW THE BASIN EMBANKMENT SHALL HAVE A MINIMUM SLOPE OF 1H : 1V.

2. ALL BASIN EMBANKMENT FILL MATERIAL SHALL BE WELL GRADED BORROW WITH A MINIMUM OF 20% FINES CONTENT. EMBANKMENT FILL SHALL BE PLACED IN 12" (MAX.) LIFTS AND BE COMPACTED TO 95% MODIFIED PROCTOR. A CUTOFF TRENCH SHALL BE EXCAVATED AS SHOWN PRIOR TO CONSTRUCTION OF EMBANKMENT.

3. DETENTION BASIN AND ALL EXCAVATIONS SHALL BE KEPT FREE OF WATER DURING CONSTRUCTION.

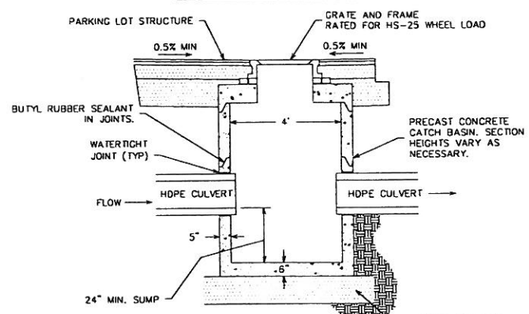


HDPE CULVERT TRENCH DETAIL

(NTS)

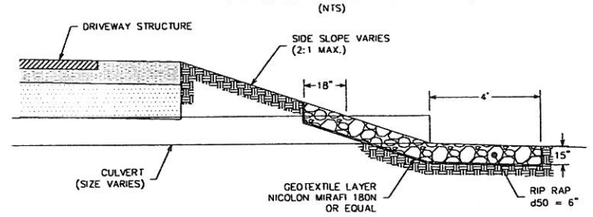
TRENCH TO BE SUPPORTED BY SLOPING BACK AT 2:1 OR OTHER ACCEPTABLE METHOD.

NOMINAL DIAMETER (IN)	MIN. TRENCH WIDTH (IN)
4	21
6	23
8	25
10	28
12	31
15	34
18	39
24	48
30	66
36	78
42	83
48	89
60	102



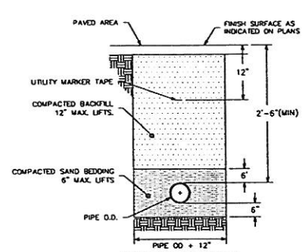
TYPICAL CATCH BASIN

(NTS)



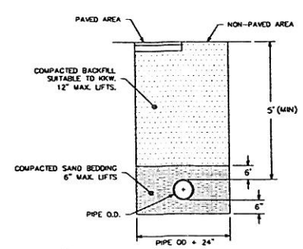
CULVERT INLET/OUTLET PROTECTION DETAIL

(NTS)



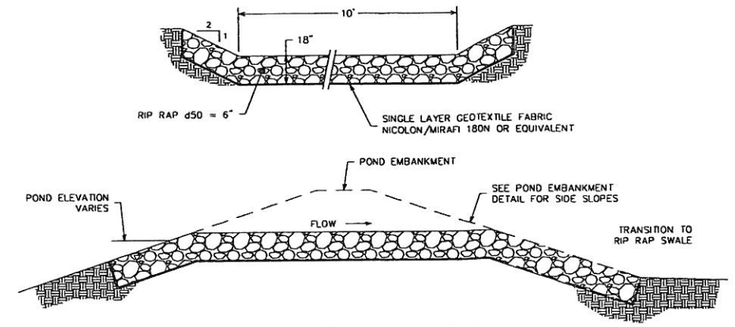
UTILITY CONDUIT TRENCH DETAIL

(NTS)



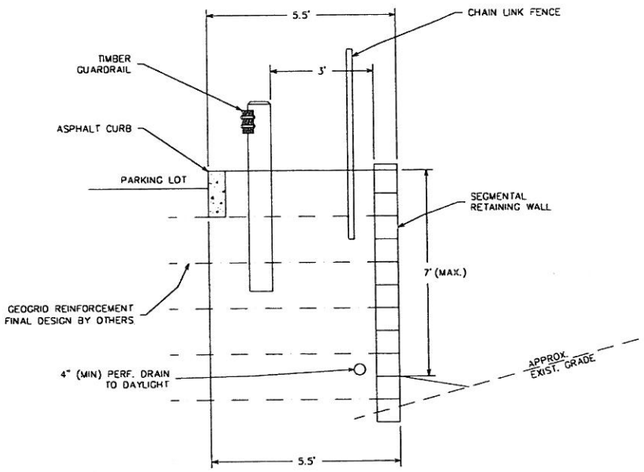
WATER LINE TRENCH DETAIL

(NTS)



EMERGENCY SPILLWAY DETAIL

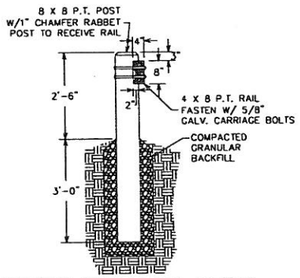
(NTS)



RETAINING WALL SECTION

(NTS)

NOTE: RETAINING WALL DESIGN BY OTHERS. (CONTRACTOR TO PROVIDE OWNER WITH DESIGN BY LICENSED PROFESSIONAL ENGINEER)



TIMBER GUARDRAIL DETAIL

(NTS)

MAXIMUM POST SPACING SHALL BE 6'.

NO.	DESCRIPTION	DATE
B.	DEP & TOWN REVIEW REVISIONS	09/28/16
A.	REVISED USF 1 X-SECTION.	07/29/16

REVISIONS

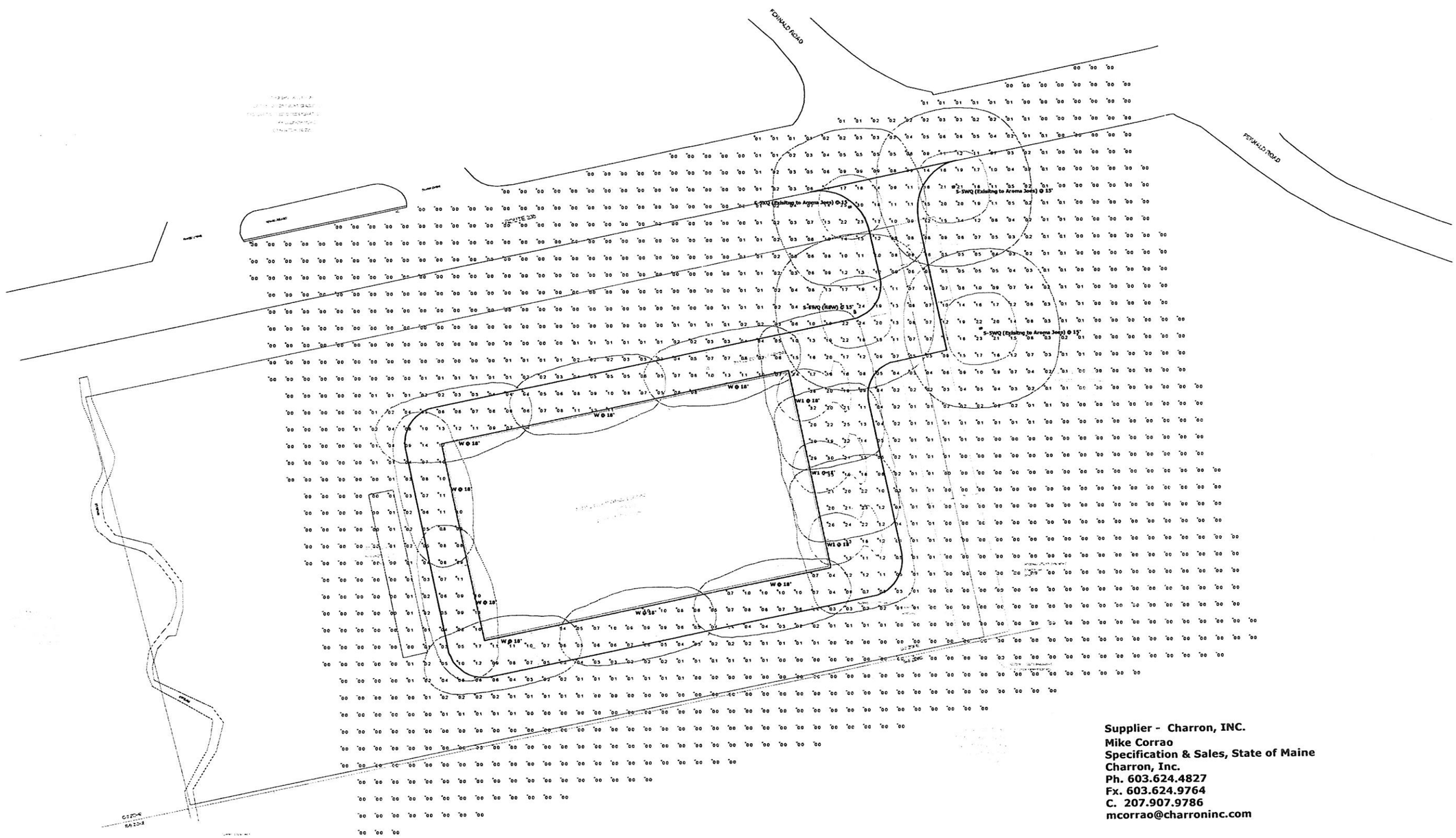
SITE DETAILS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL ◆ STRUCTURAL ◆ MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: AS NOTED	APPROVED BY:	DRAWN BY: MJS
DATE: 06/01/16		REVISION : DATE B : 09/28/16
JOB NO: C022-16	FILE: KITTERY STORAGE DET.DWG	SHEET 4

TAX MAP 28, LOT 14-1



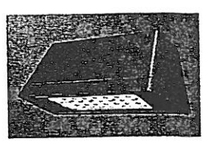
Plan View
Scale - 1" = 30'

Supplier - Charron, INC.
Mike Corrao
Specification & Sales, State of Maine
Charron, Inc.
Ph. 603.624.4827
Fx. 603.624.9764
C. 207.907.9786
mcorrao@charroninc.com

S-5WQ (NEW)	1	EATON - McGRAW-EDISON (FORMER COOPER LIGHTING)	TLM-E02-LED-E1-5WQ
S-5WQ (Exisitng to Aroma Joes)	2	EATON - McGRAW-EDISON (FORMER COOPER LIGHTING)	TLM-E02-LED-E1-5WQ
S-5XQ (Exisitng to Aroma Joes)	1	EATON - McGRAW-EDISON (FORMER COOPER LIGHTING)	TLM-E02-LED-E1-5XQ
W	8	COOPER LIGHTING - McGRAW-EDISON	ISS-F01-LED-E1-BL3
W1	3	EATON - McGRAW-EDISON (FORMER COOPER LIGHTING)	IST-E02-LED-E1-BL4

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
All Points	+	0.3 fc	4.4 fc	0.0 fc	N/A	N/A
Park and Drive	+	1.1 fc	4.4 fc	0.4 fc	11.0:1	2.8:1



Eaton's Cooper Lighting - IMPACT ELITE - IST LED WALL PACK

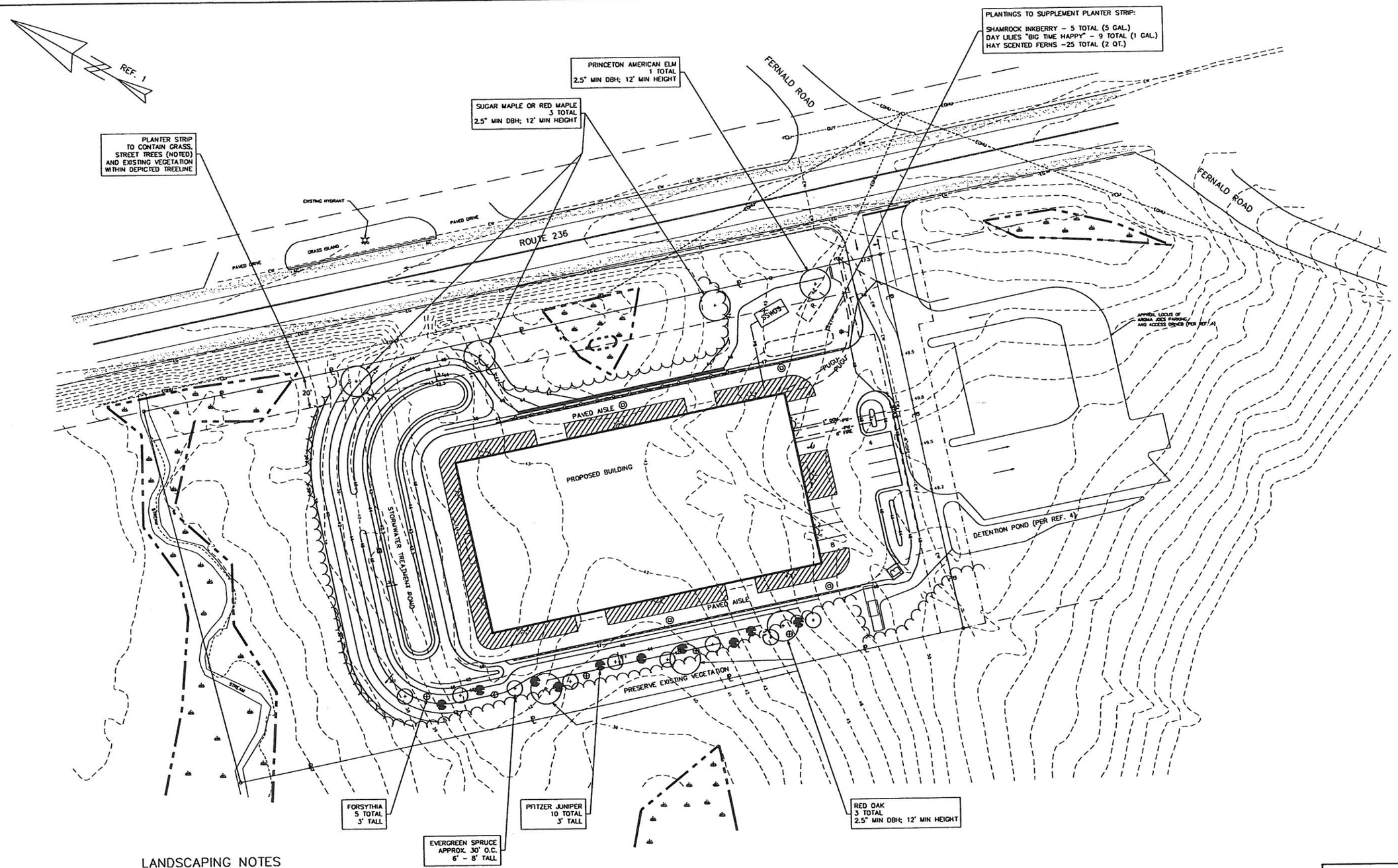
Eaton's Cooper Lighting - TALON - TLM LED SITE FIXTURE

SHEET 5 - TAX MAP 28, LOT 14-1

CHARRON

Kittery Self Storage
Route 236 Kittery
Kittery, ME

Designer
MKC
Date
5/27/2016
Scale
1" = 30'
Drawing No.
1 of 1



LANDSCAPING NOTES

1. LANDSCAPING PLAN PREPARED BY GERALD R. MYLROIE, AICP.

GRAPHIC SCALE

30 0 30 60 90 (FEET)

NO.	DESCRIPTION	DATE
B.	TOWN REVIEW REVISIONS.	09/29/16
A.	TOWN REVIEW REVISIONS.	07/29/16

REVISIONS

LANDSCAPING PLAN
KITTERY SELF STORAGE
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL ◆ STRUCTURAL ◆ MARINE
1284 STATE ROAD – ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1"= 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 6/1/16		REVISION : DATE B : 09/29/16
JOB NO: C022-16	FILE: KITTERY SELF STORAGE	SHEET 6

TAX MAP 28, LOT 14-1

EROSION AND SEDIMENT CONTROL PRACTICES

1. NO SOIL SHALL BE DISTURBED DURING THE PERIOD OF MARCH 1 THROUGH APRIL 15 NOR DURING ANY OTHER PERIOD WHEN SOILS ARE SATURATED DUE TO RAIN OR SNOW MELT.
2. DISTURBED SOILS SHALL BE STABILIZED WITHIN ONE (1) WEEK FROM THE TIME IT WAS LAST ACTIVELY WORKED USING TEMPORARY OR PERMANENT MEASURES SUCH AS PLACEMENT OF RIPRAP, MULCH OR OTHER EROSION CONTROL BLANKET, OR OTHER COMPARABLE MEASURES.
3. HAY OR STRAW MULCH, WHERE USED, SHALL BE APPLIED AT A RATE OF AT LEAST ONE (1) BALE PER 500 SQUARE FEET (1-2 TONS PER ACRE).
4. IF MULCH IS LIKELY TO BE REMOVED DUE TO TO STEEP SLOPES OR WIND, IT SHALL BE ANCHORED WITH NETTING, PEG OR TWINE, OR OTHER SUITABLE METHOD AND SHALL BE MAINTAINED UNTIL A CATCH OF VEGETATION IS ESTABLISHED OVER THE ENTIRE DISTURBED AREA.
5. IN ADDITION TO PLACEMENT OF RIPRAP, MULCH OR EROSION CONTROL BLANKETS, ADDITIONAL STEPS SHALL BE TAKEN WHERE NECESSARY IN ORDER TO PREVENT SEDIMENTATION OF THE WATER. EVIDENCE OF SEDIMENTATION INCLUDES: VISIBLE GULLY EROSION; DISCOLORATION OF WATER BY SUSPENDED PARTICLES AND SLUMPING OF BANKS. SILT FENCES, STAKED HAY BALES AND OTHER SEDIMENTATION CONTROL MEASURES, WHERE PLANNED FOR, SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF WORK BUT SHALL ALSO BE INSTALLED WHENEVER NECESSARY DUE TO SEDIMENTATION.
6. MULCH OR OTHER TEMPORARY MEASURES SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED WITH VEGETATION OR OTHER PERMANENT CONTROL MEASURES AFTER WHICH TEMPORARY MEASURES WILL BE REMOVED.
7. PERMANENT re-VEGETATION OF ALL DISTURBED AREAS USING NATIVE PLANT MATERIAL WHEN POSSIBLE, SHALL OCCUR WITHIN 30 DAYS FROM THE TIME THE AREAS WERE LAST ACTIVELY WORKED, OR FOR FALL AND WINTER ACTIVITIES, BY JUNE 15, EXCEPT WHERE PRECLUDED BY THE TYPE OF ACTIVITY (E.G. RIPRAP, ROAD SURFACES, ETC.). THE VEGETATIVE COVER SHALL BE MAINTAINED.
8. DISPOSAL OF COLLECTED DEBRIS MUST BE IN CONFORMANCE WITH MAINE SOLID WASTE LAW, TITLE 38 MRSA SECTION 1301 ET. SEQ.
9. LIME AND FERTILIZER APPLICATION RATES SHALL NOT EXCEED THE FOLLOWING:

   GROUND LIMESTONE: 3 TONS/ACRE (130 LBS./1000 S.F.)
   FERTILIZER: 10-10-10 OR EQUIVALENT: 600 LBS./ACRE (14 LBS./1000 S.F.)

   FERTILIZER SHALL NOT BE APPLIED BEFORE START OF THE GROWING SEASON NOR AFTER SEPTEMBER 30. FERTILIZED AREAS SHALL BE MULCHED TO REDUCE OFF-SITE TRANSPORT OF NUTRIENTS UNTIL USED BY VEGETATIVE GROWTH.

SEEDING MIXTURE AND SCHEDULE:

SPREAD TOPSOIL UNIFORMLY 6" DEEP OVER AREAS TO BE RECLAIMED. THE FOLLOWING SEED MIXTURE SHALL BE USED:

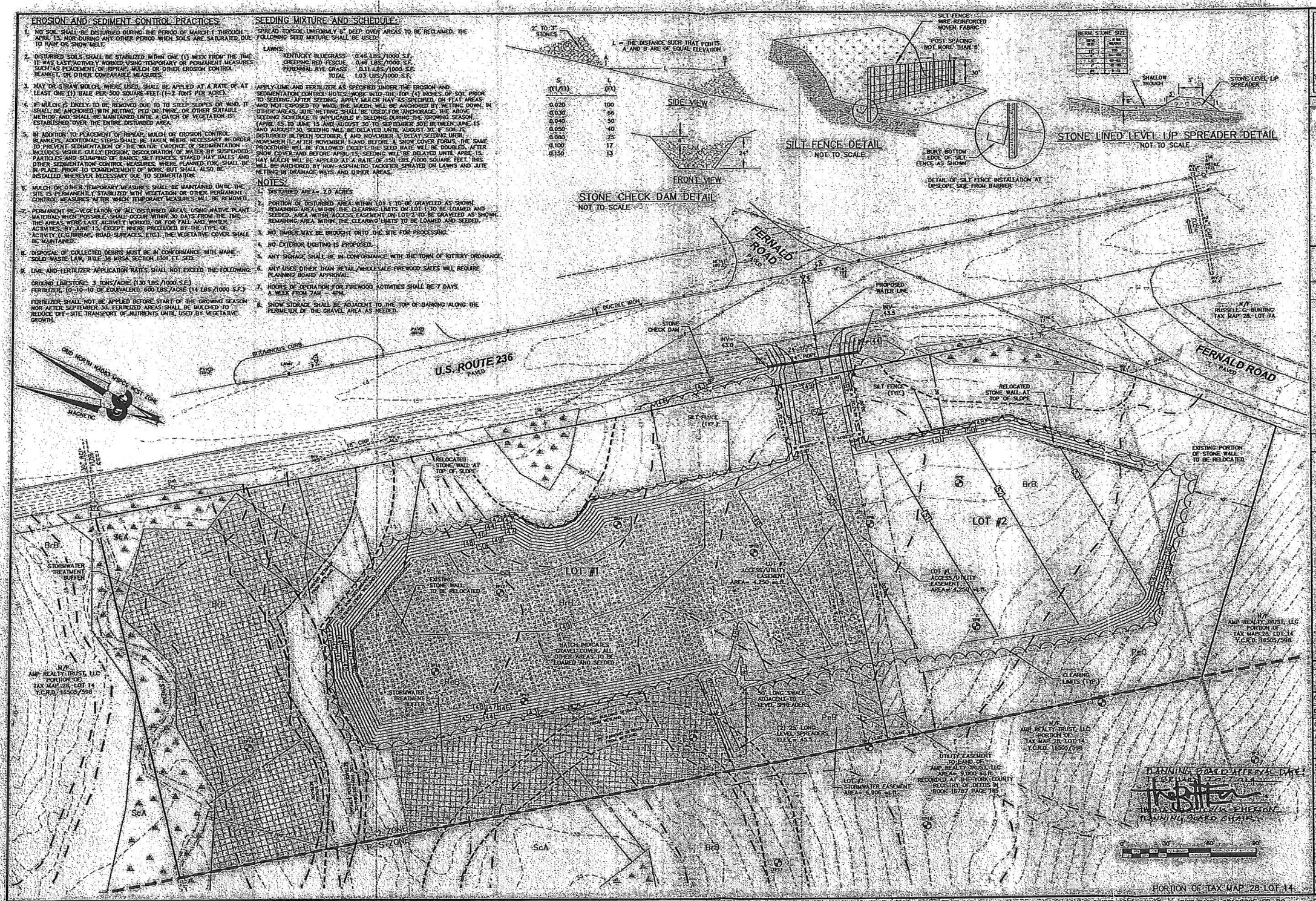
LAWNS:

KENTUCKY BLUEGRASS	0.46 LBS./1000 S.F.
CREEPING RED FESCUE	0.46 LBS./1000 S.F.
PERENNIAL RYE GRASS	0.11 LBS./1000 S.F.
TOTAL	1.03 LBS./1000 S.F.

APPLY LIME AND FERTILIZER AS SPECIFIED UNDER THE EROSION AND SEDIMENTATION CONTROL NOTES. WORK INTO THE TOP (4) INCHES OF SOIL PRIOR TO SEEDING. AFTER SEEDING, APPLY MULCH HAY AS SPECIFIED ON FLAT AREAS AND NOT EXPOSED TO WIND. THE MULCH WILL BE ANCHORED BY NETTING DOWN. IN OTHER AREAS, JUTE NETTING SHALL BE USED FOR ANCHORAGE. THE ABOVE SEEDING SCHEDULE IS APPLICABLE IF SEEDING DURING THE GROWING SEASON (APRIL 15 TO JUNE 15 AND AUGUST 30 TO SEPTEMBER 30). BETWEEN JUNE 15 AND AUGUST 30, SEEDING WILL BE DELAYED UNTIL AUGUST 30. IF SOIL IS DISTURBED BETWEEN OCTOBER 1 AND NOVEMBER 15 DELAY SEEDING UNTIL NOVEMBER 15. AFTER NOVEMBER 15 AND BEFORE A SNOW COVER FORMS, THE SAME PROCEDURE WILL BE FOLLOWED EXCEPT THE SEED RATE WILL BE DOUBLED. AFTER SNOW COVER AND BEFORE APRIL 15, SEEDING WILL BE DELAYED UNTIL APRIL 15. HAY MULCH WILL BE APPLIED AT A RATE OF 150 LBS./1000 SQUARE FEET. THIS WILL BE ANCHORED BY NON-ASPHALTIC TACKIFIER SPRAYED ON LAWNS AND JUTE NETTING IN DRAINAGE WAYS AND OTHER AREAS.

NOTES:

1. DISTURBED AREA = 2.9 ACRES.
2. PORTION OF DISTURBED AREA WITHIN LOT 1 TO BE GRAVELED AS SHOWN. REMAINING AREA WITHIN THE CLEARING LIMITS ON LOT 1 TO BE LOAMED AND SEEDED. AREA WITHIN ACCESS EASEMENT ON LOT 2 TO BE GRAVELED AS SHOWN. REMAINING AREA WITHIN THE CLEARING LIMITS TO BE LOAMED AND SEEDED.
3. NO TIMBER MAY BE BROUGHT ONTO THE SITE FOR PROCESSING.
4. NO EXTERIOR LIGHTING IS PROPOSED.
5. ANY SIGNAGE SHALL BE IN CONFORMANCE WITH THE TOWN OF KITTERY ORDINANCE.
6. ANY USES OTHER THAN RETAIL/WHOLESALE FIREWOOD SALES WILL REQUIRE PLANNING BOARD APPROVAL.
7. HOURS OF OPERATION FOR FIREWOOD ACTIVITIES SHALL BE 7 DAYS.
8. SNOW STORAGE SHALL BE ADJACENT TO THE TOP OF BANKING ALONG THE PERIMETER OF THE GRAVEL AREA AS NEEDED.



TAX MAP 28, LOT 14-1 - SHEET 7 - KSS - PREV-APP'D SITE PLAN

DIRECTORY: \12\9800\CARLSON\ENGINEERING\DRAWING DWG NAME: 12\9800E-SD-2C DATE: 04/18/2013

STATE OF MAINE
THOMAS H. HAYDEN
No. 6977
LICENSED
PROFESSIONAL ENGINEER

© CIVIL CONSULTANTS

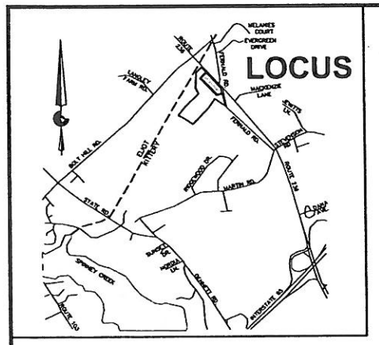
CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 109
South Berwick
Maine
03908
207-384-2550
civilc@ctcon.com

NO.	REVISIONS	INT.	DATE
1	REVISE PER TOWN OF KITTERY REVIEW	MAA	07/20/14
2	UPDATE LOT GRADING AND WETLANDS BUFFERS	MAA	01/22/14
3	UPDATE DRAINAGE TREATMENT	NJR	10/29/13
4	REVISE GRADING AROUND WETLANDS	MAA	08/20/13
5	RELOCATE STONE WALL & LOT RESERVE AREA	MAA	07/24/13

SUBDIVISION OF LAND OF PETER J. PAUL
TRUSTEE OF THE PAOLUCCI REALTY TRUST
U.S. ROUTE 236
KITTERY, MAINE
PREPARED FOR
PETER J. PAUL
MAILING ADDRESS: 381 MARGINAL WAY, PORTLAND, MAINE 04101

CIVIL CONSULTANTS

DRAWN: AJL | CALC:
DATE: 18 APRIL 2013
CHECKED:
APPROVED:
SCALE: 1"=30'
SHEET TITLE: SITE PLAN
SHEET NUMBER: C2
SHEET 2 of 3
PROJECT # 12-198.00



LOCATION PLAN

(NOT TO SCALE)

NOTES:

1. ASSESSOR'S INFORMATION: TOWN OF KITTERY
   PORTION OF ASSESSOR'S MAP 28
   LOT 14
2. RECORD OWNER: PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST
   291 HAROLD L. DOW HIGHWAY
   ELIOT, MAINE 03903
3. DEED REFERENCE: Y.C.R.D. 16573/762
   Y.C.R.D. 16505/598
4. ZONING INFORMATION: COMMERCIAL (C2) ZONE

LOT SIZE:	40,000 sq.ft
MINIMUM FRONTAGE:	150'
SETBACKS:	
FRONT YARD:	50'
SIDE YARD:	30'
REAR YARD:	40' (ABUTTING RESIDENTIAL ZONE)
MAXIMUM BUILDING HEIGHT:	40'
MAXIMUM BUILDING COVERAGE:	40%

5. THE PARCEL IS LOCATED IN FLOOD HAZARD ZONE C AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE TOWN OF KITTERY, COMMUNITY PANEL NO 230171 0004 D, EFFECTIVE DATE: JULY 5, 1984. FLOOD ZONE C IS DEFINED AS AREAS OF MINIMAL FLOODING.
6. TOTAL PARCEL AREA= 4.18 ACRES±.

PLAN REFERENCE:

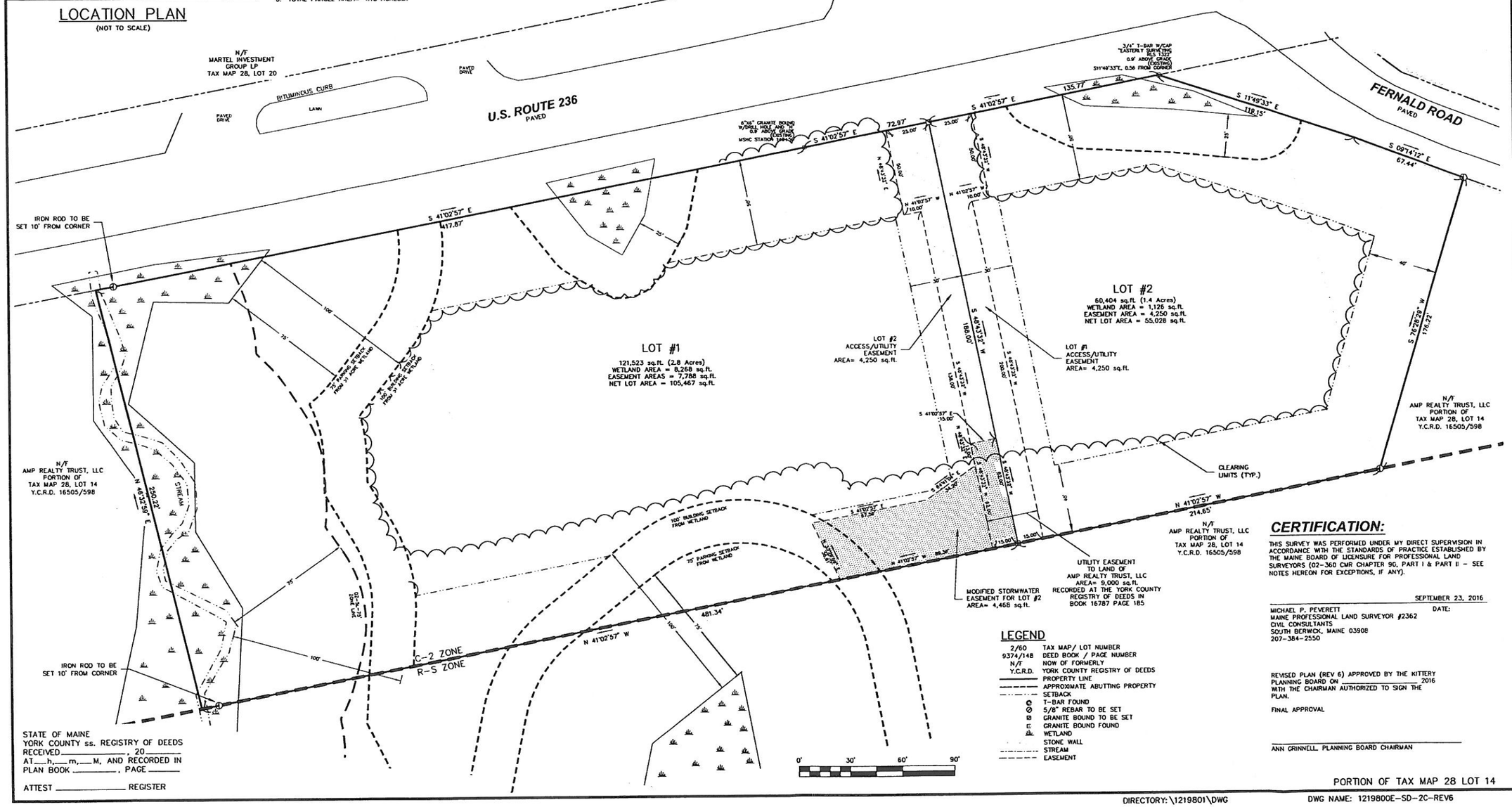
"BOUNDARY AND EXISTING CONDITIONS LAND OF AMP REALTY HOLDINGS, LLC AND PETER J. PAUL, TRUSTEE – ROUTE 236 TAX MAP 28 LOT 14 KITTERY YORK COUNTY MAINE", BY CIVIL CONSULTANTS, DATED: 4/8/2013, REVISION 2, DATED: 2/11/14. PLAN RECORDED AT THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 366 PAGE 10.

DEVELOPMENT CONDITIONS:

1. THE STORMWATER TREATMENT AREAS SHALL BE MAINTAINED PER MDEP CHAPTER 500 TREATMENT STANDARDS.
2. ANY FUTURE STORMWATER FROM FUTURE IMPERVIOUS AREA ON LOT 2 SHALL BE DIRECTED TO THE STORMWATER EASEMENT AREA.
3. THE 50' FRONT SETBACK/YARD AREA SHOWN ON LOTS 1 AND 2 IS SUBJECT TO A PUBLIC EASEMENT TO THE TOWN OF KITTERY FOR THE CONSTRUCTION OF A PAVED SIDEWALK AND ASSOCIATED STREET TREES. THE INSTALLATION OF THE SIDEWALK SHALL BE DONE BY THE OWNER/DEVELOPER IN ACCORDANCE WITH DETAILS APPROVED BY THE PLANNING BOARD AT THE TIME DEVELOPMENT IS PROPOSED BEYOND THAT REPRESENTED ON PLAN SHEET C2 (SITE PLAN, REVISION 5, DATED: 2/20/14).
4. REAR/SIDE SETBACK AREA SHOWN ADJACENT TO LAND OF AMP REALTY TRUST, LLC SERVES AS THE BUFFER REQUIRED BY CODE SECTIONS 16.9.1.7. & 16.3.2.11.D.2.

PLANNING BOARD CONDITIONS OF APPROVAL:

1. NO CHANGES, ERASURES, MODIFICATIONS OR REVISIONS MAY BE MADE TO ANY PLANNING BOARD APPROVED FINAL PLAN... (TITLE 16.10.9.1.2)
2. MAINE DEP BEST MANAGEMENT PRACTICES NOTES ALL WORK ASSOCIATED WITH THE SITE AND BUILDING RENOVATIONS TO ENSURE ADEQUATE EROSION CONTROL AND SLOPE STABILIZATION SHALL BE INCLUDED ON THE PLAN PRIOR TO SIGNATURE AND RECORDING.
3. PRIOR TO THE COMMENCEMENT OF GRADING AND/OR CONSTRUCTION WITHIN A BUILDING ENVELOPE, AS SHOWN ON THE PLAN, THE OWNER AND/OR DEVELOPER MUST STAKE ALL CORNERS OF THE ENVELOPE. THESE MARKERS MUST REMAIN IN PLACE UNTIL THE CODE ENFORCEMENT OFFICER (CEO) DETERMINES CONSTRUCTION IS COMPLETED AND THERE IS NO DANGER OF DAMAGE TO AREAS THAT ARE, PER PLANNING BOARD APPROVAL, TO REMAIN UNDISTURBED. TOWN PLANNING STAFF WILL REVIEW WITH THE OWNER'S REPRESENTATIVE THOSE TREES TO BE REMOVED ALONG THE SETBACK LINE AND IDENTIFY ANY TREES DUE TO THEIR PROXIMITY MAY WARRANT A CHANGE TO THE PROPOSED SITE GRADING.
4. THE FRONT YARD OF LOTS 1 AND 2 IS SUBJECT TO A PUBLIC EASEMENT TO THE TOWN OF KITTERY FOR THE CONSTRUCTION OF A PAVED WALKWAY AND ASSOCIATED STREET TREES, FURNISHED AND INSTALLED BY THE OWNER AND/OR DEVELOPER.
5. ANY AND ALL DEVELOPMENT OF THE LOTS IS PROHIBITED PRIOR TO THE APPROVAL OF THE PLANNING BOARD, WITH THE EXCEPTION OF THAT DEVELOPMENT WHICH HAS ALREADY BEEN APPROVED ON FEBRUARY 20, 2014. BEFORE OPERATION COMMENCES, ALL NEW BUSINESSES ARE REQUIRED TO SUBMIT A BUSINESS USE APPLICATION FOR REVIEW AND APPROVAL BY THE CODE ENFORCEMENT OFFICER AND TOWN PLANNER.
6. ANY PROPOSED DEVELOPMENT OTHER THAN WHAT IS DEPICTED ON THE PLAN MUST RECEIVE PRIOR PLANNING BOARD APPROVAL.
7. PLAN REVIEW STAFF COMMENTS #1–4 DATED FEBRUARY 13, 2014 (AS NOTED IN INSTRUCTIONS/NOTICE TO APPLICANT, #7 IN FINDINGS OF FACT, FEBRUARY 20, 2014).



LEGEND

2/60	TAX MAP/ LOT NUMBER
9374/148	DEED BOOK / PAGE NUMBER
N/F	NOW OF FORMERLY
Y.C.R.D.	YORK COUNTY REGSTRY OF DEEDS
	PROPERTY LINE
	APPROXIMATE ABUTTING PROPERTY
	SETBACK
	T-BAR FOUND
	5/8" REBAR TO BE SET
	GRANITE BOUND TO BE SET
	GRANITE BOUND FOUND
	WETLAND
	STONE WALL
	STREAM
	EASEMENT

CERTIFICATION:

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE STANDARDS OF PRACTICE ESTABLISHED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS (02-360 CMR CHAPTER 90, PART I & PART II – SEE NOTES HEREON FOR EXCEPTIONS, IF ANY).

SEPTEMBER 23, 2016

MICHAEL P. PEVERETT — DATE:
MAINE PROFESSIONAL LAND SURVEYOR #2362
CIVIL CONSULTANTS
SOUTH BERWICK, MAINE 03908
207-384-2550

REVISED PLAN (REV 6) APPROVED BY THE KITTERY PLANNING BOARD ON _____ 2016 WITH THE CHAIRMAN AUTHORIZED TO SIGN THE PLAN.

FINAL APPROVAL

ANN GRINNELL, PLANNING BOARD CHAIRMAN

STATE OF MAINE
YORK COUNTY ss. REGISTRY OF DEEDS
RECEIVED _____, 20_____
AT ___h, ___m, ___M, AND RECORDED IN
PLAN BOOK _____, PAGE _____

ATTEST _____ REGISTER

PORTION OF TAX MAP 28 LOT 14

DIRECTORY: \1219801\DWG DWG NAME: 1219800E-SD-2C-REV6 DATE: 09/23/2016

© CIVIL CONSULTANTS

CIVIL CONSULTANTS
Engineers
Planners
Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
civcon@civcon.com

NO.	REVISIONS	INT.	DATE
6	REVISE STORMWATER EASEMENT & WETLAND SETBACKS	JES	09/23/16
5	REVISE PER TOWN OF KITTERY REVIEW	JAA	02/20/14
4	UPDATE CLEARING LIMITS & WOODED BUFFERS	JAA	01/22/14
3	UPDATE STORMWATER TREATMENT BUFFER	JAA	10/30/13
2	UPDATE RESERVE AREA LOCATION	JAA	08/20/13
1	ADD RESERVE AREA, UPDATE TREATMENT BUFFER	JAA	07/24/13

SUBDIVISION OF LAND OF PETER J. PAUL, TRUSTEE OF THE PAOLUCCI REALTY TRUST
U.S. ROUTE 236
KITTERY, MAINE
PREPARED FOR:
PETER J. PAUL
MAILING ADDRESS: 291 HAROLD L. DOW HIGHWAY, ELIOT, MAINE 03903

CIVIL CONSULTANTS

DRAWN JAA	CALC.
DATE 18 APRIL 2013	
CHECKED	
APPROVED	
SCALE 1"=30'	
SHEET TITLE: SUBDIVISION PLAN	
SHEET NUMBER: 1	
SHEET 1 of 1	
PROJECT # 12-198.00	

ATTAR
ENGINEERING, INC
CIVIL STRUCTURAL MARINE

STORMWATER MANAGEMENT PLAN
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, MAINE

Project No.: C022-16

June 1, 2016
Revised: September 28, 2016

♦ Scope

This stormwater management plan has been prepared for the proposed Kittery Storage Solutions facility located at 91 Route 236 in Kittery, Maine. The project will consist of a three-level self-storage building and associated asphalt surfaced parking areas and access aisles. The project site contains approximately 2.8 acres.

The project will create approximately 1.8 acres of disturbed area and approximately 1.15 acres of impervious area, therefore, Chapter 500 (Stormwater Management) permitting is necessary from the Maine Department of Environmental Protection (MDEP). The project has been designed to meet the stormwater management requirements outlined in MDEP Chapter 500 as well as the Kittery Land Use and Development Code (LUDC).

♦ Site and Watershed Description

The project site is located on Route 236 in Kittery, Maine. A 7½ minute series U.S.G.S. map of the project area is attached; the parcel is located on the west side of Route 236, several hundred feet north of the Fernald Road intersection.

The site is located in the Piscataqua River watershed (sources: USGS 7 ½ minute series, Portsmouth Quadrangle. The Piscataqua River is directly tributary to the Atlantic Ocean.

Existing site features consist of a gravel surface, less than one acre in area, that was permitted to support a firewood sales business. In addition, along the southerly property line, a driveway is under construction the will access a recently approved mixed-use building on an adjacent lot to the south of the subject parcel. Kittery Storage Solutions will utilize this driveway as well. The remainder of the site is wooded and contains several wooded wetland and an unnamed stream that flows in a westerly direction along the north property line.

The topography of the site, in general, slopes down from north to south with an intermediate low area along the westerly property line. A swale with several driveway cross culverts exists along the easterly property line, adjacent to Route 236. Runoff is collected at the northerly property line by the previously mentioned stream. Existing grades are mostly from 3-8%. On-site elevations (datum is NAD 1988) range from a high point of approximately 50' at the southerly property line (adjacent to the neighboring development project), 43'-44' at the interior of the site, to a low point of approximately 34' along the stream. It should be noted that these elevations do not reflect the finished elevations of the previously noted gravel fill; it is estimated that 3'-5' of fill has been placed.

The site is not located within a 100-Year Special Flood Hazard Area per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 2301710004C (7/5/84).

A majority of the site will need to be filled to accommodate the proposed facility, with a maximum fill of approximately 6' (existing grade to building floor elevation). Proposed cuts,

in general, are less than 3'.

- **Soils/Hydrologic Soil Groups**

Site soil types and the respective HSG's were taken from a High Intensity Soil Survey prepared by Kenneth Gardner (CSS# 61).
Soil types are as follows:
BrB – Adams loamy sand, 0-8% slopes (HSG D)
PeB/C – Peru fine sandy loam, B 3-8% slopes, C 8-15% slopes, (HSG D)
ScA – Scantic silt loam, 0-3% slopes, (HSG D)

- **Methodology**

The stormwater quantity analysis was conducted using the HydroCAD Stormwater Modeling System by Applied Microcomputer Systems. The analysis was accomplished to determine the "Existing Condition" and "Developed Condition" stormwater flows. Both cases were analyzed for the 2, 10, and 25 year, 24-hour frequency storm events. The Existing Condition analyzes the site as it currently exists (wooded and undeveloped) and the Developed Condition models the site with the proposed development described above.

- **Water Quantity Analysis and Results**

Existing Condition
The site was modeled as four subcatchments (SC) for the Existing Condition analysis. All SC's include on and off-site areas.

Two Analysis Point (AP) were selected, downstream of the SC's. Analysis Points are typically located downstream of proposed developed areas and provide convenient locations to compare Existing Condition flows to Developed Condition flows. AP 1 is at the point of runoff into the steam and AP 2 is at a low spot along the westerly property line.

This report includes a plan that depicts the existing conditions on which the Existing Condition calculations are based.

Developed Condition
The Developed Condition analysis consists of ten subcatchments. Other features such as ponds and reaches were added to account for on-site routing, detention and treatment of stormwater. An underdrained soil filter (USF) pond (Pond 1) is included to provide both treatment and storage of stormwater. The Pond 1 outlet includes a level spreader intended to distribute runoff over an existing wooded buffer. All Developed Condition flows are routed to AP's 1 and 2, described above.

Tables showing Existing Condition peak flows, Developed Condition peak flows and the change in peak flow from Existing Condition to Developed Condition are presented on a separate page.

The analysis indicates decreases in peak flow at AP's 1 and 2 for all storm events, thus meeting the requirements of the Kittery LUDC.

This report includes a plan that depicts the developed conditions on which the Developed Condition calculations are based.

- **Water Quality**

In accordance with the MDEP *Chapter 500* General Standards, runoff from developed areas on the site will receive treatment in an underdrained soil filter pond prior to being discharged from the site. Approximately 99.8% of the impervious area and 81.2% of the developed area will be treated, exceeding the MDEP General Standards requirements of 95% and 80%, respectively. Treatment calculations and BMP sizing calculations are included in this report and are also depicted on the developed conditions / treatment plan noted above.

- **Summary**

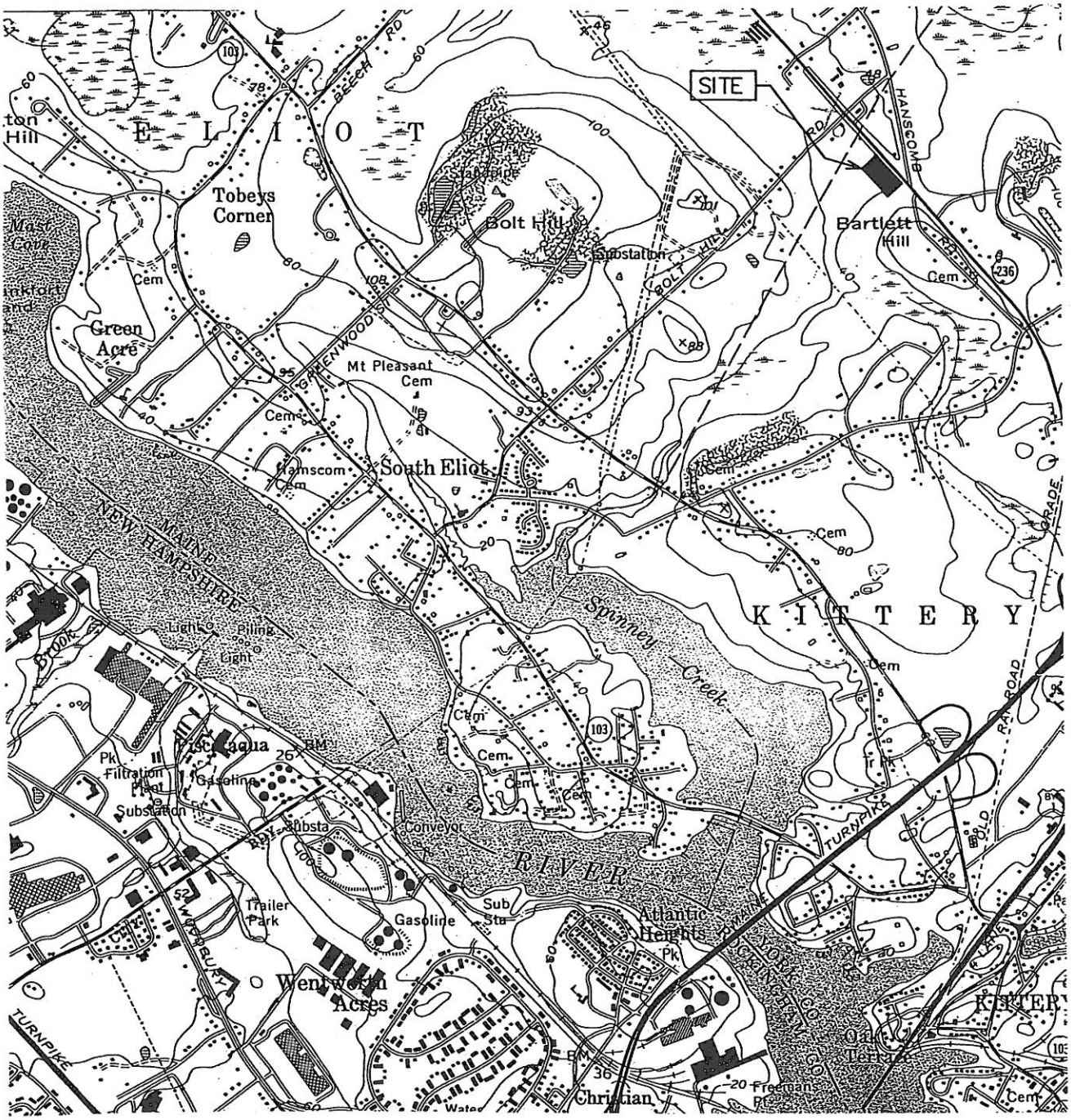
The use of a USF pond to attenuate peak flows results in no significant increase in peak runoff quantity from the proposed Kittery Storage Solutions development. No adverse effects are anticipated on any downstream properties or drainage structures for the analyzed storm events. The USF pond also serves to address runoff quality, as required by MDEP Chapter 500.

Sincerely;

Lewis Chamberlain, P.E.

C022-16_SW.doc

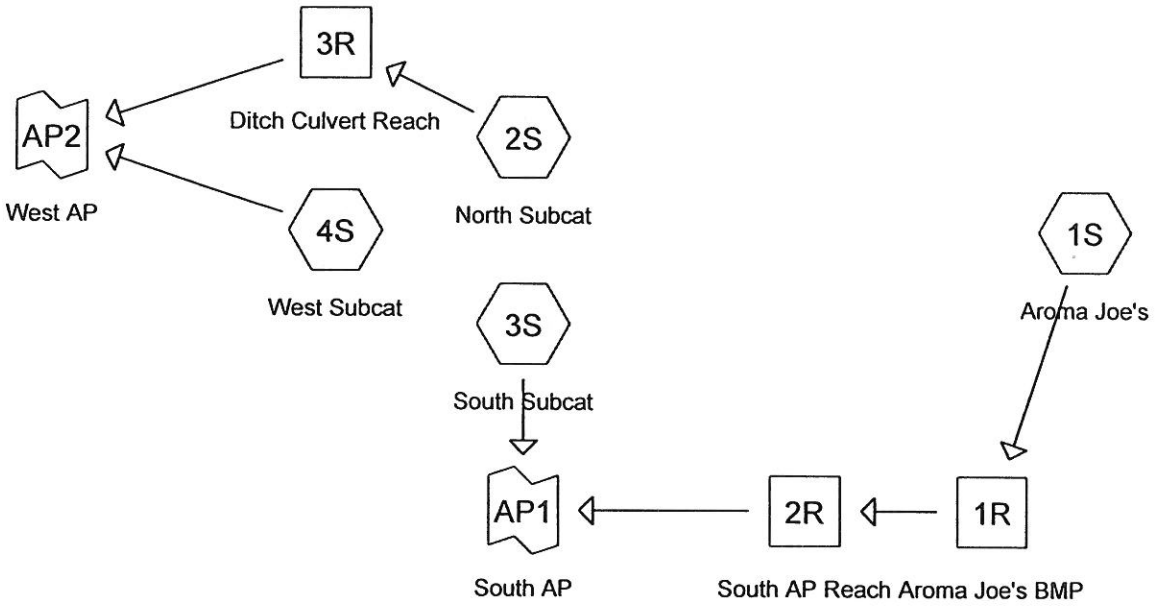
STATE OF MAINE
LEWIS CHAMBERLAIN
No. 9762
LICENSED
PROFESSIONAL ENGINEER

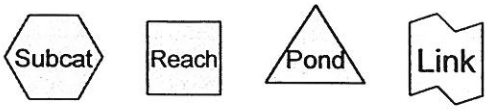


ATTAR
ENGINEERING, INC
CIVIL STRUCTURAL MARINE
1284 STATE ROAD, ELIOT ME 03903

KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, MAINE
USGS 7.5' SERIES – PORTSMOUTH QUAD.
APPROX. SCALE 1" = 2,000'
PROJECT NO. C022-16

EXISTING CONDITION CALCULATIONS





Routing Diagram for Kittery Storage EXT
Prepared by Hewlett-Packard Company, Printed 9/29/2016
HydroCAD® 10.00 s/n 01988 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.227	72	Woods/grass comb., Good, HSG C (1S)
0.001	74	>75% Grass cover, Good, HSG C (1S)
3.215	79	Woods/grass comb., Good, HSG D (1S, 2S, 3S, 4S)
0.036	80	>75% Grass cover, Good, HSG D (1S)
0.006	98	Paved parking, HSG C (1S)
0.518	98	Paved parking, HSG D (1S, 2S, 4S)
4.004	**81**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>1.57"
Flow Length=210' Tc=8.1 min CN=83 Runoff=1.10 cfs 0.079 af

Subcatchment 2S: North Subcat Runoff Area=61,619 sf 15.96% Impervious Runoff Depth>1.50"
Flow Length=428' Tc=18.5 min CN=82 Runoff=1.86 cfs 0.176 af

Subcatchment 3S: South Subcat Runoff Area=30,450 sf 0.00% Impervious Runoff Depth>1.30"
Flow Length=191' Tc=11.6 min CN=79 Runoff=0.94 cfs 0.076 af

Subcatchment 4S: West Subcat Runoff Area=56,031 sf 6.68% Impervious Runoff Depth>1.37"
Flow Length=181' Tc=10.2 min CN=80 Runoff=1.90 cfs 0.146 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.41' Max Vel=3.04 fps Inflow=1.10 cfs 0.079 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=1.08 cfs 0.079 af

Reach 2R: South AP Reach Avg. Flow Depth=0.17' Max Vel=0.28 fps Inflow=1.08 cfs 0.079 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=0.95 cfs 0.078 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.28' Max Vel=0.28 fps Inflow=1.86 cfs 0.176 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=1.65 cfs 0.174 af

Link AP1: South AP Inflow=1.88 cfs 0.154 af
Primary=1.88 cfs 0.154 af

Link AP2: West AP Inflow=2.87 cfs 0.320 af
Primary=2.87 cfs 0.320 af

Total Runoff Area = 4.004 ac Runoff Volume = 0.477 af Average Runoff Depth = 1.43"
86.92% Pervious = 3.480 ac 13.08% Impervious = 0.524 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>2.89"
Flow Length=210' Tc=8.1 min CN=83 Runoff=2.00 cfs 0.145 af

Subcatchment2S: North Subcat Runoff Area=61,619 sf 15.96% Impervious Runoff Depth>2.79"
Flow Length=428' Tc=18.5 min CN=82 Runoff=3.44 cfs 0.329 af

Subcatchment3S: South Subcat Runoff Area=30,450 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=191' Tc=11.6 min CN=79 Runoff=1.84 cfs 0.147 af

Subcatchment4S: West Subcat Runoff Area=56,031 sf 6.68% Impervious Runoff Depth>2.62"
Flow Length=181' Tc=10.2 min CN=80 Runoff=3.63 cfs 0.280 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.62' Max Vel=3.49 fps Inflow=2.00 cfs 0.145 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=1.98 cfs 0.145 af

Reach 2R: South AP Reach Avg. Flow Depth=0.24' Max Vel=0.35 fps Inflow=1.98 cfs 0.145 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=1.81 cfs 0.144 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.41' Max Vel=0.35 fps Inflow=3.44 cfs 0.329 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=3.16 cfs 0.325 af

Link AP1: South AP Inflow=3.65 cfs 0.291 af
Primary=3.65 cfs 0.291 af

Link AP2: West AP Inflow=5.67 cfs 0.606 af
Primary=5.67 cfs 0.606 af

Total Runoff Area = 4.004 ac Runoff Volume = 0.902 af Average Runoff Depth = 2.70"
86.92% Pervious = 3.480 ac 13.08% Impervious = 0.524 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>4.02"
Flow Length=210' Tc=8.1 min CN=83 Runoff=2.75 cfs 0.202 af

Subcatchment2S: North Subcat Runoff Area=61,619 sf 15.96% Impervious Runoff Depth>3.91"
Flow Length=428' Tc=18.5 min CN=82 Runoff=4.77 cfs 0.460 af

Subcatchment3S: South Subcat Runoff Area=30,450 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=191' Tc=11.6 min CN=79 Runoff=2.61 cfs 0.210 af

Subcatchment4S: West Subcat Runoff Area=56,031 sf 6.68% Impervious Runoff Depth>3.71"
Flow Length=181' Tc=10.2 min CN=80 Runoff=5.11 cfs 0.398 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.92' Max Vel=3.54 fps Inflow=2.75 cfs 0.202 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=2.37 cfs 0.202 af

Reach 2R: South AP Reach Avg. Flow Depth=0.28' Max Vel=0.39 fps Inflow=2.37 cfs 0.202 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=2.34 cfs 0.201 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.50' Max Vel=0.40 fps Inflow=4.77 cfs 0.460 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=4.46 cfs 0.457 af

Link AP1: South AP Inflow=4.92 cfs 0.411 af
Primary=4.92 cfs 0.411 af

Link AP2: West AP Inflow=8.08 cfs 0.854 af
Primary=8.08 cfs 0.854 af

Total Runoff Area = 4.004 ac Runoff Volume = 1.271 af Average Runoff Depth = 3.81"
86.92% Pervious = 3.480 ac 13.08% Impervious = 0.524 ac

Summary for Subcatchment 1S: Aroma Joe's

Runoff = 2.75 cfs @ 12.11 hrs, Volume= 0.202 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,587	80	>75% Grass cover, Good, HSG D
8,984	98	Paved parking, HSG D
5,513	79	Woods/grass comb., Good, HSG D
55	74	>75% Grass cover, Good, HSG C
254	98	Paved parking, HSG C
9,903	72	Woods/grass comb., Good, HSG C
26,296	83	Weighted Average
17,058		64.87% Pervious Area
9,238		35.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	40	0.1000	1.58		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
1.0	120	0.0100	2.03		**Shallow Concentrated Flow, SCF 2** Paved Kv= 20.3 fps
8.1	210	Total			

Summary for Subcatchment 2S: North Subcat

Runoff = 4.77 cfs @ 12.25 hrs, Volume= 0.460 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
9,834	98	Paved parking, HSG D
51,785	79	Woods/grass comb., Good, HSG D
61,619	82	Weighted Average
51,785		84.04% Pervious Area
9,834		15.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0300	0.08		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
3.2	185	0.0378	0.97		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
4.5	193	0.0207	0.72		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
18.5	428	Total			

Summary for Subcatchment 3S: South Subcat

Runoff = 2.61 cfs @ 12.16 hrs, Volume= 0.210 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
30,450	79	Woods/grass comb., Good, HSG D
30,450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0400	0.09		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
1.9	141	0.0638	1.26		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
11.6	191	Total			

Summary for Subcatchment 4S: West Subcat

Runoff = 5.11 cfs @ 12.14 hrs, Volume= 0.398 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,743	98	Paved parking, HSG D
52,288	79	Woods/grass comb., Good, HSG D
56,031	80	Weighted Average
52,288		93.32% Pervious Area
3,743		6.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0600	0.10		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	55	0.1091	1.65		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
1.4	76	0.0329	0.91		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
10.2	181	Total			

Summary for Reach 1R: Aroma Joe's BMP

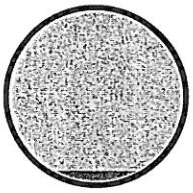
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 116% of Manning's capacity
[76] Warning: Detained 0.002 af (Pond w/culvert advised)

Inflow Area = 0.604 ac, 35.13% Impervious, Inflow Depth > 4.02" for 25 YEAR STORM event
Inflow = 2.75 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.37 cfs @ 12.10 hrs, Volume= 0.202 af, Atten= 14%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.4 min

Peak Storage= 94 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00' above invert (0.92' above fill)
Bank-Full Depth= 1.00' above invert (0.92' above fill) Flow Area= 0.8 sf, Capacity= 2.37 cfs

12.0" Round Pipe w/ 1.0" inside fill
n= 0.013 Corrugated PE, smooth interior
Length= 124.0' Slope= 0.0050 '/'
Inlet Invert= 46.00', Outlet Invert= 45.38'



Summary for Reach 2R: South AP Reach

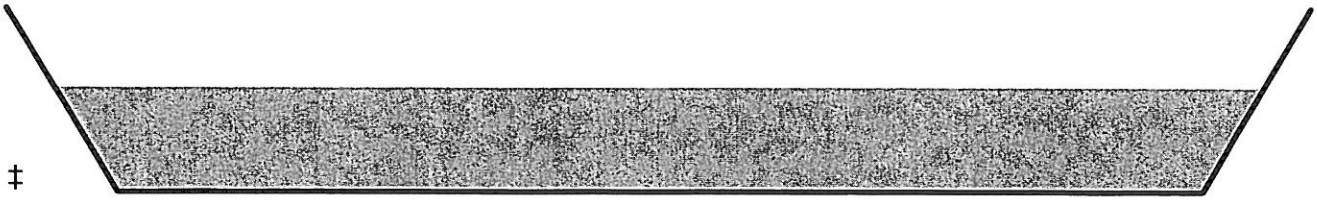
[61] Hint: Exceeded Reach 1R outlet invert by 0.28' @ 12.20 hrs

Inflow Area = 0.604 ac, 35.13% Impervious, Inflow Depth > 4.02" for 25 YEAR STORM event
Inflow = 2.37 cfs @ 12.10 hrs, Volume= 0.202 af
Outflow = 2.34 cfs @ 12.20 hrs, Volume= 0.201 af, Atten= 1%, Lag= 5.9 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.39 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 14.1 min

Peak Storage= 576 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 11.0 sf, Capacity= 6.11 cfs

20.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 96.0' Slope= 0.0638 '/'
Inlet Invert= 45.38', Outlet Invert= 39.26'



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Summary for Reach 3R: Ditch Culvert Reach

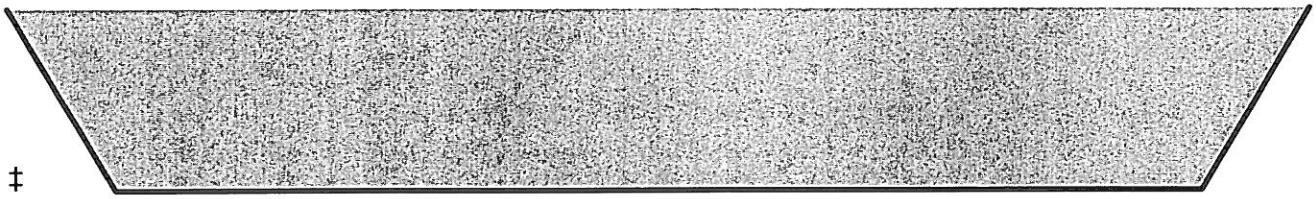
[55] Hint: Peak inflow is 108% of Manning's capacity

Inflow Area = 1.415 ac, 15.96% Impervious, Inflow Depth > 3.91" for 25 YEAR STORM event
Inflow = 4.77 cfs @ 12.25 hrs, Volume= 0.460 af
Outflow = 4.46 cfs @ 12.32 hrs, Volume= 0.457 af, Atten= 7%, Lag= 4.2 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 19.6 min

Peak Storage= 1,674 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 0.50' Flow Area= 11.0 sf, Capacity= 4.41 cfs

20.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 151.0' Slope= 0.0331 '/'
Inlet Invert= 39.50', Outlet Invert= 34.50'



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Summary for Link AP1: South AP

Inflow Area = 1.303 ac, 16.28% Impervious, Inflow Depth > 3.79" for 25 YEAR STORM event
Inflow = 4.92 cfs @ 12.17 hrs, Volume= 0.411 af
Primary = 4.92 cfs @ 12.17 hrs, Volume= 0.411 af, Atten= 0%, Lag= 0.0 min

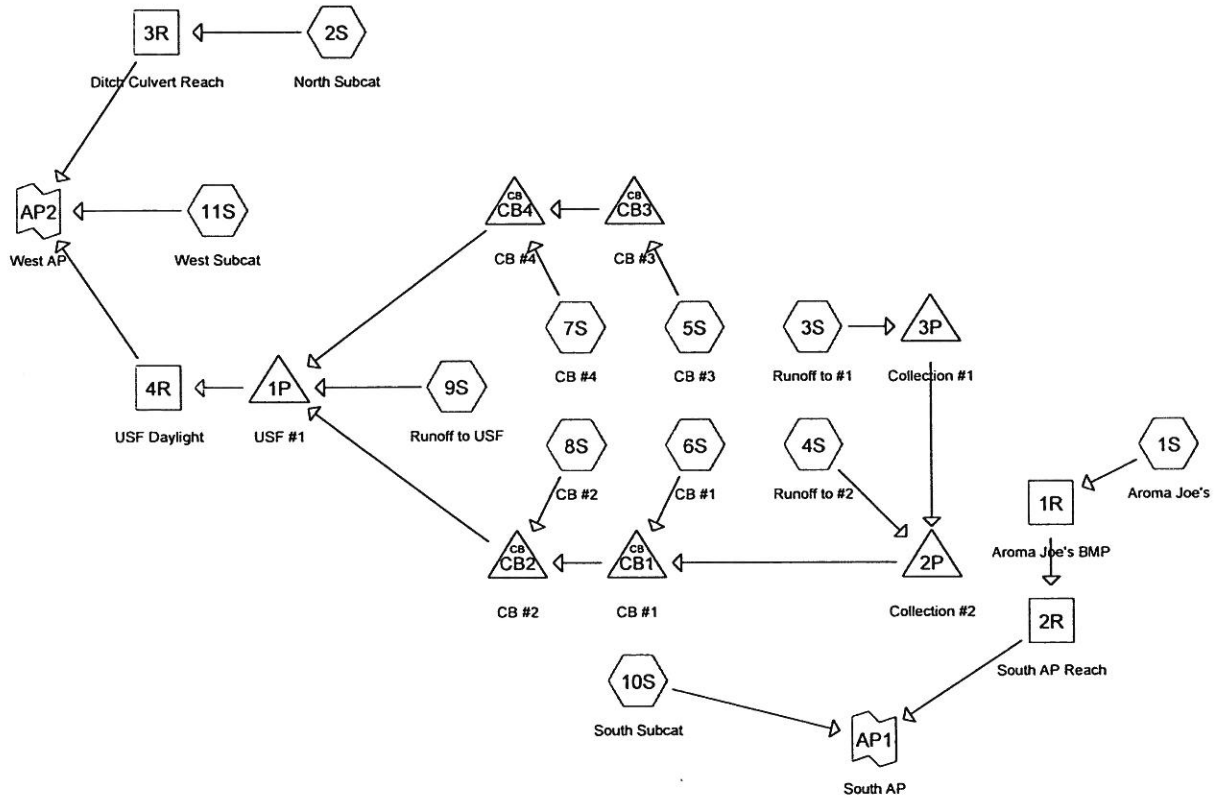
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

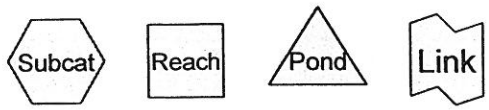
Summary for Link AP2: West AP

Inflow Area = 2.701 ac, 11.54% Impervious, Inflow Depth > 3.80" for 25 YEAR STORM event
Inflow = 8.08 cfs @ 12.19 hrs, Volume= 0.854 af
Primary = 8.08 cfs @ 12.19 hrs, Volume= 0.854 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

DEVELOPED CONDITION CALCULATIONS





Routing Diagram for Kittery Storage PRP
Prepared by Hewlett-Packard Company, Printed 9/29/2016
HydroCAD® 10.00 s/n 01988 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.227	72	Woods/grass comb., Good, HSG C (1S)
0.001	74	>75% Grass cover, Good, HSG C (1S)
1.452	79	Woods/grass comb., Good, HSG D (1S, 2S, 10S, 11S)
0.755	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 9S, 10S, 11S)
0.019	82	Woods/grass comb., Fair, HSG D (4S)
0.006	98	Paved parking, HSG C (1S)
0.964	98	Paved parking, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S)
0.592	98	Unconnected roofs, HSG D (4S, 5S, 6S, 7S, 8S, 9S)
4.017	**86**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>1.57"
Flow Length=210' Tc=8.1 min CN=83 Runoff=1.10 cfs 0.079 af

Subcatchment2S: North Subcat Runoff Area=30,572 sf 28.26% Impervious Runoff Depth>1.72"
Flow Length=277' Tc=6.5 min CN=85 Runoff=1.47 cfs 0.101 af

Subcatchment3S: Runoff to #1 Runoff Area=3,147 sf 79.85% Impervious Runoff Depth>2.50"
Flow Length=43' Slope=0.0200 '/' Tc=0.6 min CN=94 Runoff=0.24 cfs 0.015 af

Subcatchment4S: Runoff to #2 Runoff Area=6,199 sf 63.33% Impervious Runoff Depth>2.31"
Flow Length=60' Slope=0.0200 '/' Tc=0.8 min CN=92 Runoff=0.45 cfs 0.027 af

Subcatchment5S: CB #3 Runoff Area=5,933 sf 100.00% Impervious Runoff Depth>2.87"
Flow Length=78' Slope=0.0200 '/' Tc=1.0 min CN=98 Runoff=0.49 cfs 0.033 af

Subcatchment6S: CB #1 Runoff Area=5,574 sf 100.00% Impervious Runoff Depth>2.87"
Flow Length=54' Slope=0.0200 '/' Tc=0.8 min CN=98 Runoff=0.46 cfs 0.031 af

Subcatchment7S: CB #4 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>2.87"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.64 cfs 0.042 af

Subcatchment8S: CB #2 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>2.87"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.64 cfs 0.042 af

Subcatchment9S: Runoff to USF Runoff Area=24,545 sf 53.53% Impervious Runoff Depth>2.13"
Flow Length=82' Tc=0.9 min CN=90 Runoff=1.65 cfs 0.100 af

Subcatchment10S: South Subcat Runoff Area=15,334 sf 0.00% Impervious Runoff Depth>1.30"
Flow Length=224' Tc=13.2 min CN=79 Runoff=0.45 cfs 0.038 af

Subcatchment11S: West Subcat Runoff Area=42,059 sf 8.90% Impervious Runoff Depth>1.43"
Flow Length=148' Tc=4.9 min CN=81 Runoff=1.75 cfs 0.115 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.41' Max Vel=3.04 fps Inflow=1.10 cfs 0.079 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=1.08 cfs 0.079 af

Reach 2R: South AP Reach Avg. Flow Depth=0.17' Max Vel=0.28 fps Inflow=1.08 cfs 0.079 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=0.95 cfs 0.078 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.22' Max Vel=0.24 fps Inflow=1.47 cfs 0.101 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=1.07 cfs 0.099 af

Reach 4R: USF Daylight Avg. Flow Depth=0.09' Max Vel=0.15 fps Inflow=0.28 cfs 0.230 af
n=0.400 L=117.0' S=0.0427 '/' Capacity=5.00 cfs Outflow=0.28 cfs 0.226 af

Pond 1P: USF #1 Peak Elev=43.72' Storage=5,846 cf Inflow=4.42 cfs 0.289 af
Primary=0.28 cfs 0.230 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.230 af

Pond 2P: Collection #2 Peak Elev=44.49' Storage=80 cf Inflow=0.66 cfs 0.042 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=0.58 cfs 0.042 af

Pond 3P: Collection #1 Peak Elev=44.61' Storage=45 cf Inflow=0.24 cfs 0.015 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=0.22 cfs 0.015 af

Pond CB1: CB #1 Peak Elev=44.26' Inflow=1.02 cfs 0.072 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=1.02 cfs 0.072 af

Pond CB2: CB #2 Peak Elev=43.84' Inflow=1.65 cfs 0.114 af
12.0" Round Culvert n=0.013 L=153.0' S=0.0046 '/' Outflow=1.65 cfs 0.114 af

Pond CB3: CB #3 Peak Elev=44.04' Inflow=0.49 cfs 0.033 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=0.49 cfs 0.033 af

Pond CB4: CB #4 Peak Elev=43.72' Inflow=1.12 cfs 0.074 af
12.0" Round Culvert n=0.013 L=149.0' S=0.0047 '/' Outflow=1.12 cfs 0.074 af

Link AP1: South AP Inflow=1.40 cfs 0.116 af
Primary=1.40 cfs 0.116 af

Link AP2: West AP Inflow=2.81 cfs 0.440 af
Primary=2.81 cfs 0.440 af

Total Runoff Area = 4.017 ac Runoff Volume = 0.623 af Average Runoff Depth = 1.86"
61.13% Pervious = 2.455 ac 38.87% Impervious = 1.561 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>2.89"
Flow Length=210' Tc=8.1 min CN=83 Runoff=2.00 cfs 0.145 af

Subcatchment2S: North Subcat Runoff Area=30,572 sf 28.26% Impervious Runoff Depth>3.08"
Flow Length=277' Tc=6.5 min CN=85 Runoff=2.58 cfs 0.180 af

Subcatchment3S: Runoff to #1 Runoff Area=3,147 sf 79.85% Impervious Runoff Depth>3.97"
Flow Length=43' Slope=0.0200 '/' Tc=0.6 min CN=94 Runoff=0.38 cfs 0.024 af

Subcatchment4S: Runoff to #2 Runoff Area=6,199 sf 63.33% Impervious Runoff Depth>3.78"
Flow Length=60' Slope=0.0200 '/' Tc=0.8 min CN=92 Runoff=0.71 cfs 0.045 af

Subcatchment5S: CB #3 Runoff Area=5,933 sf 100.00% Impervious Runoff Depth>4.33"
Flow Length=78' Slope=0.0200 '/' Tc=1.0 min CN=98 Runoff=0.73 cfs 0.049 af

Subcatchment6S: CB #1 Runoff Area=5,574 sf 100.00% Impervious Runoff Depth>4.33"
Flow Length=54' Slope=0.0200 '/' Tc=0.8 min CN=98 Runoff=0.69 cfs 0.046 af

Subcatchment7S: CB #4 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>4.33"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.95 cfs 0.063 af

Subcatchment8S: CB #2 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>4.33"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.95 cfs 0.063 af

Subcatchment9S: Runoff to USF Runoff Area=24,545 sf 53.53% Impervious Runoff Depth>3.58"
Flow Length=82' Tc=0.9 min CN=90 Runoff=2.70 cfs 0.168 af

Subcatchment10S: South Subcat Runoff Area=15,334 sf 0.00% Impervious Runoff Depth>2.53"
Flow Length=224' Tc=13.2 min CN=79 Runoff=0.88 cfs 0.074 af

Subcatchment11S: West Subcat Runoff Area=42,059 sf 8.90% Impervious Runoff Depth>2.71"
Flow Length=148' Tc=4.9 min CN=81 Runoff=3.31 cfs 0.218 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.62' Max Vel=3.49 fps Inflow=2.00 cfs 0.145 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=1.98 cfs 0.145 af

Reach 2R: South AP Reach Avg. Flow Depth=0.24' Max Vel=0.35 fps Inflow=1.98 cfs 0.145 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=1.81 cfs 0.144 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.32' Max Vel=0.30 fps Inflow=2.58 cfs 0.180 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=2.04 cfs 0.178 af

Reach 4R: USF Daylight Avg. Flow Depth=0.21' Max Vel=0.26 fps Inflow=1.19 cfs 0.362 af
n=0.400 L=117.0' S=0.0427 '/' Capacity=5.00 cfs Outflow=1.16 cfs 0.357 af

Pond 1P: USF #1 Peak Elev=44.26' Storage=8,775 cf Inflow=6.87 cfs 0.458 af
Primary=1.19 cfs 0.362 af Secondary=0.00 cfs 0.000 af Outflow=1.19 cfs 0.362 af

Pond 2P: Collection #2 Peak Elev=44.69' Storage=130 cf Inflow=1.04 cfs 0.068 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=0.87 cfs 0.068 af

Pond 3P: Collection #1 Peak Elev=44.72' Storage=58 cf Inflow=0.38 cfs 0.024 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=0.33 cfs 0.023 af

Pond CB1: CB #1 Peak Elev=44.59' Inflow=1.55 cfs 0.114 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=1.55 cfs 0.114 af

Pond CB2: CB #2 Peak Elev=44.37' Inflow=2.49 cfs 0.178 af
12.0" Round Culvert n=0.013 L=153.0' S=0.0046 '/' Outflow=2.49 cfs 0.178 af

Pond CB3: CB #3 Peak Elev=44.27' Inflow=0.73 cfs 0.049 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=0.73 cfs 0.049 af

Pond CB4: CB #4 Peak Elev=44.26' Inflow=1.68 cfs 0.112 af
12.0" Round Culvert n=0.013 L=149.0' S=0.0047 '/' Outflow=1.68 cfs 0.112 af

Link AP1: South AP Inflow=2.67 cfs 0.218 af
Primary=2.67 cfs 0.218 af

Link AP2: West AP Inflow=5.23 cfs 0.753 af
Primary=5.23 cfs 0.753 af

Total Runoff Area = 4.017 ac Runoff Volume = 1.076 af Average Runoff Depth = 3.21"
61.13% Pervious = 2.455 ac 38.87% Impervious = 1.561 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Aroma Joe's Runoff Area=26,296 sf 35.13% Impervious Runoff Depth>4.02"
Flow Length=210' Tc=8.1 min CN=83 Runoff=2.75 cfs 0.202 af

Subcatchment2S: North Subcat Runoff Area=30,572 sf 28.26% Impervious Runoff Depth>4.23"
Flow Length=277' Tc=6.5 min CN=85 Runoff=3.50 cfs 0.248 af

Subcatchment3S: Runoff to #1 Runoff Area=3,147 sf 79.85% Impervious Runoff Depth>5.18"
Flow Length=43' Slope=0.0200 '/' Tc=0.6 min CN=94 Runoff=0.48 cfs 0.031 af

Subcatchment4S: Runoff to #2 Runoff Area=6,199 sf 63.33% Impervious Runoff Depth>4.98"
Flow Length=60' Slope=0.0200 '/' Tc=0.8 min CN=92 Runoff=0.92 cfs 0.059 af

Subcatchment5S: CB #3 Runoff Area=5,933 sf 100.00% Impervious Runoff Depth>5.51"
Flow Length=78' Slope=0.0200 '/' Tc=1.0 min CN=98 Runoff=0.92 cfs 0.063 af

Subcatchment6S: CB #1 Runoff Area=5,574 sf 100.00% Impervious Runoff Depth>5.51"
Flow Length=54' Slope=0.0200 '/' Tc=0.8 min CN=98 Runoff=0.87 cfs 0.059 af

Subcatchment7S: CB #4 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>5.51"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=1.20 cfs 0.081 af

Subcatchment8S: CB #2 Runoff Area=7,650 sf 100.00% Impervious Runoff Depth>5.51"
Flow Length=48' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=1.20 cfs 0.081 af

Subcatchment9S: Runoff to USF Runoff Area=24,545 sf 53.53% Impervious Runoff Depth>4.77"
Flow Length=82' Tc=0.9 min CN=90 Runoff=3.55 cfs 0.224 af

Subcatchment10S: South Subcat Runoff Area=15,334 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=224' Tc=13.2 min CN=79 Runoff=1.25 cfs 0.106 af

Subcatchment11S: West Subcat Runoff Area=42,059 sf 8.90% Impervious Runoff Depth>3.82"
Flow Length=148' Tc=4.9 min CN=81 Runoff=4.61 cfs 0.307 af

Reach 1R: Aroma Joe's BMP Avg. Flow Depth=0.92' Max Vel=3.54 fps Inflow=2.75 cfs 0.202 af
12.0" Round Pipe w/ 1.0" inside fill n=0.013 L=124.0' S=0.0050 '/' Capacity=2.37 cfs Outflow=2.37 cfs 0.202 af

Reach 2R: South AP Reach Avg. Flow Depth=0.28' Max Vel=0.39 fps Inflow=2.37 cfs 0.202 af
n=0.400 L=96.0' S=0.0638 '/' Capacity=6.11 cfs Outflow=2.34 cfs 0.201 af

Reach 3R: Ditch Culvert Reach Avg. Flow Depth=0.39' Max Vel=0.34 fps Inflow=3.50 cfs 0.248 af
n=0.400 L=151.0' S=0.0331 '/' Capacity=4.41 cfs Outflow=2.86 cfs 0.245 af

Reach 4R: USF Daylight Avg. Flow Depth=0.27' Max Vel=0.31 fps Inflow=1.81 cfs 0.486 af
n=0.400 L=117.0' S=0.0427 '/' Capacity=5.00 cfs Outflow=1.79 cfs 0.481 af

Pond 1P: USF #1 Peak Elev=44.63' Storage=11,132 cf Inflow=8.81 cfs 0.596 af
Primary=1.81 cfs 0.486 af Secondary=0.00 cfs 0.000 af Outflow=1.81 cfs 0.486 af

Pond 2P: Collection #2 Peak Elev=45.20' Storage=315 cf Inflow=1.35 cfs 0.090 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=1.52 cfs 0.090 af

Pond 3P: Collection #1 Peak Elev=45.19' Storage=129 cf Inflow=0.48 cfs 0.031 af
12.0" Round Culvert n=0.013 L=52.0' S=0.0058 '/' Outflow=0.62 cfs 0.031 af

Pond CB1: CB #1 Peak Elev=45.66' Inflow=1.93 cfs 0.148 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=1.93 cfs 0.148 af

Pond CB2: CB #2 Peak Elev=45.39' Inflow=3.13 cfs 0.229 af
12.0" Round Culvert n=0.013 L=153.0' S=0.0046 '/' Outflow=3.13 cfs 0.229 af

Pond CB3: CB #3 Peak Elev=44.65' Inflow=0.92 cfs 0.063 af
12.0" Round Culvert n=0.013 L=101.0' S=0.0050 '/' Outflow=0.92 cfs 0.063 af

Pond CB4: CB #4 Peak Elev=44.65' Inflow=2.13 cfs 0.143 af
12.0" Round Culvert n=0.013 L=149.0' S=0.0047 '/' Outflow=2.13 cfs 0.143 af

Link AP1: South AP Inflow=3.59 cfs 0.307 af
Primary=3.59 cfs 0.307 af

Link AP2: West AP Inflow=7.80 cfs 1.034 af
Primary=7.80 cfs 1.034 af

Total Runoff Area = 4.017 ac Runoff Volume = 1.460 af Average Runoff Depth = 4.36"
61.13% Pervious = 2.455 ac 38.87% Impervious = 1.561 ac

Summary for Subcatchment 1S: Aroma Joe's

Runoff = 2.75 cfs @ 12.11 hrs, Volume= 0.202 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
1,587	80	>75% Grass cover, Good, HSG D
8,984	98	Paved parking, HSG D
5,513	79	Woods/grass comb., Good, HSG D
55	74	>75% Grass cover, Good, HSG C
254	98	Paved parking, HSG C
9,903	72	Woods/grass comb., Good, HSG C
26,296	83	Weighted Average
17,058		64.87% Pervious Area
9,238		35.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	40	0.1000	1.58		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
1.0	120	0.0100	2.03		**Shallow Concentrated Flow, SCF 2** Paved Kv= 20.3 fps
8.1	210	Total			

Summary for Subcatchment 2S: North Subcat

Runoff = 3.50 cfs @ 12.10 hrs, Volume= 0.248 af, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
8,640	98	Paved parking, HSG D
6,218	80	>75% Grass cover, Good, HSG D
15,714	79	Woods/grass comb., Good, HSG D
30,572	85	Weighted Average
21,932		71.74% Pervious Area
8,640		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	50	0.0700	0.24		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.00"
0.8	82	0.0548	1.64		**Shallow Concentrated Flow, SCF 1** Short Grass Pasture Kv= 7.0 fps
2.2	145	0.0241	1.09		**Shallow Concentrated Flow, SCF 2** Short Grass Pasture Kv= 7.0 fps
6.5	277	Total			

Summary for Subcatchment 3S: Runoff to #1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.48 cfs @ 12.01 hrs, Volume= 0.031 af, Depth> 5.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
2,513	98	Paved parking, HSG D
634	80	>75% Grass cover, Good, HSG D
3,147	94	Weighted Average
634		20.15% Pervious Area
2,513		79.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	43	0.0200	1.12		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 4S: Runoff to #2

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.92 cfs @ 12.01 hrs, Volume= 0.059 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
80	98	Unconnected roofs, HSG D
3,846	98	Paved parking, HSG D
1,427	80	>75% Grass cover, Good, HSG D
846	82	Woods/grass comb., Fair, HSG D
6,199	92	Weighted Average
2,273		36.67% Pervious Area
3,926		63.33% Impervious Area
80		2.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0200	1.20		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 5S: CB #3

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.92 cfs @ 12.01 hrs, Volume= 0.063 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,202	98	Unconnected roofs, HSG D
2,731	98	Paved parking, HSG D
5,933	98	Weighted Average
5,933		100.00% Impervious Area
3,202		53.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	78	0.0200	1.27		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 6S: CB #1

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.87 cfs @ 12.01 hrs, Volume= 0.059 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,202	98	Unconnected roofs, HSG D
2,372	98	Paved parking, HSG D
5,574	98	Weighted Average
5,574		100.00% Impervious Area
3,202		57.45% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	54	0.0200	1.18		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 7S: CB #4

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.20 cfs @ 12.01 hrs, Volume= 0.081 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
5,830	98	Unconnected roofs, HSG D
1,820	98	Paved parking, HSG D
7,650	98	Weighted Average
7,650		100.00% Impervious Area
5,830		76.21% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	48	0.0200	1.15		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 8S: CB #2

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.20 cfs @ 12.01 hrs, Volume= 0.081 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
5,830	98	Unconnected roofs, HSG D
1,820	98	Paved parking, HSG D
7,650	98	Weighted Average
7,650		100.00% Impervious Area
5,830		76.21% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	48	0.0200	1.15		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"

Summary for Subcatchment 9S: Runoff to USF

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.55 cfs @ 12.01 hrs, Volume= 0.224 af, Depth> 4.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
7,635	98	Unconnected roofs, HSG D
5,504	98	Paved parking, HSG D
11,406	80	>75% Grass cover, Good, HSG D
24,545	90	Weighted Average
11,406		46.47% Pervious Area
13,139		53.53% Impervious Area
7,635		58.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	65	0.0200	1.22		**Sheet Flow, SF 1** Smooth surfaces n= 0.011 P2= 3.00"
0.0	17	0.2500	7.50		**Shallow Concentrated Flow, SCF 1** Grassed Waterway Kv= 15.0 fps
0.9	82	Total			

Summary for Subcatchment 10S: South Subcat

Runoff = 1.25 cfs @ 12.18 hrs, Volume= 0.106 af, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,761	80	>75% Grass cover, Good, HSG D
11,573	79	Woods/grass comb., Good, HSG D
15,334	79	Weighted Average
15,334		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	50	0.0300	0.08		**Sheet Flow, SF 1** Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	174	0.0574	1.20		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
13.2	224	Total			

Summary for Subcatchment 11S: West Subcat

[49] Hint: Tc<2dt may require smaller dt

Runoff = 4.61 cfs @ 12.07 hrs, Volume= 0.307 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
3,743	98	Paved parking, HSG D
7,868	80	>75% Grass cover, Good, HSG D
30,448	79	Woods/grass comb., Good, HSG D
42,059	81	Weighted Average
38,316		91.10% Pervious Area
3,743		8.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.1300	0.30		**Sheet Flow, SF 1** Grass: Short n= 0.150 P2= 3.00"
0.2	17	0.1000	1.58		**Shallow Concentrated Flow, SCF 1** Woodland Kv= 5.0 fps
2.0	81	0.0185	0.68		**Shallow Concentrated Flow, SCF 2** Woodland Kv= 5.0 fps
4.9	148	Total			

Summary for Reach 1R: Aroma Joe's BMP

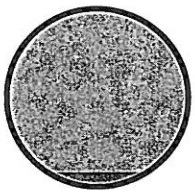
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 116% of Manning's capacity
[76] Warning: Detained 0.002 af (Pond w/culvert advised)

Inflow Area = 0.604 ac, 35.13% Impervious, Inflow Depth > 4.02" for 25 YEAR STORM event
Inflow = 2.75 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.37 cfs @ 12.10 hrs, Volume= 0.202 af, Atten= 14%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.4 min

Peak Storage= 94 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00' above invert (0.92' above fill)
Bank-Full Depth= 1.00' above invert (0.92' above fill) Flow Area= 0.8 sf, Capacity= 2.37 cfs

12.0" Round Pipe w/ 1.0" inside fill
n= 0.013 Corrugated PE, smooth interior
Length= 124.0' Slope= 0.0050 '/'
Inlet Invert= 46.00', Outlet Invert= 45.38'



Summary for Reach 2R: South AP Reach

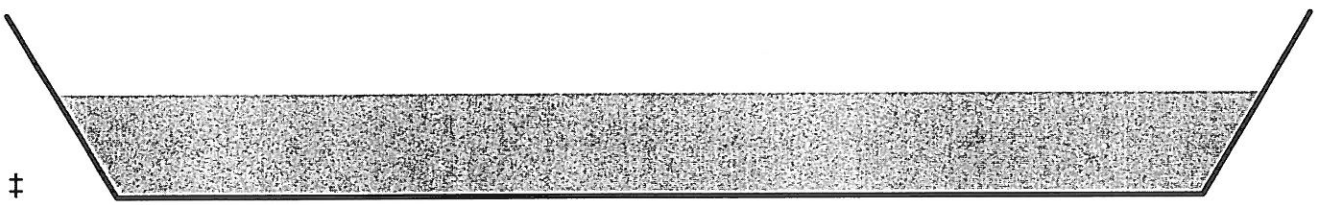
[61] Hint: Exceeded Reach 1R outlet invert by 0.28' @ 12.20 hrs

Inflow Area = 0.604 ac, 35.13% Impervious, Inflow Depth > 4.02" for 25 YEAR STORM event
Inflow = 2.37 cfs @ 12.10 hrs, Volume= 0.202 af
Outflow = 2.34 cfs @ 12.20 hrs, Volume= 0.201 af, Atten= 1%, Lag= 5.9 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.39 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 14.1 min

Peak Storage= 576 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 11.0 sf, Capacity= 6.11 cfs

20.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 96.0' Slope= 0.0638 '/'
Inlet Invert= 45.38', Outlet Invert= 39.26'



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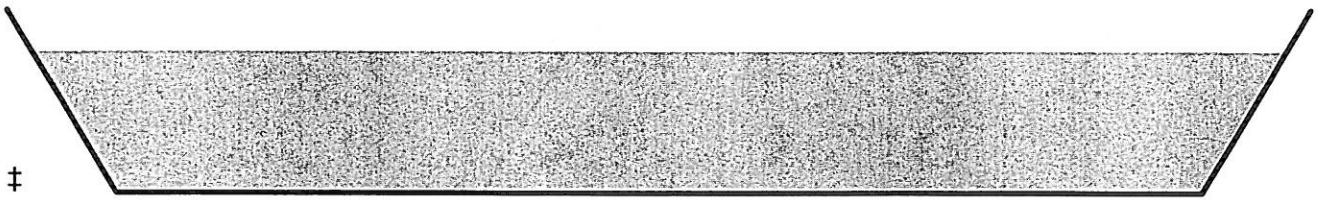
Summary for Reach 3R: Ditch Culvert Reach

Inflow Area = 0.702 ac, 28.26% Impervious, Inflow Depth > 4.23" for 25 YEAR STORM event
Inflow = 3.50 cfs @ 12.10 hrs, Volume= 0.248 af
Outflow = 2.86 cfs @ 12.16 hrs, Volume= 0.245 af, Atten= 18%, Lag= 3.8 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.34 fps, Min. Travel Time= 7.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 25.7 min

Peak Storage= 1,261 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 0.50' Flow Area= 11.0 sf, Capacity= 4.41 cfs

20.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 151.0' Slope= 0.0331 '/'
Inlet Invert= 39.50', Outlet Invert= 34.50'



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Summary for Reach 4R: USF Daylight

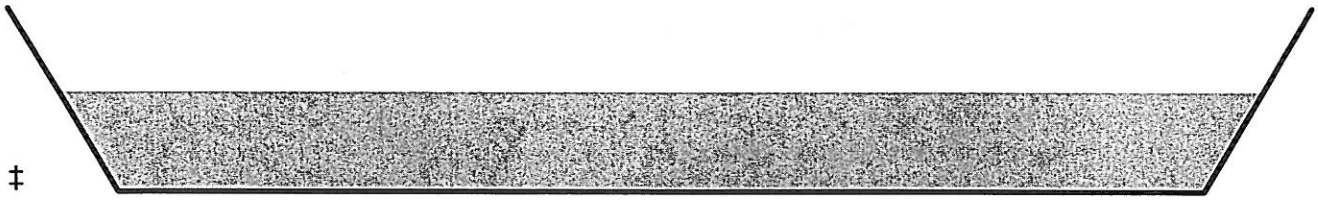
[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.393 ac, 76.42% Impervious, Inflow Depth > 4.19" for 25 YEAR STORM event
Inflow = 1.81 cfs @ 12.41 hrs, Volume= 0.486 af
Outflow = 1.79 cfs @ 12.50 hrs, Volume= 0.481 af, Atten= 1%, Lag= 5.4 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 12.5 min

Peak Storage= 672 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 0.50' Flow Area= 11.0 sf, Capacity= 5.00 cfs

20.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 4.0 '/' Top Width= 24.00'
Length= 117.0' Slope= 0.0427 '/'
Inlet Invert= 39.50', Outlet Invert= 34.50'



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Summary for Pond 1P: USF #1

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.393 ac, 76.42% Impervious, Inflow Depth > 5.13" for 25 YEAR STORM event
Inflow = 8.81 cfs @ 12.01 hrs, Volume= 0.596 af
Outflow = 1.81 cfs @ 12.41 hrs, Volume= 0.486 af, Atten= 79%, Lag= 23.8 min
Primary = 1.81 cfs @ 12.41 hrs, Volume= 0.486 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 44.63' @ 12.41 hrs Surf.Area= 6,662 sf Storage= 11,132 cf

Plug-Flow detention time= 120.1 min calculated for 0.486 af (82% of inflow)
Center-of-Mass det. time= 68.3 min (809.7 - 741.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.30'	22,079 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.30	3,220	0	0
43.00	4,088	2,558	2,558
43.80	5,162	3,700	6,258
44.00	5,437	1,060	7,318
46.00	9,324	14,761	22,079

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	**12.0" Round CMP_Round 12"** L= 31.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 39.80' / 39.00' S= 0.0258 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	40.00'	**6.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.00' / 39.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	42.30'	**2.400 in/hr Exfiltration over Horizontal area**
#4	Device 1	44.80'	**8.0" W x 8.0" H Vert. Orifice/Grate** X 6 rows with 1.0" cc spacing C= 0.600
#5	Secondary	44.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#6	Device 1	43.80'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=1.81 cfs @ 12.41 hrs HW=44.63' TW=39.77' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Passes 1.81 cfs of 7.87 cfs potential flow)
  ├─**2=Culvert** (Passes 0.37 cfs of 1.85 cfs potential flow)
  │ └─**3=Exfiltration** (Exfiltration Controls 0.37 cfs)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Orifice/Grate** (Orifice Controls 1.44 cfs @ 3.66 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=42.30' TW=39.50' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Collection #2

[82] Warning: Early inflow requires earlier time span
[90] Warning: Qout>Qin may require Finer Routing or smaller dt
[80] Warning: Exceeded Pond 3P by 0.33' @ 12.30 hrs (1.39 cfs 0.022 af)

Inflow Area =	0.215 ac, 68.90% Impervious, Inflow Depth > 5.02" for 25 YEAR STORM event			
Inflow =	1.35 cfs @ 12.01 hrs, Volume=	0.090 af		
Outflow =	1.52 cfs @ 12.19 hrs, Volume=	0.090 af, Atten= 0%, Lag= 11.0 min		
Primary =	1.52 cfs @ 12.19 hrs, Volume=	0.090 af		

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 45.20' @ 12.14 hrs Surf.Area= 437 sf Storage= 315 cf

Plug-Flow detention time= 5.9 min calculated for 0.089 af (99% of inflow)
Center-of-Mass det. time= 4.9 min (752.2 - 747.3)

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	3,276 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	90	0	0
46.00	670	760	760
47.00	950	810	1,570
48.00	2,462	1,706	3,276

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**12.0" Round CMP_Round 12"** L= 52.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.00' / 43.70' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.19 hrs HW=44.92' TW=45.02' (Dynamic Tailwater)
└**1=CMP_Round 12"** (Controls 0.00 cfs)

Summary for Pond 3P: Collection #1

[82] Warning: Early inflow requires earlier time span
[90] Warning: Qout>Qin may require Finer Routing or smaller dt
[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area =	0.072 ac, 79.85% Impervious, Inflow Depth > 5.18" for 25 YEAR STORM event				
Inflow =	0.48 cfs @	12.01 hrs,	Volume=	0.031 af	
Outflow =	0.62 cfs @	12.25 hrs,	Volume=	0.031 af,	Atten= 0%, Lag= 14.5 min
Primary =	0.62 cfs @	12.25 hrs,	Volume=	0.031 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 45.19' @ 12.20 hrs Surf.Area= 183 sf Storage= 129 cf

Plug-Flow detention time= 16.0 min calculated for 0.031 af (99% of inflow)
Center-of-Mass det. time= 9.5 min (749.9 - 740.4)

Volume	Invert	Avail.Storage	Storage Description
#1	44.00'	674 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.00	35	0	0
46.00	285	320	320
47.00	422	354	674

Device	Routing	Invert	Outlet Devices
#1	Primary	44.30'	**12.0" Round CMP_Round 12"** L= 52.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.30' / 44.00' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.76 cfs @ 12.25 hrs HW=45.00' TW=44.84' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Outlet Controls 0.76 cfs @ 1.82 fps)

Summary for Pond CB1: CB #1

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 45.66' (Flood elevation advised)
[80] Warning: Exceeded Pond 2P by 0.78' @ 12.05 hrs (3.14 cfs 0.054 af)

Inflow Area =	0.343 ac, 80.52% Impervious, Inflow Depth > 5.20" for 25 YEAR STORM event				
Inflow =	1.93 cfs @	12.01 hrs,	Volume=	0.148 af	
Outflow =	1.93 cfs @	12.01 hrs,	Volume=	0.148 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.93 cfs @	12.01 hrs,	Volume=	0.148 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 45.66' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	43.60'	**12.0" Round CMP_Round 12"** L= 101.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.60' / 43.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=44.90' TW=45.28' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Controls 0.00 cfs)

Summary for Pond CB2: CB #2

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 45.39' (Flood elevation advised)
[80] Warning: Exceeded Pond CB1 by 0.59' @ 12.00 hrs (2.23 cfs 0.030 af)

Inflow Area =	0.518 ac, 87.12% Impervious, Inflow Depth > 5.30" for 25 YEAR STORM event				
Inflow =	3.13 cfs @	12.01 hrs,	Volume=	0.229 af	
Outflow =	3.13 cfs @	12.01 hrs,	Volume=	0.229 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.13 cfs @	12.01 hrs,	Volume=	0.229 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 45.39' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	**12.0" Round CMP_Round 12"** L= 153.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.00' / 42.30' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.78 cfs @ 12.01 hrs HW=45.29' TW=44.06' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Outlet Controls 2.78 cfs @ 3.54 fps)

Summary for Pond CB3: CB #3

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 44.65' (Flood elevation advised)

Inflow Area =	0.136 ac,100.00% Impervious, Inflow Depth > 5.51" for 25 YEAR STORM event				
Inflow =	0.92 cfs @	12.01 hrs, Volume=	0.063 af		
Outflow =	0.92 cfs @	12.01 hrs, Volume=	0.063 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.92 cfs @	12.01 hrs, Volume=	0.063 af		

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 44.65' @ 12.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	43.60'	**12.0" Round CMP_Round 12"** L= 101.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.60' / 43.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=44.39' TW=44.49' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Controls 0.00 cfs)

Summary for Pond CB4: CB #4

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 44.65' (Flood elevation advised)
[80] Warning: Exceeded Pond CB3 by 0.15' @ 12.00 hrs (0.84 cfs 0.012 af)

Inflow Area =	0.312 ac,100.00% Impervious, Inflow Depth > 5.51" for 25 YEAR STORM event				
Inflow =	2.13 cfs @	12.01 hrs, Volume=	0.143 af		
Outflow =	2.13 cfs @	12.01 hrs, Volume=	0.143 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.13 cfs @	12.01 hrs, Volume=	0.143 af		

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 44.65' @ 12.44 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	43.00'	**12.0" Round CMP_Round 12"** L= 149.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 43.00' / 42.30' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.65 cfs @ 12.01 hrs HW=44.48' TW=44.06' (Dynamic Tailwater)
└─**1=CMP_Round 12"** (Outlet Controls 1.65 cfs @ 2.10 fps)

Summary for Link AP1: South AP

Inflow Area = 0.956 ac, 22.19% Impervious, Inflow Depth > 3.85" for 25 YEAR STORM event
Inflow = 3.59 cfs @ 12.19 hrs, Volume= 0.307 af
Primary = 3.59 cfs @ 12.19 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: West AP

Inflow Area = 3.061 ac, 44.08% Impervious, Inflow Depth > 4.05" for 25 YEAR STORM event
Inflow = 7.80 cfs @ 12.11 hrs, Volume= 1.034 af
Primary = 7.80 cfs @ 12.11 hrs, Volume= 1.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

BMP CALCULATIONS

Kittery Storage Solutions - Existing Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	1.88	3.65	4.92
AP2	2.87	5.67	8.08

Kittery Storage Solutions - Developed Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	1.40	2.67	3.59
AP2	2.81	5.23	7.80

Kittery Storage Solutions - Change in Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.48	-0.98	-1.33
AP2	-0.06	-0.44	-0.28

KITTERY STORAGE SOLUTIONS [KITTERY] - BMP Calculations

Kittery Self Storage SWA BMP.xls

C022-16

POND SIZING CALCULATIONS

AREA	IMP. (ft^2)	LA. (ft^2)	RA. (ft^2)	BMP	Treatment Volume (ft^3)	CHECK
SC				**USF 1**		
3S	1,958	634	555		203	
4S	3,466	1,427	1,307		380	
5S	5,703	0	230		483	
6S	5,574	0	0		465	
7S	7,650	0	0		638	
8S	7,650	0	0		638	
9S	13,139	11,407	0		1,475	
Total	45,140	13,468	2,092		4,280	
			5% Impervious + 2% Landscaped Area =		2,568	Filter Area
				Provided Volume =	6,258	OK
				Provided Area =	3,220	OK

IMP - IMPERVIOUS AREA
RA - REMAINING SUBCATCHMENT AREA
BMP - BEST MANAGEMENT PRACTICE
CPV - CHANNEL PROTECTION VOLUME
LA - LANDSCAPED AREA, ARES THAT WILL BE REPLANTED WITH SHRUBS OR GRASS
DEV - DEVELOPED AREA, THE SUM OF THE IMPERVIOUS AREA AND LANDSCAPED AREA.

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.

KITTERY STORAGE SOLUTIONS [KITTERY] - BMP Calculations
Kittery Self Storage SWA BMP.xls
C022-16

TREATMENT CALCULATIONS

Amended Impervious Area to be Treated	45,237	sf	1.04 Acres
Amended Developed Area to be Treated	76,552	sf	1.76 Acres

AMENDED DEVELOPED CONDITIONS:

AREA	IMP. (ft^2)					LA. (ft^2)					DEV. (ft^2)					TREATMENT	REMAINING (ft^2)	
	Ext. (HCAD)	Created Require to Treat	Total (Hydro CAD)	Treated	Not Treated	Ext. (HCAD)	Created Require to Treat	Total (Hydro CAD)	Treated	Not Treated	Ext.	Created Require to Treat	Total (Hydro CAD)	Treated	Not Treated		Total SC Area (HCAD)	Remaining Area (Undeveloped)
1S	9,238	0	9,238	0	9,238	0	0	0	0	0	9,238	0	9,238	0	9,238		26,297	17,059
2S	8,543	97	8,640	0	8,640	0	6,218	6,218	0	6,218	8,543	6,315	14,858	0	14,858		30,572	15,714
3S	555	1,958	2,513	2,513	0	0	634	634	634	0	555	2,592	3,147	3,147	0	USF 1	3,147	0
4S	461	3,466	3,927	3,927	0	0	1,427	1,427	1,427	0	461	4,893	5,354	5,354	0	USF 1	6,200	846
5S	230	5,703	5,933	5,933	0	0	0	0	0	0	230	5,703	5,933	5,933	0	USF 1	5,933	0
6S	0	5,574	5,574	5,574	0	0	0	0	0	0	0	5,574	5,574	5,574	0	USF 1	5,574	0
7S	0	7,650	7,650	7,650	0	0	0	0	0	0	0	7,650	7,650	7,650	0	USF 1	7,650	0
8S	0	7,650	7,650	7,650	0	0	0	0	0	0	0	7,650	7,650	7,650	0	USF 1	7,650	0
9S	0	13,139	13,139	13,139	0	0	11,407	11,407	11,407	0	0	24,546	24,546	24,546	0	USF 1	24,546	0
10S	0	0	0	0	0	0	3,761	3,761	0	3,761	0	3,761	3,761	0	3,761		15,334	11,573
11S	3,016	0	3,016	0	3,016	0	7,868	7,868	0	7,868	3,016	7,868	10,884	0	10,884		42,058	31,174
TOTAL	22,043	45,237	67,280	46,386	20,894	0	31,315	31,315	13,468	17,847	22,043	76,552	98,595	59,854	38,741		174,961	76,366

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.

AREA	IMP. (ft^2)	DEV (ft^2)
Total Area	46386	59854
Total Acres	1.06	1.37
% Treated=	99.8%	78.2%

**95% IMP. AND 80% DEV IS REQUIRED

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.
**IMPERVIOUS TREATED PERCENTAGE CALCULATED FROM "CREATED REQUIRED TO TREAT" COLUMN
**PROJECT ALSO TREATS AN ADDITIONAL 1,246 S.F. OF EXISTING IMPERVIOUS SURFACE

OPERATION AND MAINTENANCE PROGRAM

ATTAR
ENGINEERING, INC
CIVIL · STRUCTURAL · MARINE

KITTERY STORAGE SOLUTIONS
91 ROUTE 236
KITTERY, MAINE

OPERATION AND MAINTENANCE PROGRAM STORMWATER MANAGEMENT BMP's

This project contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater and the prevention of erosion. These BMP's consist of swales, underdrained soil filter ponds, catchbasins and culverts. All components should be inspected quarterly, and after every significant rain event of 1" in any 24-hour period. Additional inspection intervals are specified for certain BMP's, specifically, underdrained soil filters.

The party responsible for implementing this Operation and Maintenance Program (O & M Program) is noted in the "Record Keeping" section, below.

Swales
All swales should be inspected for accumulation of debris, which could adversely affect the function of this BMP. These areas should also be maintained to have gradual slopes, which prevent channeling of stormwater and erosion of the bottom and sides of the swales.

Catch Basins
All catch basin grates, sumps, and inlets/outlets should be inspected for accumulation of debris, which could adversely affect the function of this BMP. Additionally, the basin inverts shall be inspected for clogging and material soundness. Sumps shall always be clear to a depth of 1' below the outlet invert. Inlet structures shall be inspected and cleaned of debris at least twice annually, once in the spring following snow melt and once in the autumn after leaf fall.

Culverts
Culvert inlets and outlets should be inspected for debris, which could clog the BMP. Additionally, the placement of rip-rap should be inspected to ensure that all areas remain smooth and no areas exhibit erosion in the form of rills or gullies.

Snow Removal
Snow shall be stockpiled only in the approved snow storage areas. Plowing of snow into wetland areas or detention ponds shall be avoided. Additionally, a mostly sand mix (reduced salt) shall be applied during winter months to prevent excessive salt from leaching into wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

Underdrained Soil Filters
The underdrained soil filter area is a very effective BMP, however, long term maintenance is essential to its operation. The soil filter should be inspected after every major storm event during the first year to ensure proper function and at least twice-annually, thereafter. The inspection should ensure that the filter drains within 24 - 48

1284 State Road, Eliot, ME 03903 ◇ tel (207) 439-6023 ◇ fax (207) 439-2128

hours. The top several inches of the filter should be replaced with fresh filter material, when water ponds for longer than 72 hours. Debris and sediment that builds up should be removed from the pre-treatment structure at least annually. Outlet structures shall be inspected and cleaned of debris at least twice annually, once in the spring following snow melt and once in the autumn after leaf fall. The height of grass shall be maintained at a maximum of 12"; mowing shall be limited to no more than two times during the growing season.

Seeding, Fertilizing and Mulching

All exposed soil materials and stockpiles must be either temporarily or permanently seeded, fertilized and mulched in accordance with plan specifications. This is one of the most important features of the Erosion Control Plan, which will provide both temporary and permanent stabilization. Eroded or damaged lawn areas must be repaired until a 75% effective growth of vegetation is established and permanently maintained.

Record Keeping

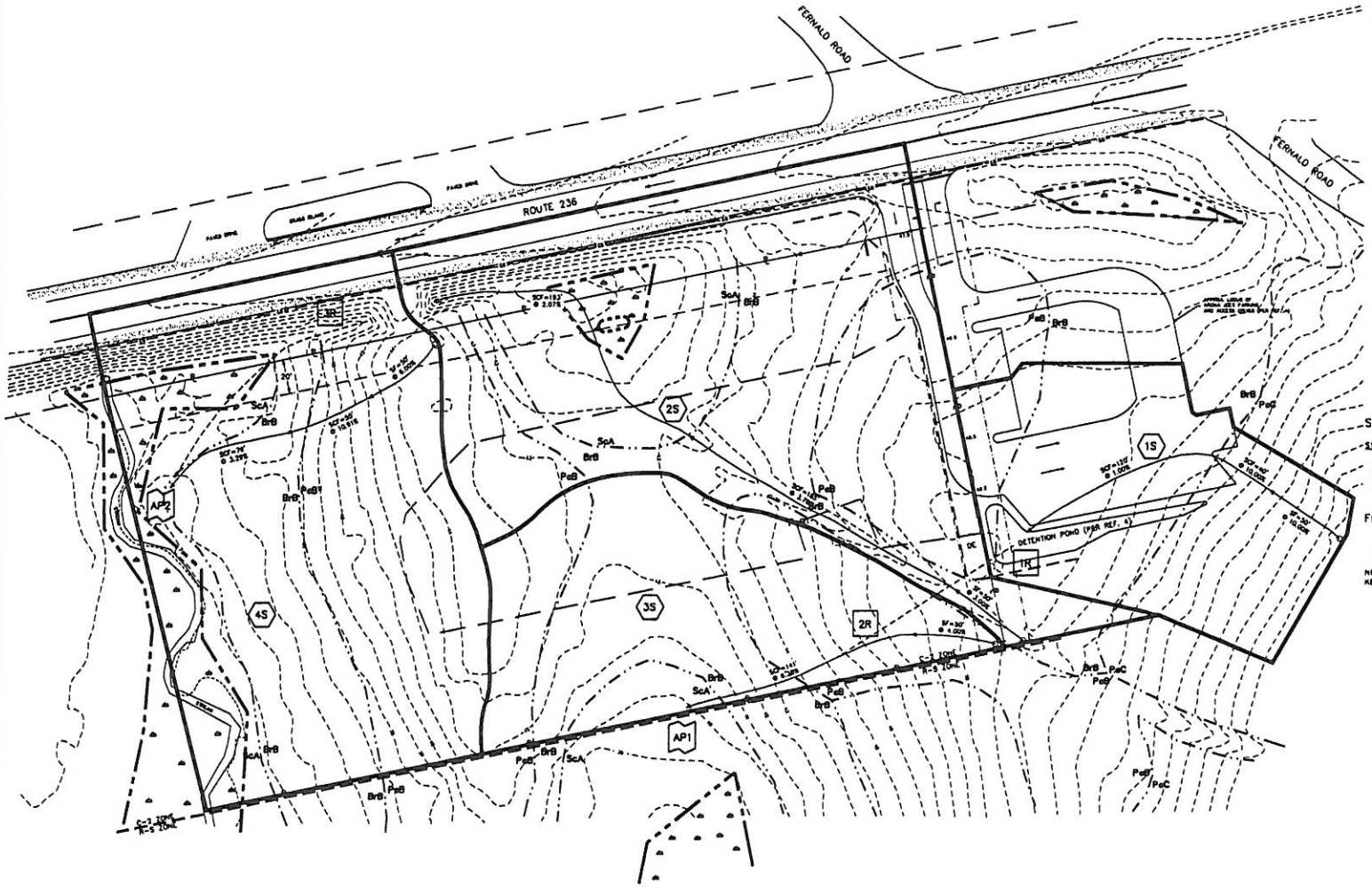
Routine maintenance and inspections will be accomplished by the property owner [Arenhall Corp., P.O. Box 158, Wells, ME, 04090, (207)-467-1778], the property owner's maintenance staff or third party contracted by the property owner. All inspections accomplished in accordance with this program shall be documented on the attached Inspection & Maintenance Log. Copies of the Log shall be kept by the property owner and be made available to the Department (Maine Department of Environmental Protection), upon request.

INSPECTION & MAINTENANCE LOG
KITTERY STORAGE SOLUTIONS

Date	Purpose[1]	Maintenance Done[2]	By

1. Purpose is the reason for the inspection. For example; "quarterly' or "after a significant rain event."
2. Maintenance Done means any maintenance required as a result of the inspection, such as trash removal or re-seeding of areas.

C022-16sw_opmaint.doc



SOILS LEGEND

SYMBOL	SOIL SERIES NAME	HSG	SLOPES
BrB	BRAYTON/NESTBURY FINE SANDY LOAM	D	0-8%
PeB	PERU FINE SANDY LOAM	C/D	3-8%
PeC	PERU FINE SANDY LOAM	C/D	8-15%
ScA	SCANTIC SILT LOAM	D	0-3%

FLOW TYPES

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW
CF CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM A HIGH INTENSITY SOIL SURVEY PREPARED BY KENNETH GARDNER (CSS #61).

SUBCATCHMENT
REACH
POND (LEVEL SPREADER)
ANALYSIS POINT

LEGEND

EXT. Tc FLOW LINE
EXT. Tc GRADE CALC.
PRP. Tc FLOW LINE
PRP. Tc GRADE CALC.
F.W. WETLAND BNDY.
F.W. WETLAND AREA
SUBCATCHMENT BNDY.
SOIL TYPE BOUNDARY

GRAPHIC SCALE
0 30 60 90 120 (FEET)

NO.	DESCRIPTION	DATE
A	DEP & TOWN REVIEW REVISIONS	09/28/18

REVISIONS

STORMWATER: EXISTING CONDITIONS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING INC.
CIVIL & STRUCTURAL & MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

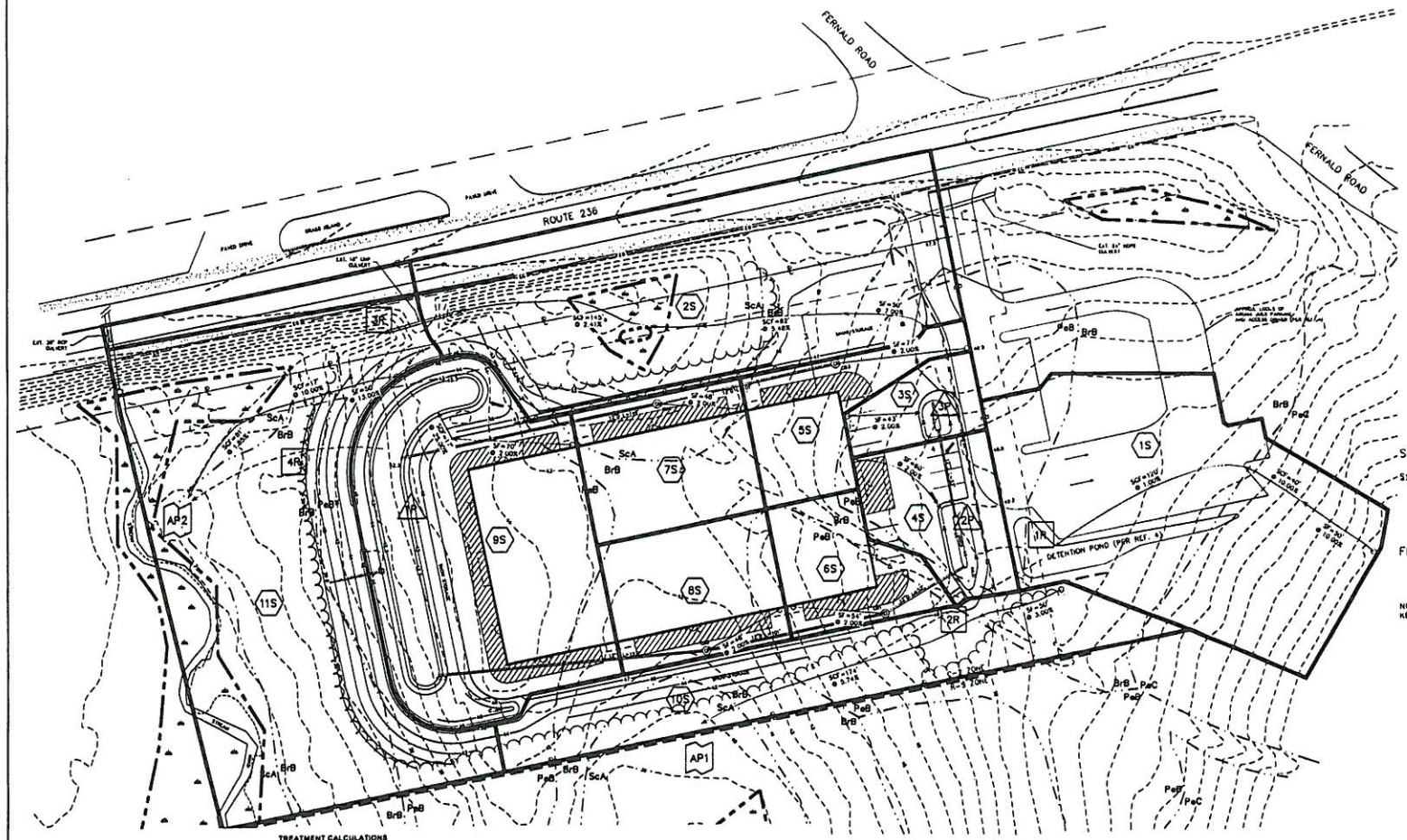
SCALE: 1" = 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 08/01/18		REVISION DATE: A : 09/28/18
JOB NO: C022-18	FILE: KITTERY SELF STORAGE SHALDWG	SHEET 1 OF 2

TAX MAP 28, LOT 14-1

KITTERY STORAGE SOLUTIONS (KITTERY) - BMP Calculations

Kittery Self Storage BMA BMP.xls

C022-16



POND SIZING CALCULATIONS

AREA	IMP. (ft²)	LA. (ft²)	RA. (ft²)	BMP	Treatment Volume (ft³)	CHECK
BC				USF 1		
2S	1,096	834	663		203	
4S	3,466	1,427	1,307		380	
5S	5,703	0	230		483	
6S	9,571	0	0		465	
7S	7,850	0	0		638	
8S	7,850	0	0		638	
9S	13,139	11,407	0		1,475	
Total	43,140	13,468	2,092		4,290	
		5% Impervious + 2% Landscaped Area =			2,568	Filter Area
				Provided Volume =	8,258	OK
				Provided Area =	3,220	OK

IMP - IMPERVIOUS AREA
RA - REMAINING SUBCATCHMENT AREA
BMP - BEST MANAGEMENT PRACTICE
CPV - CHANNEL PROTECTION VOLUME
LA - LANDSCAPED AREA, AREA THAT WILL BE REPLANTED WITH SHRUBS OR GRASS
DEV - DEVELOPED AREA, THE SUM OF THE IMPERVIOUS AREA AND LANDSCAPED AREA

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP=2000 S.F.

SOILS LEGEND

SYMBOL	SOIL SERIES NAME	HSG	SLOPES
BrB	BRAYTON/WESTBURY FINE SANDY LOAM	D	0-8%
PeD	PERU FINE SANDY LOAM	C/D	3-8%
PeC	PERU FINE SANDY LOAM	C/D	8-15%
ScA	SCANTIC SILT LOAM	D	0-3%

FLOW TYPES

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW
CF CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM A HIGH INTENSITY SOIL SURVEY PREPARED BY KENNETH GARDNER (CSS #81).

SUBCATCHMENT
REACH
POND (LEVEL SPREADER)
ANALYSIS POINT

LEGEND

EXT. Tc FLOW LINE
EXT. Tc GRADE CALC.
PRP. Tc FLOW LINE
PRP. Tc GRADE CALC.
F.W. WETLAND BNDY.
F.W. WETLAND AREA
SUBCATCHMENT BNDY.
SOIL TYPE BOUNDARY

TREATMENT CALCULATIONS

Amended Impervious Area to be Treated 45,237 sf 1.04 Acres
Amended Developed Area to be Treated 78,552 sf 1.78 Acres

AMENDED DEVELOPED CONDITIONS:

AREA	IMP. (ft²) Est. (HCAD)	IMP. (ft²) Created Requires to Treat	IMP. (ft²) Total (Hydro CAD)	IMP. (ft²) Treated	IMP. (ft²) Not Treated	LA. (ft²) Est. (HCAD)	LA. (ft²) Created Requires to Treat	LA. (ft²) Total (Hydro CAD)	LA. (ft²) Treated	LA. (ft²) Not Treated	DEV. (ft²) Est.	DEV. (ft²) Created Requires to Treat	DEV. (ft²) Total (Hydro CAD)	DEV. (ft²) Treated	DEV. (ft²) Not Treated	TREATMENT
1S	9,238	0	9,238	0	9,238	0	0	0	0	0	9,238	0	9,238	0	9,238	
2S	8,543	97	8,640	0	8,640	0	8,218	8,218	0	8,218	8,543	8,315	16,858	0	16,858	
3S	955	1,858	2,813	2,813	0	0	834	834	834	0	955	2,692	3,647	3,647	0	USF 1
4S	461	2,446	2,907	2,907	0	0	1,427	1,427	1,427	0	461	3,873	4,334	4,334	0	USF 1
5S	230	3,703	3,933	3,933	0	0	0	0	0	0	230	3,703	3,933	3,933	0	USF 1
6S	0	9,571	9,571	9,571	0	0	0	0	0	0	0	9,571	9,571	9,571	0	USF 1
7S	0	7,850	7,850	7,850	0	0	0	0	0	0	0	7,850	7,850	7,850	0	USF 1
8S	0	7,850	7,850	7,850	0	0	0	0	0	0	0	7,850	7,850	7,850	0	USF 1
9S	0	13,139	13,139	13,139	0	0	11,407	11,407	11,407	0	0	24,546	24,546	24,546	0	USF 1
10S	0	0	0	0	0	0	3,781	3,781	0	3,781	0	3,781	3,781	0	3,781	
11S	0	0	0	0	0	0	7,868	7,868	0	7,868	0	7,868	10,886	0	10,886	
1R	3,018	0	3,018	0	3,018											
TOTAL	22,643	45,237	67,880	44,464	20,884	0	31,318	31,318	13,668	17,847	22,643	76,552	98,895	58,684	38,741	

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP=2000 S.F.

AREA	IMP. (ft²)	DEV. (ft²)
Total Area	46,464	86,664
Total Acres	1.06	1.37
% Treated	95.5%	78.7%

*BIO, USF 2AND RPA DEV IS REQUIRED
*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP=2000 S.F.
**IMPERVIOUS TREATED PERCENTAGE CALCULATED FROM "CREATED REQUIRED TO TREAT" COLUMN
**PROJECT ALSO TREATS AN ADDITIONAL 1,346 S.F. OF EXISTING IMPERVIOUS SURFACE

REMAINING (ft²) Total BC Area (HCAD)	Remaining Area (Undeveloped)
26,757	17,059
30,572	15,714
1,167	0
8,700	848
5,933	0
9,571	0
7,850	0
7,850	0
24,546	0
15,334	11,573
42,058	31,172
174,961	76,366

GRAPHIC SCALE
0 30 60 90 120 (FEET)

NO.	DESCRIPTION	DATE
A	DEP & TOWN REVIEW REVISIONS	09/28/16

REVISIONS

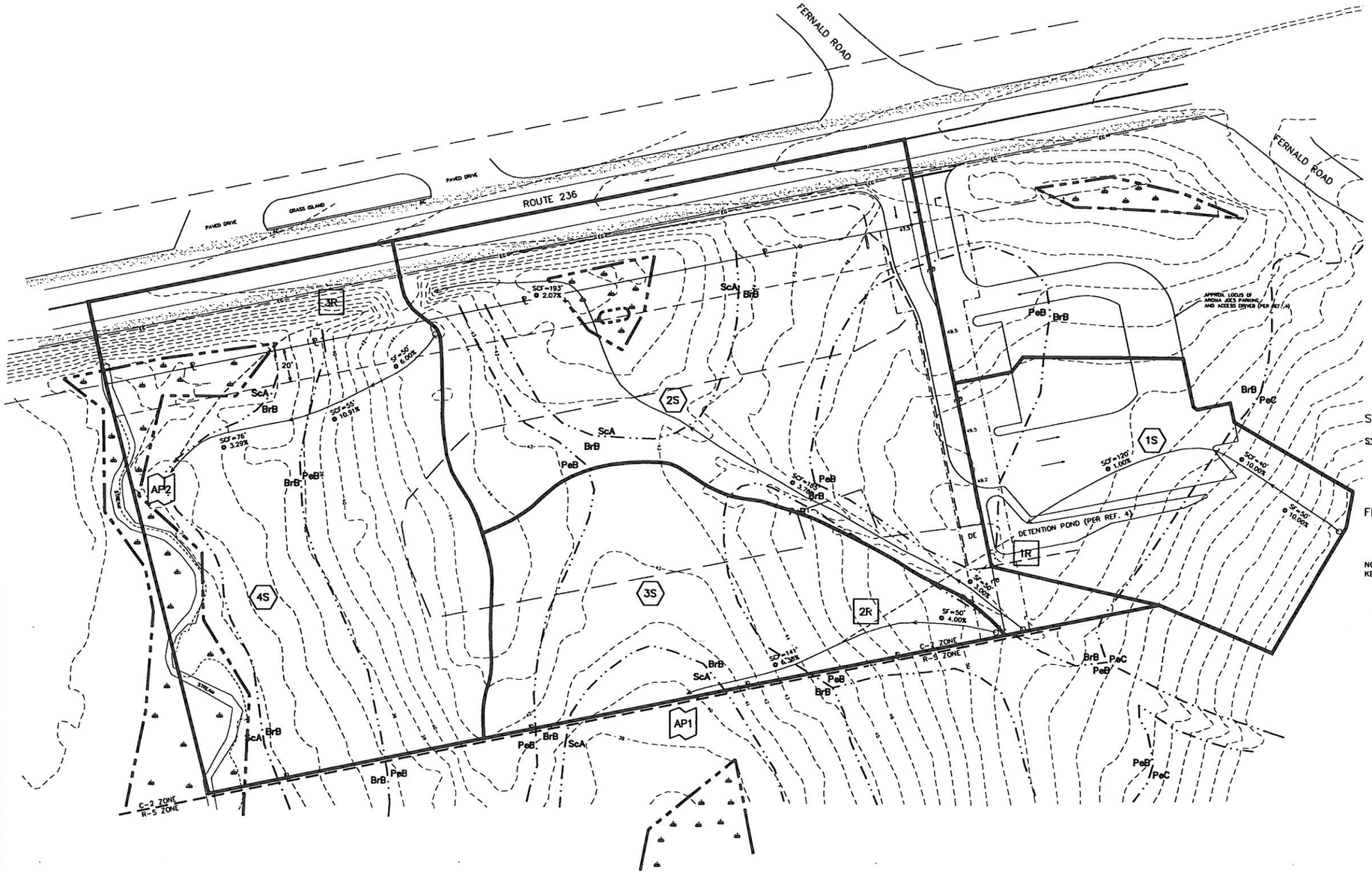
STORMWATER: DEVELOPED CONDITIONS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL & STRUCTURAL & MARINE
1284 STATE HIGHWAY - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 06/01/16		REVISION DATE: A : 09/28/16
JOB NO. C022-16	F.L.: KITTERY SELF STORAGE SHALDWG	SHEET 2 OF 2

TAX MAP 28, LOT 14-1



SOILS LEGEND

SYMBOL	SOIL SERIES NAME	HSG	SLOPES
BrB	BRAYTON/WESTBURY FINE SANDY LOAM	D	0–8%
PeB	PERU FINE SANDY LOAM	C/D	3–8%
PeC	PERU FINE SANDY LOAM	C/D	8–15%
ScA	SCANTIC SILT LOAM	D	0–3%

FLOW TYPES

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW
CF CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM A HIGH INTENSITY SOIL SURVEY PREPARED BY KENNETH GARDNER (CSS #61).

1S SUBCATCHMENT
1R REACH
1P POND (LEVEL SPREADER)
AP1 ANALYSIS POINT

LEGEND

EXT. Tc FLOW LINE
EXT. Tc GRADE CALC.
PRP. Tc FLOW LINE
PRP. Tc GRADE CALC.
F.W. WETLAND BNDY.
F.W. WETLAND AREA
SUBCATCHMENT BNDY.
SOIL TYPE BOUNDARY

GRAPHIC SCALE
0 30 60 90 120 (FEET)

NO.	DESCRIPTION	DATE
A	DEP & TOWN REVIEW REVISIONS	09/28/16

REVISIONS

STORMWATER: EXISTING CONDITIONS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

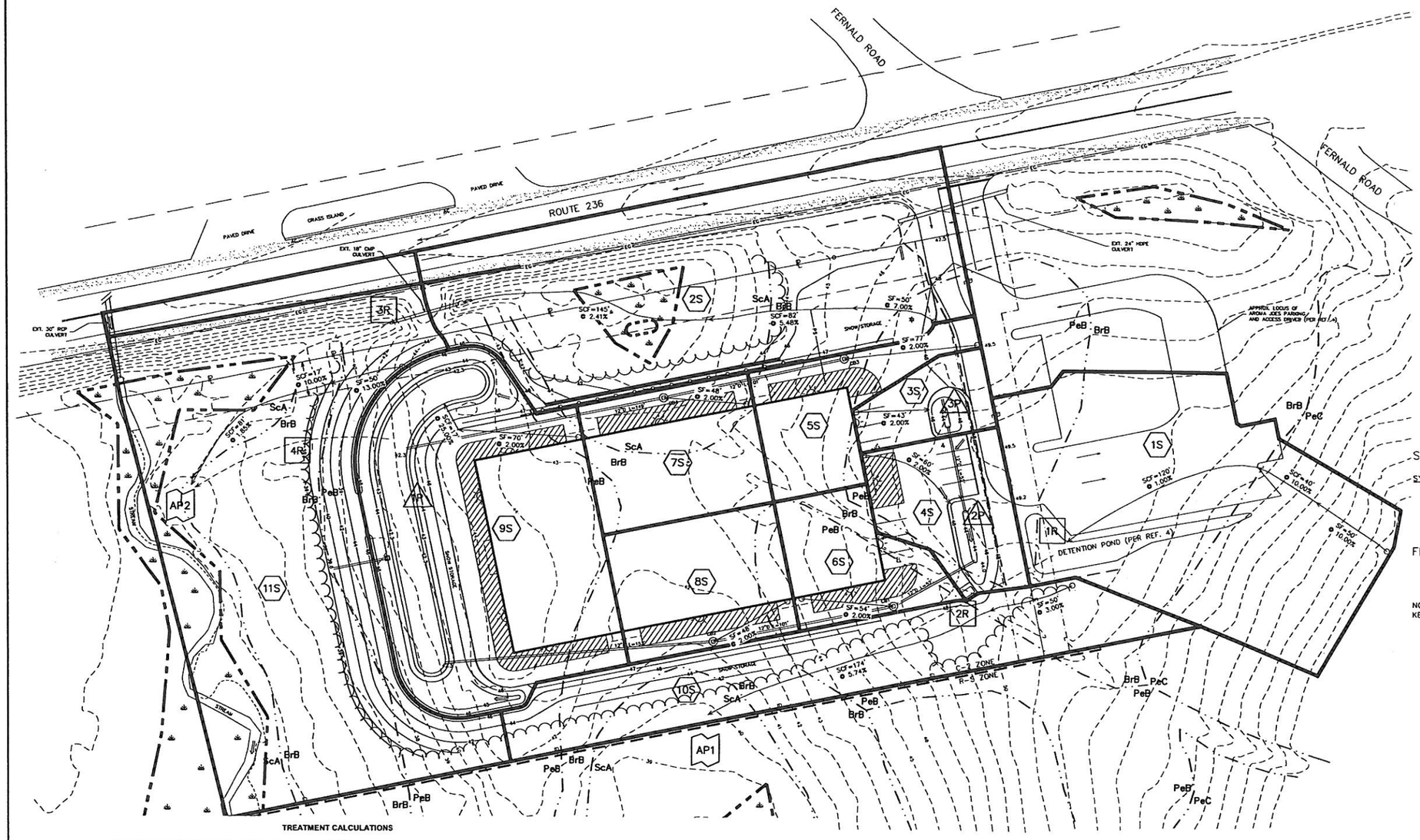
FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

ATTAR ENGINEERING, INC.
CIVIL ◆ STRUCTURAL ◆ MARINE
1284 STATE ROAD – ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 06/01/16		REVISION DATE: A : 09/28/16
JOB NO: C022-16	FILE: KITTERY SELF STORAGE SWM.DWG	SHEET 1 OF 2

TAX MAP 28, LOT 14-1

KITTERY STORAGE SOLUTIONS [KITTERY] - BMP Calculations
Kittery Self Storage SWA BMP.xls
C022-16



POND SIZING CALCULATIONS

AREA	IMP. (ft²)	LA. (ft²)	RA. (ft²)	BMP	Treatment Volume (ft³)	CHECK
SC				USF 1		
3S	1,958	634	555		203	
4S	3,466	1,427	1,307		380	
5S	5,703	0	230		483	
6S	5,574	0	0		465	
7S	7,650	0	0		638	
8S	7,650	0	0		638	
9S	13,139	11,407	0		1,475	
Total	45,140	13,468	2,092		4,280	
		5% Impervious + 2% Landscaped Area =			2,568	Filter Area
				Provided Volume =	6,258	OK
				Provided Area =	3,220	OK

IMP - IMPERVIOUS AREA
RA - REMAINING SUBCATCHMENT AREA
BMP - BEST MANAGEMENT PRACTICE
CPV - CHANNEL PROTECTION VOLUME
LA - LANDSCAPED AREA, ARES THAT WILL BE REPLANTED WITH SHRUBS OR GRASS
DEV - DEVELOPED AREA, THE SUM OF THE IMPERVIOUS AREA AND LANDSCAPED AREA.

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.

SOILS LEGEND

SYMBOL	SOIL SERIES NAME	HSG	SLOPES
BrB	BRAYTON/WESTBURY FINE SANDY LOAM	D	0-8%
PeB	PERU FINE SANDY LOAM	C/D	3-8%
PeC	PERU FINE SANDY LOAM	C/D	8-15%
ScA	SCANTIC SILT LOAM	D	0-3%

FLOW TYPES

SF SHEET FLOW
SCF SHALLOW CONCENTRATED FLOW
CF CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM A HIGH INTENSITY SOIL SURVEY PREPARED BY KENNETH GARDNER (CSS #61).

1S SUBCATCHMENT
1R REACH
1P POND (LEVEL SPREADER)
AP1 ANALYSIS POINT

LEGEND

EXT. Tc FLOW LINE
EXT. Tc GRADE CALC. SF=XXX' @ X.XX%
PRP. Tc FLOW LINE
PRP. Tc GRADE CALC. SF=XXX' @ X.XX%
F.W. WETLAND BNDY.
F.W. WETLAND AREA (UPLAND / WETLAND)
SUBCATCHMENT BNDY.
SOIL TYPE BOUNDARY

TREATMENT CALCULATIONS

Amended Impervious Area to be Treated	45,237	sf	1.04 Acres
Amended Developed Area to be Treated	76,552	sf	1.76 Acres

AMENDED DEVELOPED CONDITIONS:

AREA	IMP. (ft²) Ext. (HCAD)	IMP. Created Require to Treat	IMP. Total (Hydro CAD)	IMP. Treated	IMP. Not Treated	LA. (ft²) Ext. (HCAD)	LA. Created Require to Treat	LA. Total (Hydro CAD)	LA. Treated	LA. Not Treated	DEV. (ft²) Ext.	DEV. Created Require to Treat	DEV. Total (Hydro CAD)	DEV. Treated	DEV. Not Treated	TREATMENT
1S	9,238	0	9,238	0	9,238	0	0	0	0	0	9,238	0	9,238	0	9,238	
2S	8,543	97	8,640	0	8,640	0	6,218	6,218	0	6,218	8,543	6,315	14,858	0	14,858	
3S	555	1,958	2,513	2,513	0	0	634	634	634	0	555	2,592	3,147	3,147	0	USF 1
4S	461	3,466	3,927	3,927	0	0	1,427	1,427	1,427	0	461	4,893	5,354	5,354	0	USF 1
5S	230	5,703	5,933	5,933	0	0	0	0	0	0	230	5,703	5,933	5,933	0	USF 1
6S	0	5,574	5,574	5,574	0	0	0	0	0	0	0	5,574	5,574	5,574	0	USF 1
7S	0	7,650	7,650	7,650	0	0	0	0	0	0	0	7,650	7,650	7,650	0	USF 1
8S	0	7,650	7,650	7,650	0	0	0	0	0	0	0	7,650	7,650	7,650	0	USF 1
9S	0	13,139	13,139	13,139	0	0	11,407	11,407	11,407	0	0	24,546	24,546	24,546	0	USF 1
10S	0	0	0	0	0	0	3,761	3,761	0	3,761	0	3,761	3,761	0	3,761	
11S	3,016	0	3,016	0	3,016	0	7,868	7,868	0	7,868	3,016	7,868	10,884	0	10,884	
TOTAL	22,043	45,237	67,280	46,386	20,894	0	31,315	31,315	13,468	17,847	22,043	76,552	98,595	59,854	38,741	

REMAINING (ft²) Total SC Area (HCAD)	Remaining Area (Undeveloped)
26,297	17,059
30,572	15,714
3,147	0
6,200	846
5,933	0
5,574	0
7,650	0
7,650	0
24,546	0
15,334	11,573
42,058	31,174
174,961	76,366

*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.

AREA	IMP. (ft²)	DEV (ft²)
Total Area	46386	59854
Total Acres	1.06	1.37
% Treated**	99.8%	78.2%

**95% IMP. AND 80% DEV IS REQUIRED
*BIORETENTION - MAX 1 ACRE SUBCATCHMENT, BOP<2000 S.F.
**IMPERVIOUS TREATED PERCENTAGE CALCULATED FROM "CREATED REQUIRED TO TREAT" COLUMN
**PROJECT ALSO TREATS AN ADDITIONAL 1,248 S.F. OF EXISTING IMPERVIOUS SURFACE

GRAPHIC SCALE
0 30 60 90 120 (FEET)

NO.	DESCRIPTION	DATE
A	DEP & TOWN REVIEW REVISIONS	09/28/16

REVISIONS

STORMWATER: DEVELOPED CONDITIONS
KITTERY STORAGE SOLUTIONS
91 ROUTE 236, KITTERY, ME

FOR: ARENHALL CORP.
P.O. BOX 158
WELLS, ME 04090

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TAX MAP 28, LOT 14-1