



CONSERVATION COMMISSION

AGENDA

Monday, May 15, 2023

4:30 PM

Room 22, Recreation Center

Commission Members

Alexander Von Plinsky, IV, Chair
Councilor Andrew Madison, Vice Chair
Art Walker
Councilor Robert Williams, Ex-Officio
Eloise Clark
Steven Bill
Kenneth Bergman

Deborah LeBlanc, Alternate
Thomas P. Haynes, Alternate
John Therriault, Alternate
Brian Reilly, Alternate
Lee Stanish, Alternate

SITE VISIT: There will be a site visit of 19 Whitcomb's Mill Road at 3:30 pm (TMP # 237-018-000).
Commission members should meet at the Recreation Center at 3:15 pm to carpool to the site.

1. Call to Order
2. Approval of Meeting Minutes – April 17, 2023
3. Planning Board Referral – Surface Water Protection Conditional Use Permit Application SWP-CUP-02-23 – 19 Whitcomb's Mill Road, 9-lot CRD Subdivision
4. Report-outs
 - 1) Greater Goose Pond Forest Stewardship Subcommittee
 - 2) Outreach
 - 3) Invasive Species
 - 4) Land Conservation
5. Discussion Items:
 - a) Keene Meadow Solar Station project update
 - b) Potential Land Purchase Update (Rt 9/Washing St. Ext. properties)
 - c) Airport proposed wildlife control fence update
 - d) Conservation Commission speaking events
 - e) 2023 New Hampshire Drinking Water Festival
 - f) Wantastiquet-Monadnock Trail Coalition request for Keene Conservation Commission member representative
 - g) Educational resources for invasive species removal
6. Correspondence: ARLAC letter regarding the Ashuelot River Monitoring Program dated April 24, 2023
7. New or Other Business
8. Adjourn – Next meeting date: **Monday, June 19, 2023**

1 City of Keene
2 New Hampshire

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5 CONSERVATION COMMISSION
6 MEETING MINUTES
7

Monday, April 17, 2023

4:30 PM

Room 22,
Recreation Center

Members Present:

Alexander Von Plinsky, IV, Chair
Councilor Robert Williams (Arrived at 4:47 PM)
Eloise Clark
Ken Bergman
Thomas Haynes, Alternate (via Zoom)
Lee Stanish, Alternate (Arrived at 4:48 PM)
Brian Reilly, Alternate
Steven Bill, Alternate
John Therriault, Alternate
Deborah LeBlanc, Alternate (Voting)

Staff Present:

Mari Brunner, Senior Planner
Amanda Palmeira, Assistant City Attorney

Members Not Present:

Councilor Andrew Madison, Vice Chair
Art Walker

8
9 **1) Call to Order**

10
11 Chair Von Plinsky called the meeting to order at 4:31 PM and thanked Vice Chair Madison for
12 leading the meeting last month. Roll call ensued. Mr. Haynes was participating remotely, and he
13 was alone at his location.

14
15 **2) Approval of Meeting Minutes – March 20, 2023**

16
17 Revisions: Line 368–369, change “April 30” to “March 30.” There was Commission consensus
18 to not change the line marked “information garbled.” There was also consensus to not change
19 line 89 that stated, “when construction begins” because the next line stated, “after all permitting
20 is complete.”

21
22 A motion by Mr. Bergman to adopt the March 20, 2023 meeting minutes as amended was duly
23 seconded by Mr. Bill and the motion carried unanimously.

24
25 Mr. Bergman noted that the handouts provided by the presenter at the last meeting were not
26 available to him while he participated remotely. He asked how to get that information. Ms.

27 Brunner said she could provide a hard copy of those handouts from the last meeting. In general,
28 she said could upload such handouts to the Commission’s Google Drive. The Chair and Mr.
29 Bergman agreed that would be helpful.

30

31 **3) Report-Outs**

32 **A) Greater Goose Pond Forest Stewardship Subcommittee**

33

34 Mr. Haynes said there was not much to report as the Subcommittee had an upcoming meeting on
35 April 21. He noted that the Subcommittee had started installing new signs around the pond. He
36 said that members of the Subcommittee met with the Director of Parks, Recreation, and
37 Facilities—Andy Bohannon—to talk about the contractor’s application for maintenance work
38 around Goose Pond. Mr. Bill noted that the Subcommittee approved the contract to move
39 through the City process, and added that there was only the one applicant, so it should be
40 simpler. He said the Subcommittee was also working to complete maps to post and be available
41 to the public. The group would continue discussing how to get volunteers involved for trail
42 maintenance and other work needed.

43

44 Mr. Therriault asked if the Subcommittee had considered contacting Boy Scout troops for
45 volunteers. Mr. Bill replied that the Subcommittee had been led to believe that the Boy Scouts
46 were in various stages of being inactive right now. Mr. Therriault said that a lot of the upper
47 steps in Boy Scouts require community service projects and trail maintenance would be good.

48

49 **B) Outreach**

50

51 Ms. Clark reported that she was prepared for the May 10 children’s NH Drinking Water Festival.
52 She had prepared a lot of educational materials and would gather the other necessary materials.
53 Mr. Haynes would be helping Ms. Clark during the event. Groups of children—up to 15 at a
54 time—would cycle through the station for a short lesson and then a hands-on portion in 15-
55 minute intervals from 9:00 AM–3:00 PM. The focus would be on what Ms. Clark calls “muck
56 monsters,” and specifically aquatic insects.

57

58 **C) Invasive Species**

59

60 Councilor Williams was not present yet, but Chair Von Plinsky noted that the Councilor had sent
61 an email with a rough schedule of events for this year. The next event would be Monday, May 8
62 from 6:30 PM–8:00 PM at the Stone Arch Bridge. The Commission assumed it was the bridge
63 off Court Street because there was a rained-out event there last year. Ms. Clark noted how many
64 invasives are present at that location. Chair Von Plinsky would get more information from
65 Councilor Williams so that Ms. Brunner could publicize the event on the Community
66 Development Department social media. The Chair said there was also an event planned for June
67 19 from 6:30 PM–8:00 PM at the Ellis-Harrison Park.

68

69

70 **D) Land Conservation**

71
72 Chair Von Plinsky reported that the group had not met in the last month.

73
74 **4) Potential Land Purchase: Route 9/Washington St. Ext. (TMP#s 229-006-000 & 218-**
75 **042-000)**

76
77 Chair Von Plinsky discussed this potential land acquisition. He recalled that last year, Hull
78 Forest Products outbid the City for two parcels off Beaver Brook and harvested the timber from
79 the parcels. Now, Hull Forest Products wanted to sell the land and asked if the City was
80 interested. Chair Von Plinsky said he was personally interested in the City seeking to acquire
81 these parcels, but he wanted to hear from the Commission.

82
83 Mr. Bergman asked if both parcels were along the Washington Street extension or whether both
84 parcels were on either side of RT-9. Chair Von Plinsky said there was a steep parcel along Old
85 Concord Road and another parcel on the other side of RT-9. Mr. Bergman asked if the timber
86 harvest was completed, and the Chair replied in the affirmative. Chair Von Plinsky said the
87 owner, Sam Hull, seemed interested in selling to the City. Mr. Bergman wondered whether
88 anyone had a chance to look at the parcel north of RT-9. No one had seen it since the harvest.

89
90 Mr. Therriault thought the parcel south of RT-9 was important because Beaver Brook runs
91 through it and Beaver Brook Falls is near it. Chair Von Plinsky said the Brook does not run
92 through that parcel but is off to the side of it. Mr. Therriault asked, if that southern portion was
93 City land, whether it would provide access to the Brook. The Chair said this acquisition would
94 not afford access to the Brook but said owning that southern parcel would impact the Brook in
95 terms of the wholistic feeling of that space. Mr. Therriault recalled that the northern parcel was
96 important because of its proximity to Goose Pond. Chair Von Plinsky agreed, noting that it
97 provides a pretty sizeable buffer for Drummer Hill and Goose Pond from RT-9, which was the
98 argument for acquiring the land the first time.

99
100 Councilor Williams arrived.

101
102 Ms. Brunner said that the northern parcel is also valuable in that it abuts land the City owns
103 already at 0 Old Gilsum Road (TMP# 218-038-000). She displayed a map of the area that
104 highlighted the different parcels. Mr. Bergman noted that the Monadnock Conservancy also has
105 an easement on land in that area. Ms. Clark agreed but said all of those parcels are not
106 contiguous.

107
108 Ms. Stanish arrived.

109
110 The Commission discussed how to make an appropriate motion or recommendation to the City
111 Council. Ms. Brunner said that if the Chair wrote a letter to the City Council with the
112 recommendation, it could be seen by the Council sooner on April 20. Whereas if the

113 Commission just made a motion to be reflected in the meeting minutes, the matter would not be
114 seen by the City Council until their May 4 meeting. Ms. Brunner recalled that this Commission
115 has the authority to purchase land with prior approval from the City Council. She said the
116 Council supported pursuing this acquisition last year so she did not see a reason they would not
117 this time.

118
119 A motion by Mr. Bill was duly seconded by Mr. Therriault to allow the Conservation
120 Commission Chair, Sparky Von Plinsky, IV, to write a letter urging the City Council to grant the
121 Conservation Commission permission to acquire the two parcels from Hull Forest Products.
122 Discussion ensued.

123
124 Mr. Haynes asked if the Land Use Change Tax Fund would be used to purchase the properties
125 and Chair Von Plinsky said yes.

126
127 Mr. Bergman wondered whether it would be prudent to have someone look at the land to ensure
128 that erosion was not exacerbated by the logging, for example, and to have a sense of how
129 selective the logging was. He thought it would be in the long-term interest of the City to acquire
130 the properties. No one on the Commission had visited the parcels since timber was harvested.
131 Mr. Bill thought there could be a careful analysis of the parcels based on how much the City
132 wanted to pay for them. Ms. Clark wondered if it was known what Hull Forest Products was
133 asking for the parcels. Ms. Brunner said she asked and they replied, "Let us know what you're
134 offering." So, she reached out to the City Assessor who had not replied yet. She knew that Hull
135 Forest Products paid more than the assessed value for the parcels and she said now the assessed
136 value was higher, but from the perspective of someone looking to log the parcels, it was worth a
137 lot less. Discussion ensued about what the assessed value was before the logging, but no one
138 knew. The City Assessor discouraged paying the same amount for the parcels that Hull Forest
139 Products did. Chair Von Plinsky recalled that it is the City who does the negotiating, not the
140 Commission. He still thought the Commission could use its expertise to be helpful in
141 determining the current value of the land. Mr. Reilly noted that there were steep slopes on the
142 southern parcel, making it undevelopable, which he said should theoretically lower the property
143 value. Chair Von Plinsky agreed.

144
145 Mr. Bergman recalled that the representative of Hull Forest Products who visited the
146 Commission last time talked about putting a wind farm on a plot, but Mr. Bergman was unsure if
147 it was one of these two parcels or an adjacent one. There was consensus among the Commission
148 that it was mentioned for the northern parcel. Mr. Bergman wondered if that plan was
149 abandoned. Chair Von Plinsky said that the recent emails were from Sam Hull, the company's
150 owner, and the Chair thought that the previous representative was just throwing out ideas. The
151 Chair did not think a wind farm was on the owner's radar.

152
153 Mr. Bill asked if there was any urgency, and Chair Von Plinsky did not think so.

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155 The motion carried unanimously.

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5) Discussion Items:

A) Airport Proposed Wildlife Control Fence Update

Mr. Bergman said he emailed the Airport Director, David Hickling, but had not received a reply. Mr. Bergman said he would call or visit the Airport Director because budgeting or planning could be occurring, and the Commission should remain informed.

B) Conservation Commission Speaking Events

Vice Chair Madison was not present, but the Chair said he saw in the minutes that something was in the works with Mr. Therriault. Mr. Therriault said the Vice Chair spoke with him about an event on pollinator protection in June. Mr. Therriault agreed to be the speaker, but he did not think a venue had been determined yet.

C) 2023 NH Drinking Water Festival

Discussed earlier in the meeting under “Outreach.”

D) Wantastiquet-Monadnock Trail Coalition – Request for Keene Conservation Commission Member Representative

Chair Von Plinsky recalled having a meeting with the Chair of the Chesterfield Conservation Commission, Lynne Borofsky, who invited the Keene Conservation Commission to send a representative to the next Wantastiquet-Monadnock Trail Coalition meeting. The Chair recalled that the Wantastiquet-Monadnock Trail extends essentially from the VT border to Mount Monadnock through Keene. He said the Coalition meets once or twice annually and they invited a Commissioner to attend on Tuesday, April 25 at 4:30 PM at the new Antioch University New England location in the plaza next to Ashuelot River Park where the Bank and Elm City Bagels used to be. Ms. LeBlanc agreed to attend. The Chair thanked her for offering. The [project website](#) includes more information about the Coalition’s efforts, such as the goal to have compostable toilets along the trail. The Coalition wants this Commission’s voice to be present in these efforts. Mr. Bill asked where the Wantastiquet-Monadnock Trail goes through Keene, and Ms. Clark replied that the trail follows Rail Trail.

E) Educational Resources for Invasive Species Removal

Chair Von Plinsky recalled that the Commission discussed ways to help residents feel that they can tackle invasive species. He said that Ms. Brunner found a NH guide to upland invasive species that could be a handout to property owners who want more information. Councilor Williams said there is a lot of good information available from the University of NH Cooperative Exchange. The Councilor questioned how to get that information to property owners. He said it might be useful to have the handouts available at Green Up Keene and at the Library. Chair Von

199 Plinsky added that there are also digital versions of handouts like this one that could be shared
200 with the public. The Chair said he talked with Ms. Brunner about using the Conservation
201 Commission’s website to share more information like this or other topics. Ms. Clark asked if the
202 Commission had its own dedicated website now and noted that it used to be under the
203 Community Development Department’s webpage. Ms. Brunner said it is still under the
204 Community Development Department but that the Commission has its own webpage and Ms.
205 Brunner can also share information like this on the Community Development Department’s
206 social media. Chair Von Plinsky said this was another way to think about how the Commission
207 could interact with the public moving forward.

208
209 Councilor Williams returned to the invasive species event schedule as he missed the opportunity
210 earlier in the meeting. He suggested having more events after these Commission meetings as a
211 great way to get more people to attend. Mr. Bergman asked which Stone Arch Bridge would be
212 visited for the May event. Councilor Williams confirmed it would be the northern bridge off
213 Court Street. The Councilor said that location had a lot of buckthorn and Japanese barberry. He
214 noted that weekends had not been successful for these events, so he mostly scheduled events on
215 Monday evenings before dark. He moved the May event up one week because there would be a
216 meeting on the downtown infrastructure project on May 15. He said some events later in the
217 season might be at an earlier hour so the work could continue into October. Chair Von Plinsky
218 asked if the June 19 date would be a City holiday for Juneteenth. Ms. Brunner said the City does
219 not close for Juneteenth. Councilor Williams said the intention was to have the June event after
220 the Conservation Commission meeting, which usually does not last two hours. Ms. Clark pointed
221 out that it should be “Woodland” Cemetery, which is often mistakenly written as “Woodlawn.”

222
223 **F) Keene Meadow Solar Installation**

224
225 Chair Von Plinsky reported that he had a conversation with City Attorney, Tom Mullins, who
226 discussed something very important the Commission needs to keep in mind. The Chair said he
227 would keep the conversation at this meeting focused solely on process and would not get into the
228 details of this particular solar installation. The City Attorney advised that the Conservation
229 Commission is a quasi-regulatory body, which must avoid prejudging any issue in any way
230 because the Commission will have input later in these processes for things like NH Wetland
231 Permits. Thus, it is not ideal for the Commission to be on record as for or against something in
232 advance of making such recommendations to the State of NH, as legal issues often come down to
233 optics. He said that going forward, this could remain on the agenda so the Commission stays up-
234 to-date, like it does for the airport fence. Still, Chair Von Plinsky urged the Commission to be
235 careful regardless of personal feelings about the installation and to remember the Commission’s
236 quasi-regulatory impact on this whole process.

237
238 Ms. Brunner explained the process for, and the Commission’s role in, a project like this one.
239 Under NH State Statute, Conservation Commissions have a role in reviewing NH Department of
240 Environmental Services (DES) Wetland Permit applications. So, anytime someone in the City of
241 Keene seeks to impact a wetland, the Wetland Permit would be referred to the Conservation

242 Commission. The Commission has 14 days from the time the permit is received and signed by
243 the City Clerk to make its recommendation to NH DES in a motion. While the Commission does
244 not make the final decision on these permits, it could opt to hold a public hearing on any of these
245 permits, though that has typically not been the course of action. Generally, the Commission
246 makes its recommendations in a letter to NH DES.

247
248 Ms. Brunner continued explaining the Conservation Commission’s role specific to the City of
249 Keene, which chose to go above and beyond the NH regulations for surface waters. The City has
250 a Surface Water Protection Overlay that is 75’ in the Rural, Agricultural, and Conservation
251 Districts, and 30’ everywhere else in the City. Certain activities within that overlay require a
252 Conditional Use Permit (CUP) from the Planning Board (PB), which refers CUP applications to
253 the Conservation Commission for input on water resources. Ms. Brunner recalled from the last
254 meeting that this proposed solar development would be approximately 240 acres and therefore
255 goes beyond the 20 acres allowed in City Zoning. The applicant’s first step would be to apply for
256 a variance from the Zoning Board of Adjustment (ZBA). This variance is needed for property
257 owners wanting to do something not allowed within the Zoning regulations. Ms. Brunner
258 explained that there are 5 specific criteria set by the State of NH that applicants must meet to
259 receive a variance.

260
261 If a variance was received from the ZBA, one of the applicant’s next steps would be to receive
262 permission to build along a Class VI road—Old Gilsum Road. In NH, there is a unique category
263 of Class VI roadways, which are still public rights-of-way, but are not maintained by the City.
264 The State of NH says that development along Class VI roads should be discouraged. So, to
265 receive a Building Permit for this solar development, the applicant would need permission from
266 the legislative body—the City Council—for life/safety reasons because emergency services
267 might not be able to access a development on a Class VI road.

268
269 Ultimately, Ms. Brunner said that if the applicant receives authorization for the issuance of a
270 building permit from the City Council, then the applicant would proceed through a process with
271 the Planning Board (PB). First, they would need site plan approval, which is required for any
272 commercial or multifamily development, or developments that meet a certain threshold. This site
273 plan review would be to ensure the project meets all 14 of the City’s development standards
274 listed in Article 20 of the Land Development Code dealing with: drainage, runoff, sedimentation
275 and erosion control, traffic generation, access, landscaping, screening, and lighting, etc. In
276 addition, because this project could impact wetlands or the surface water buffer, the applicant
277 would also need a CUP for surface water protection, for which the Conservation Commission
278 would make a recommendation to the PB. Additionally, if the applicant planned to impact more
279 than 20,000 square feet of precautionary slopes (between 15–25% grade), they would also need a
280 hillside protection CUP from the PB. Finally, this applicant would need a solar CUP from the
281 PB. All of the site plan review and CUPs could be concurrent before the PB. The PB would not
282 be able to act on a surface water CUP until the Conservation Commission reviews it and makes a
283 recommendation to them.

284

285 If the applicant received all of these approvals that Ms. Brunner listed, their next step would be
286 to get a Building Permit. Once construction commences and the Building Permit is issued, there
287 would be regular site visits from City Staff to ensure the construction is in compliance with all of
288 the approvals. At the beginning of the project, Staff would look at installation of sedimentation
289 and erosion control measures. Toward the end of the project, Staff would visit to ensure the site
290 matches was what on the plans. Due to the Building Permit, there would also be intermediary site
291 visits to ensure the applicant meets all of the necessary life/safety codes and building/ fire/
292 electrical codes.

293

294 Ms. Clark asked where the Alteration of Terrain Permit would fit in. Ms. Brunner said that
295 because more than 5 acres would be disturbed, the applicant would need an Alteration of Terrain
296 Permit from the State of NH. The Planning Board usually requires copies of these permits for
297 any application and the Community Development Department keeps those copies on file.

298

299 Mr. Bergman recalled that the March 2023 meeting's minutes stated that because the proposed
300 solar project is over 20 acres, the developer would apply for a variance at the ZBA's April 3
301 meeting. He asked if that meeting occurred. Ms. Brunner reported that the project was initially
302 on the ZBA's schedule but due to an error in the public notice, the hearing was postponed to
303 May in accordance with State law. Mr. Bergman recalled that the amphibian crossings in Keene
304 were commencing for the season. He also recalled the project's wetland biologist stating last
305 month that they would be monitoring vernal pools this spring. Mr. Bergman wondered whether
306 the City regulates vernal pools differently than the NH laws. Ms. Brunner replied that City
307 includes vernal pools, intermittent streams, and basically everything else in the Surface Water
308 Protection Ordinance. Ms. Brunner said the City requires staying at least 75' away from vernal
309 pools for certain activities and many activities within that 75' would require a CUP. Mr.
310 Bergman noted that some parts of New England, like MA, have good vernal pool protections. He
311 asked if Keene has stringent rules in comparison. For vernal pools, Ms. Brunner said yes. The
312 City would require a plan stamped by a wetland scientist licensed in the State of NH that shows
313 the delineations of all vernal pools, wetlands, and the buffers around them. City Staff review
314 those plans to ensure nothing is happening within those buffers or that they are getting the CUP
315 if needed. Mr. Bergman wondered if the applicant needed to disclose those monitoring results—
316 like for vernal pool monitoring that could be ongoing this spring. Ms. Brunner said the City does
317 not typically require that as a part of the surface water CUP application, but it is something the
318 PB could ask for.

319

320 Mr. Haynes asked whether the Greater Goose Pond Forest Stewardship Subcommittee could
321 have a voice in a process like this. Ms. Brunner replied that the Subcommittee is a body of the
322 Conservation Commission and would not get referrals from the PB or NH DES. However,
323 Subcommittee members could attend Conservation Commission meetings and participate when
324 these applications are reviewed. Mr. Haynes noted how the Subcommittee has a different focus
325 regarding recreation and overall use of land as stewards, so he wondered whether the
326 Subcommittee could make other recommendations through the Commission. Ms. Brunner said
327 those points could be raised in discussion but the Conservation Commission's authority in these

328 referrals is specifically regarding protection of water bodies. The Subcommittee could discuss
329 impacts to recreation trails with the applicant but that is not what the Commission would be
330 asked to comment on.

331
332 Chair Von Plinsky asked if there would be an avenue in this process for something like
333 recreation to be a focus more officially, rather than a member of the public just presenting an
334 issue with the trails to the Commission. Ms. Brunner said there is no built-in referral for impacts
335 to recreation areas, but any citizen of Keene or abutter could come to any public hearing during
336 this overall process to ask questions or raise concerns. She said that when the development team
337 was present in March, they seemed open to discussing those issues. They also expressed a
338 willingness to mitigate recreation impacts when the Director of Parks, Recreation, and Facilities—
339 —Andy Bohannon—asked.

340
341 Mr. Bill said that this Commission does not have input until another group requests its input. Ms.
342 Brunner said that was correct. She said the matter could certainly remain on the agenda to get
343 updates. Still, until this project is before the Commission for a referral, this body and individual
344 members of this body should refrain from forming/sharing opinions until the applicants or others
345 are able to present to the Commission. Mr. Bill said that the vernal pools on this property are
346 shaded currently and would be no longer if all the trees are cut, which would present a clear
347 impact. He asked if the Commission cannot talk about that until the next step in the process
348 happens. Chair Von Plinsky replied that he would like to invite the developer to another meeting
349 for a design-focused conversation, in which the Commission does not form opinions but provides
350 input before the official referrals. Ms. Brunner thought that would be fine as long as it is an
351 informational conversation, with the Commission asking questions and sharing general input.
352 Ms. Brunner would reach out to the developer to gauge their interest in that opportunity.

353
354 Ms. LeBlanc asked when the public would be notified to come and hear about this project. Ms.
355 Brunner said that the ZBA and PB public hearings would have notice in the newspaper and
356 mailed to surrounding abutters. For this Commission, it would only be listed on the agenda
357 unless there was an official public hearing, which Ms. Brunner imagined would also include a
358 notice in the newspaper. During a normal meeting like this one, it is up to the Chair to allow
359 public comment, whereas a formal public hearing requires allowing public comment.

360
361 On a cautionary note, Mr. Bergman said that the history of the development of Monadnock
362 Marketplace would show unparalleled examples of the risks of making public statements or
363 judgements prior to hearings and testimony. He said it was a profound issue with a lot of money
364 at stake. Chair Von Plinsky agreed that was important to keep in mind.

365
366 There was consensus to invite the developer back for a discussion on issues such as vernal pools
367 and erosion while the project is still in the design phase. Chair Von Plinsky reiterated that it
368 would be important to keep the discussion focused on topics within the Commission's purview.

369

370 Mr. Reilly asked whether the ZBA has any discretion or whether projects are preempted if they
371 do not meet the 5 criteria outlined by the State of NH. Ms. Brunner replied that there is some
372 judgement involved in the ZBA determining whether it meets those 5 criteria. The ZBA is
373 supposed to make their decisions based on whether applications meet those criteria and not on
374 whether a lot of people are for or against it. She said the hardest criterion to meet is the applicant
375 proving a hardship. She added that the ZBA must make a finding—or vote—on each criterion,
376 and an applicant must meet all 5 to get the variance.

377
378 Mr. Haynes said he liked the idea of inviting the developer back. He said it might be prudent for
379 the Commission to discuss the key issues among themselves, so everyone is on the same page
380 before the developer visits. The Chair said that was a good idea. Chair Von Plinsky suggested
381 that the Commission have a careful discussion in May and invite the developers back in early
382 summer. All agreed that would help to make sure that the Commission stays on topic when
383 talking to the developer. Mr. Bergman asked whether there were semantics to employ in these
384 discussions to ensure the Commission is careful and remains impartial/neutral. Mr. Reilly
385 thought it was just a matter of asking questions about the developer’s direction. Chair Von
386 Plinsky said that he thought they could develop some questions together at the next meeting.

387
388 **6) Discussion on Agricultural Land Conservation and Food Security – Rowland**
389 **Russell**

390
391 Chair Von Plinsky welcomed Rowland Russell to speak about agricultural land conservation and
392 food security. Mr. Russell’s career is in environmental studies, and he holds degrees from
393 Antioch University Seattle and New England. Mr. Russell is also a member of the Friends of
394 Public Art, he was on the Walldogs Executive Committee, is on the Board of the Cheshire
395 County Historical Society, and serves on the City’s Bicycle and Pedestrian Path Advisory
396 Committee. He also has a role coordinating volunteer activities at the Monadnock View
397 Cemetery community garden, where there are 4 dedicated pollinator plots.

398
399 Mr. Russell recalled that in 2007, the Cities for Climate Protection wrote the Climate Adaptation
400 Plan, which was the first mention of food security in the City that he saw. He said the Climate
401 Adaptation Plan focused on climate change’s effect on conservation of agricultural land, as well
402 as meeting the needs of people who need food the most. He said that the Plan had re-emerged
403 over the years in various different committees’ functions. He imagined the Plan would have been
404 in the hands of the Agricultural Commission if it had not been disbanded; Mr. Russell recalled
405 that the Conservation Commission was supposed to absorb some of those duties. He said that in
406 speaking with Mayor Hansel and Ms. Brunner, they developed an idea for the Energy and
407 Climate Committee (ECC), which sort of took over for Cities for Climate Protection. Mr. Russell
408 said that the plan was for the ECC to sponsor a work group focusing on food security. He said
409 there were still some processes in the works for the ECC to assign members to its various work
410 groups. He said there are many players interested in having a role in this. To that end, Mr.
411 Russell suggested a series of three focus groups on: 1) residential needs (including expansion of
412 community gardens called for in the 2007 Plan and incentives for residents to change lawns to

413 vegetable or pollinator gardens), 2) organizational needs (Community Kitchen, Hundred Nights,
414 Southwest Community Services, etc., that need the food), and 3) farms (including retention of
415 existing farmland, renewal of former farmland, and identification of potential farmland; also,
416 climate change adaptation). For example, the Community Kitchen struggled getting the
417 vegetable donations it needed last year; there are 6 dedicated plots at the Community Garden.
418 Each of these 3 proposed work groups would meet 3 times throughout the year, in addition to 3
419 meetings with all work groups together to deal with overall issues, like how to increase food
420 production in the region—the Climate Adaptation Plan called for the region to produce 20% of
421 its own food and the region is not there yet. Mr. Russell invited members of the Conservation
422 Commission interested in food security and farming to attend these work group meetings and
423 weigh-in. He imagined a lot of research and analysis coming out of these focus groups that
424 would go to the ECC, which would formulate recommendations to the City. Ultimately, he
425 hoped those recommendations would be considered as a part of the next master plan.

426

427 Chair Von Plinsky asked when this would ideally start over the course of the next year. Mr.
428 Russell replied that it would probably commence this summer and asked Ms. Brunner the
429 timeline to hear back from the ECC. Ms. Brunner replied that at the ECC retreat the previous
430 week, the ECC determined workgroups but had yet to determine who would serve on each. Still,
431 she said the ECC supported participating. Mr. Russell noted that he already had 2 volunteers for
432 the overarching group for all 12 meetings. He wanted a sense from the ECC before scheduling
433 focus groups. It made sense to him to start with agriculture in terms of the ECC's perspective on
434 how climate change is affecting farmers and how we all get our food.

435

436 **7) New or Other Business**

437

438 None was reported.

439

440 **8) Adjournment – Next Meeting Date: May 15, 2023**

441

442 There being no further business, Chair Von Plinsky adjourned the meeting at 5:44 PM.

443

444 Respectfully submitted by,
445 Katryna Kibler, Minute Taker
446 April 18, 2023

447

448 Reviewed and edited by,
449 Mari Brunner, Senior Planner



City of Keene, NH

Conservation Residential Development (CRD) Subdivision Application

Conservation Residential Development (CRD) subdivisions are those consisting of 3 or more proposed lots and the layout and construction of a new road, where the existing parcel to be subdivided is located in either the Rural, Low Density, or Low Density-1 zoning districts, and meets the minimum lot size requirements specified in Article 19 of the Land Development Code (LDC).

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION	
PROJECT NAME: CRD Whitcomb's Mill Estates	NUMBER OF LOTS PROPOSED:
PROJECT ADDRESS(ES): 19 Whitcombs Mill Road	
SECTION 2: CONTACT INFORMATION	
NAME/COMPANY: Sandra R Henry Trust	NAME/COMPANY: Same as Owner
MAILING ADDRESS: PO Box 9 Keene NH 03431-0009	MAILING ADDRESS:
PHONE: 603-731-0555	PHONE: 603-731-6243
EMAIL: srhenry26@yahoo.com	EMAIL:
SIGNATURE: <i>Sandra R Henry</i>	SIGNATURE: <i>Sandra R Henry</i>
PRINTED NAME: SANDRA R. HENRY	PRINTED NAME:
NAME/COMPANY: James Phippard/Bickstone Land Use Consultants LLC	TAX MAP PARCEL #(S): 237-018-000-000-000
MAILING ADDRESS: 185 Winchester St Keene NH 03431	
PHONE: 603-357-0116	TRACT SIZE: 12.42 ac
EMAIL: jphippard@ne.rr.com	DATE STAMP: RECEIVED APR 14 2023
SIGNATURE: <i>James Phippard</i>	ZONING DISTRICT: LD-1
PRINTED NAME: James P Phippard	PROJECT #: S-03-23

SECTION 3: APPLICATION SUBMISSION REQUIREMENTS

A COMPLETE APPLICATION MUST INCLUDE THE ITEMS BELOW. BOTH DIGITAL & PHYSICAL COPIES OF APPLICATION MATERIALS MUST BE SUBMITTED USING THE METHODS BELOW.

- **Email:** communitydevelopment@keeneh.gov, with "Planning Board Application" in the subject line. (**NOTE:** Large files should be submitted using a flash drive or a file-sharing platform, such as Drop Box.)
- **Mail / Hand Deliver:** Community Development (4th Floor), Keene City Hall, 3 Washington St, Keene, NH 03431

The submittal requirements for CRD applications are outlined further in **Article 19** and **Article 25.10** of the Land Development Code.
Please note that additional information may be requested during the review process.

EXEMPTIONS: Exemptions may be requested from submitting materials that are not relevant to an application by checking the appropriate box below. You may request an exemption from submitting any of the items below, except the application fee, notice list, narrative, and mailing labels. The Community Development Director may grant an exemption, if it is determined that the scope of the project does not warrant the submittal.

WAIVERS: Waiver requests are submitted when an application will not comply with all applicable standards.

GENERAL SUBMITTAL REQUIREMENTS

CERTIFIED NOTICE LIST (See Attachment A for more information.)

2 SETS OF MAILING LABELS (See Attachment A for more information.)

PROJECT NARRATIVE (See Section 1 of Attachment B for more information.)

FEES: Fill in the information below to calculate the total fee.

- \$200 base fee
 - \$100 fee per lot x 8 number of lots
 - \$62 legal ad fee
 - 4.75 current USPS certified mailing rate x 14 number of abutters 66.50
- = 1128.50 (TOTAL FEE)

NOTE: Please call the Community Development Department for the current certified mailing rate. Checks should be made payable to the *City of Keene*. Credit card payments are accepted in-person or by calling 603-352-5440.

WAIVERS (See Section 2 of Attachment B for additional information.)

- WAIVER(S) REQUESTED
- NO WAIVER(S) REQUESTED

WRITTEN DOCUMENTATION OUTLINING THE PROCESS FOR DETERMINING THE LAYOUT OF THE PROPOSED CONSERVATION RESIDENTIAL DEVELOPMENT SUBDIVISION. (See Attachment C for additional information.)

- EXEMPTION REQUESTED
- NO EXEMPTION REQUESTED

PLAN SETS (See Attachment C for additional information.)	SUBMITTED	EXEMPTION REQUESTED
LOCATION MAP	X	
OVERVIEW PLAN	X	
EXISTING CONDITIONS PLAN	X	
YIELD ANALYSIS		
PROPOSED CONDITIONS PLAN	X	
LANDSCAPING PLAN		X
TECHNICAL REPORTS (See Attachment C for additional information.)	SUBMITTED	EXEMPTION REQUESTED
DRAINAGE REPORT	X	
TRAFFIC ANALYSIS	X	
SOIL ANALYSIS	X	
OTHER REPORTS / ANALYSES		X



PROJECT NARRATIVE

12- UNIT CRD WHITCOMB'S MILL ROAD KEENE, NH

April 14, 2023

SR Henry Trust is the owner of 12.42 acres of land on the west side of Whitcomb's Mill Road. The property is zoned LD-1 and is TMP 237-018-000. It has 762 feet frontage on Whitcomb's Mill Road and has access to city sewer via an easement to the existing city sewer across Whitcomb's Mill Road on the Langdon Place of Keene property. Private drinking water wells will be installed for each of the dwelling units. Overhead power and cable TV lines will be installed along the road with underground services extended into each house lot.

This property abuts the Cheshire Rail Trail along its south side. An active farm abuts the property to the west. Single family residential properties abut the property to the north, and to the east, and across Whitcomb's Mill Road is Langdon Place of Keene, a senior living facility.

A new private road (Brookfield Lane) will be constructed to provide access to four single family house lots and three duplex lots. A fourth duplex lot will be proposed along the frontage at Arch Street which will require a waiver for a driveway directly from Whitcomb's Mill Road, rather than the proposed new road. Each single family house lot will be greater than 16,000 sf in size. The duplex lots will be greater than 32,000 sf in size.

Approximately 6.87 acres of open space land will be permanently preserved as part of this proposal. The open space includes a forested wetland area of approximately 1.9 acres and land along White Brook. A continuous forested strip varying in width from 20 feet to over 100 feet will be preserved in its natural state except for one driveway to Whitcomb's Mill Road and a planned footpath connection to the Cheshire Rail Trail.

CRD Dimensional Requirements for the LD-1 district without city water are summarized below:

Land	REQUIRED	PROVIDED
Min. Tract Size	5 acres	12.42 acres
Min Tract Frontage	100 feet	762 feet
Min. Lot Area	16,000 sf	>16,000 feet
Min. Road Frontage	40 feet	>40 feet
Min. Lot Width at Building Line	75 feet	>75 feet
Min. Front Setback	15 feet	15 feet
Min. Rear Setback	20 feet	20 feet
Min. Side Setback	10 feet	10 feet
Max. Building Coverage	35%	N/A
Max. Impervious Coverage	40%	N/A
Density, LD-1 w/o city water	1 acre per lot @ 12.42 acres	Up to 12 units on 8 lots (4 duplex units and 4 single family units)

Primary and Secondary Conservation Areas on the Tract

Primary conservation areas include White Brook which exists along the north side of this tract. There is also a forested wetland of 1.9 acres which is located primarily in the center of the lot. This area is fed by an intermittent stream coming from the south, under the Cheshire Rail Trail and discharging into the wetland area which ultimately discharges to White Brook.

Secondary conservation areas within the forested open space include a potential historic site along the brook which was believed to be the location of a sawmill constructed in 1785 by a man named Holbrook which was eventually owned by a Whitcomb. Thus, the name Whitcomb's Mill Road. The NH Natural Heritage Bureau has also identified a threatened plant species, the fringed gentia which was believed to exist on or near this site in a wetland area at one time. We found no evidence of the fringed gentia during a site inspection by a local botanist.

Open Space Land

The 6.87 acre open space land includes a wetland in the center of the property and the forested perimeter land surrounding the proposed house lots. The open space land will be owned by the Whitcomb's Mill Estates Homeowners Association. The open space land shall be used for passive recreation only including hiking, walking, fishing, snow shoeing, sledding, and other passive recreational uses. No motorized vehicles will be allowed except as necessary for maintenance. No tree cutting will be allowed except for dead or damaged trees which pose a safety hazard.

The applicant is proposing to construct a gravel footpath through a portion of the open space for a connection to the Cheshire Rail Trail at the southeast corner of the property, subject to approval of a license from the State of NH to allow the connection.

The applicant reserves the right to construct a fire pond within the existing wetland, subject to necessary permits and approvals. Each house lot has direct access to the open space land. A copy of the Open Space Covenants is attached.

Permitted Uses

Single family dwellings and two-family dwellings are permitted uses in the LD-1 district under Table 19-3 in the LDC.

Design Criteria

This proposal includes eight new building lots, four of which will be large enough to accommodate a duplex. Four lots are sized to accommodate one single family dwelling. Access to the proposed new building lots will be from the proposed new road with the exception of the access to Lot 8. Lot 8 is large enough to support a duplex and the access to this lot is proposed to be from Whitcomb's Mill Road. The final location for this driveway will be subject to approval from City staff at the time a driveway permit application is filed for Lot 8.

Waiver Criteria

A waiver is requested from section 19.3.5.A.3 to allow a shared driveway directly from Whitcomb's Mill Road to Lot 8.

1. ***Specific circumstances relative to the subdivision, or conditions of the land in such subdivision, indicate that the waiver will properly carry out the spirit and intent of the regulations:*** It is not possible to bring a driveway from the new road to the building site on Lot 8 without crossing the wetland area, or without crossing Lot 7 in close proximity to the building site on Lot 7, or without cutting through the forested buffer between Lot 7 and Whitcomb's Mill Road. The least disruptive impact is to allow a driveway straight in from Whitcomb's Mill Road and onto Lot 8. In the event a duplex is proposed, this will be a shared driveway.
2. ***Granting the waiver will not increase the potential for creating adverse impacts to abutters, the community or the environment:*** This portion of Whitcomb's Mill Road is straight and has good line of sight in both directions. The driveway to the existing single family home across Whitcomb's Mill Road is located to the north and will not conflict with a proposed new driveway location to Lot 8. The addition of a residential driveway in this location will not result in excess traffic and will not create a safety hazard.
3. ***Consideration will also be given as to whether strict conformity with the regulations would pose an unnecessary hardship to the applicant.*** Denial of the waiver would result in the loss of two potential building sites for the applicant. The shortfall in income would force the applicant to significantly raise the cost of the remaining building sites which could jeopardize the feasibility of the entire project.

The proposed new road (Brookfield Lane) will remain a private road to be owned and maintained by the Whitcomb's Mill Estates HOA. The City of Keene will be granted an easement to pass and repass over the property to maintain and repair the public sewer lines into the site. No curbing, no streetlights and no sidewalks are proposed.

Subdivision Review Narrative

12 Unit CRD
Whitcomb 's Mill Road
Keene, NH

April 14, 2023

Site Development Standards

- 20.2 Drainage & Stormwater Management-** Stormwater from the proposed new road will sheet drain to roadside swales and be collected in stormwater treatment areas before discharging to the existing wetland area in the center of the site. The stormwater collection area is sized to retain a 25 year design storm. There will be no increase in runoff leaving the site as a result of this proposal. See attached Hydrocad report from SVE Associates.
- 20.3 Sediment/Erosion Control** – Sediment and erosion control will be provided using silt fencing during construction at the disturbed areas and use of a stone construction entrance during construction.
- 20.4 Snow Storage & Removal** – Snow will be stored around the perimeter of the paved roadway. Excess snow will be removed from the site after each snowstorm as needed.
- 20.5 Landscaping** – No landscaping is proposed.
- 20.6 Screening** – Screening of the CRD will be provided by the existing forested buffer along Whitcomb's Mill Road and around the perimeter of the proposed building lots.
- 20.7 Lighting** – No lighting is proposed. This is a rural residential area and excess lighting is not desirable.
- 20.8 Sewer & Water** – City sewer exists on the Langdon Place of Keene property directly across the street from the site. The City of Keene holds an easement to allow the sewer to be extended to Whitcomb's Mill Road. The applicant will extend the sewer from the existing sewer manhole at Langdon Place of Keene to Whitcomb's Mill Road and then into the CRD site to provide sewer service to each building site. Domestic water will be provided by individual wells located on each building site.
- 20.9 Traffic & Access Management** – A traffic report for this project was prepared by Stephen G. Pernaw & Company, Inc. The report estimates that approximately 106 vehicle trips will be generated on an average weekday. It estimates that up to 8 vehicle trips will occur during the AM peak hour and

up to 10 vehicle trips will occur during the PM peak hour.

The report concludes that this additional traffic will not significantly affect the prevailing traffic operations along Whitcomb's Mill Road, or at the intersection at Rt. 9 and at the Arch Street intersection.

20.10 Filling & Excavation – Minor filling and excavation will be necessary for the construction of the new road and the installation of the new sewer main. Trucks will haul materials from NH Rt. 9 to Whitcomb's Mill Road to the building site. Approximately 1200 CY of material will be hauled to or from the site.

20.11 Surface Waters & Wetlands – White Brook passes along the north side of the site. No work is proposed within 250 feet of the brook. An existing wetland area of approximately 1.9 acres exists in the center of the site. An intermittent stream exists near the east side of the site and discharges stormwater through existing culverts under the rail trail and under the proposed new road leading into the site. No impacts to White Brook or the intermittent stream are proposed. A NHDES Wetlands permit will be required to extend an existing culvert under the new road. Sediment and erosion control measures will be installed prior to disturbance to any areas on the site.

20.12 Hazardous or Toxic Materials – The applicant has no knowledge of hazardous or toxic materials at this site.

20.13 Noise – No excessive noise will result from this proposal.

20.14 Architecture & Visual Appearance - The proposed CRD is a land subdivision to create future building sites. This standard is not applicable.



City of Keene, NH
**Surface Water Protection
 Conditional Use Permit (CUP) Application**

If you have questions about how to complete this form, please call (603) 252-5442 or email: communitydevelopment@keene-nh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME:
CRB Whitcomb's Mill Estates

PROJECT ADDRESS:
19 Whitcomb's Mill Road

SECTION 2: CONTACT INFORMATION

NAME/COMPANY:
Sandra R Henry Trust

NAME/COMPANY:
Same as Owner

MAILING ADDRESS:
PO Box 9 Keene NH 03431-0009

MAILING ADDRESS:

PHONE:
603-731-0555

PHONE:

EMAIL:
shenry26@yahoo.com

EMAIL:

SIGNATURE:
Sandra R Henry

SIGNATURE:

PRINTED NAME:
SANDRA R HENRY

PRINTED NAME:

NAME/COMPANY:
James Phippard/Brickstone Land Use Consultants

TAX MAP PARCEL ID:
037-018-000-000-000

MAILING ADDRESS:
185 Winchester St Keene NH 03431

PARCEL SIZE: 12.42 ac DATE/TIME:

PHONE:
603-357-0116

ZONING DISTRICT:

EMAIL:
jphippard@ne.nh.com

LD-1

SIGNATURE:
James P Phippard

PROJECT #:
S-03-23 B



PRINTED NAME:
James P Phippard

SWP-CUP 0223

SECTION 3: APPLICATION SUBMISSION REQUIREMENTS

A COMPLETE APPLICATION MUST INCLUDE THE FOLLOWING ITEMS. BOTH PHYSICAL & DIGITAL COPIES OF APPLICATION MATERIALS MUST BE SUBMITTED USING THE METHODS BELOW.

- **Digitally:** Email (communitydevelopment@keenenh.gov) or a file-sharing platform (such as Dropbox)
- **Mail / Hand Deliver:** Community Development (4th Floor), City Hall, 3 Washington St, Keene, NH 03431

The submittal requirements for Surface Water Protection Conditional Use Permit (CUP) applications are outlined further in **Article 11.6.3.B** and **Article 25.14** of the Land Development Code (LDC). You may request an exemption from providing any of the items below, except the application fee, notice list, narrative, and mailing labels. The Community Development Director may grant an exemption, if it is determined that the scope of the project does not warrant the submittal.

Note: Additional information may be required by the respective decision-making authority during the review process.

GENERAL SUBMITTAL REQUIREMENTS

CERTIFIED NOTICE LIST (See Attachment A for more information.)

2 SETS OF MAILING LABELS (See Attachment A for more information.)

PROJECT NARRATIVE (See Section 2 of Attachment B for more information.)

FEES: Fill in the information below to calculate the total fee.

\$100 base fee + \$62 legal ad-fee + (4.75 current USPS certified mailing rate x 15 abutters) = \$233.25 (Total Fee)

✓ abutter fee waived
 App. to be prepared @ same
 time as ORD.

NOTE: Please call the Community Development Department for the current certified mailing rate. Checks should be made payable to the *City of Keene*. Credit card payments are accepted in-person or by calling 603-352-5440.

INFORMATION DEMONSTRATING THAT THE PROPOSED ENCROACHMENT WILL NOT CAUSE ADVERSE IMPACTS TO THE SURFACE WATER RESOURCE, OR DESIGN DETAILS THAT DEMONSTRATE THAT PROPOSED MITIGATION WILL PREVENT ADVERSE IMPACTS TO THE SURFACE WATER RESOURCE.

SUBMITTED
 EXEMPTION REQUESTED

WAIVERS (See Section 3 of Attachment B for additional information.)

WAIVER(S) REQUESTED
 NO WAIVER(S) REQUESTED

PLAN SETS (See Attachment C for additional information.)

SUBMITTED **EXEMPTION REQUESTED**

LOCATION MAP OF PROPOSED IMPROVEMENTS	X	
EXISTING CONDITIONS PLAN	X	
PROPOSED CONDITIONS PLAN	X	
GRADING PLAN	X	
LANDSCAPING PLAN		X
LIGHTING PLAN		X
ELEVATIONS		X

TECHNICAL REPORTS (See Attachment C for additional information.)

SUBMITTED **EXEMPTION REQUESTED**

DRAINAGE REPORT	X	
TRAFFIC ANALYSIS	X	
SOIL ANALYSIS	X	
HISTORIC EVALUATION		X
SCREENING ANALYSIS		X
ARCHITECTURAL & VISUAL APPEARANCE ANALYSIS		X
OTHER REPORTS / ANALYSES		X

POSTED NOTICE REQUIREMENT (See Section 1 of Attachment B for additional information.)

Conditional Use Permit Narrative

12 Unit CRD

Whitcomb's Mill Road

Keene NH

May 01, 2023



S-03-23 B
SWP-CUP-02-23

Conditional Use Permit Standards

11.6.2 A – This proposed use will avoid encroachment into the Surface Water Protection Overlay District.

The proposed subdivision is designed to avoid and preserve the existing jurisdictional wetlands while creating buildable areas for up to 12 dwelling units. The jurisdictional wetlands will become part of the permanent open space. It was necessary to include several areas of the wetland buffer in order to provide the necessary land areas to meet minimum lot sizes required by zoning. Most of the wetland buffer areas on building lots lie within setback areas and cannot be built on.

11.6.2 B – Encroachment into the buffer area has been minimized to the maximum extent possible.

The proposed subdivision layout is the minimum encroachment possible which allows the creation of building sites for up to 12 dwellings.

11.6.2 C – The nature, design, siting and scale of the proposed use and the characteristics of the site will avoid the potential for adverse impacts to the surface water resource.

The surface water resources on this site include White Brook along the north side of the site, a forested wetland in the center of the site, and an intermittent stream at the southeast side of the site. Forested open space land provides a buffer to protect White Brook from the developed area. The jurisdictional wetlands in the center of the site and the intermittent stream will become part of the permanent open space and protected from development. A small footpath is planned running parallel to the intermittent stream for access to the Cheshire Rail Trail. The footpath will meander through the existing trees and will be outside the wetland buffer.

11.6.2 D – The surface water buffer area shall be left in a natural state to the maximum extent possible.

All of the proposed open space land is intended to be left in a natural state as much as possible. Open space covenants are included in the Home Owners Association (HOA) documents requiring this. A small area along the downhill side of the proposed stormwater basin will require removal of a few trees to complete the grading outside the basin.

11.6.2 E –

1. Size, character and quality of the surface water –

White Brook is a small perennial stream flowing from west to east along the northern side of the site. The stream joins Black Brook approximately one mile east of the site and becomes Ash Swamp Brook.

The subdivision site is a former gravel pit 12.42 acres in size. The site was stripped of vegetation in the 1950's and 1960's and the sands and gravels were removed. The center of the site was excavated down to groundwater and was left as a small sedimentation basin and served to protect White Brook from sedimentation. The site was never reclaimed and re-vegetated but was left to grow fallow. The jurisdictional wetland in the center of the site is approximately 1.9 acres in size and collects stormwater from land areas south of the site through an intermittent stream and a stone culvert under the Cheshire Rail Trail. The wetland area is forested with saplings, small trees and scrub shrubs.

2. Location and connectivity relative to other surface waters –

White Brook is a small perennial stream flowing from west to east along the northern side of the site. The stream joins Black Brook approximately one mile east of the site and becomes Ash Swamp Brook. The wetland area on the site is located immediately south of White Brook and discharges water to the stream. The wetland area receives stormwater from offsite to the south via the intermittent stream.

3. Ecological and hydrological functions of the surface water –

The primary function of the forested wetland is stormwater retention and removal of sediments and nutrients before discharging stormwater to White Brook. Secondary functions include wildlife habitat primarily for birds and small animals.

4. Topography, slopes, soils and vegetation within the resource –

Most of the site slopes gently downward to the north at slopes of 8% or less. There are very steep slopes along the south and west property lines left over from the gravel pit operation. The remaining soils on the site are remnants of the former gravel pit and are classified as 22C Colton gravelly sandy loam. The vegetation at the site is mostly small trees and scrub shrub which grew fallow after the gravel pit ceased operation.

5. Role of the buffer in mitigating soil erosion, sediment and nutrient transport, groundwater recharge, flood storage, and flow dispersion -

Most of the existing wetland buffer lacks adequate vegetation to effectively prevent soil erosion or to filter sediment and nutrients. Stormwater currently sheet drains through the buffer areas and into the existing wetland. The wetland buffers do not provide a significant source for groundwater recharge, flood storage or flow dispersion.

6. Wildlife habitat or travel corridor –

The forested wetland and the land areas next to White Brook do provide wildlife habitat and a travel corridor for animals following the stream. Birds and small animals frequent this area and will benefit from preservation of the wetland as permanent space.

7. Stormwater runoff and potential to impact the surface water

resource – Stormwater runoff from the proposed new road will be collected and directed to a stormwater basin constructed in an upland area near the cul-de-sac. The basin is sized for a 25 year design storm and designed to collect sediments within the basin. Water overflowing the basin will discharge to a vegetated slope and eventually to the forested wetland. A stormwater report prepared by SVE Associates is attached.

8. Sensitivity of surface water resource to changes in the buffer zone -

As the house lots are developed the buffer areas will be stabilized with loam and vegetation. This will improve the ability of the buffers in these locations to filter stormwater runoff and protect the wetlands.

WHITCOMB'S MILL ESTATES

19 Whitcombs Mill Road, KEENE, NEW HAMPSHIRE

OWNER & APPLICANT:

Sandra R. Henry Trust

P.O. BOX 9
KEENE, NH 03431

APPROVED BY THE APPLICANT:

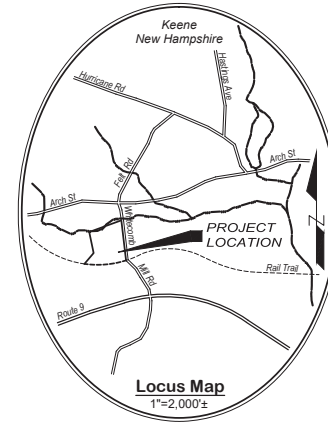
ON _____

INSPECTION PERMISSION: UPON APPROVAL OF THIS SITE PLAN, THE OWNER GRANTS PERMISSION FOR THE MEMBERS OR AGENTS OF THE KEENE PLANNING BOARD TO INSPECT THIS SITE AS NECESSARY.

APPROVED BY THE KEENE PLANNING BOARD

ON _____

CERTIFIED BY CHAIRMAN _____



INDEX OF PLANS

- N-1 NOTES AND LEGEND
 - *PLAN OF CRD SUBDIVISION (1" = 50')
 - *SUPPLEMENTAL SOILS AND TOPOGRAPHY PLAN (1" = 50')
- S-1 EXISTING CONDITIONS PLAN (1" = 50')
- C-1 SUBDIVISION PLAN (1" = 50')
- C-2 PROPOSED ROAD PLAN (1" = 30')
- C-3 PROPOSED SEWER PLAN (1" = 30')
- C-4 PROPOSED SEWER PLAN (1" = 30')
- C-5 PROPOSED SEWER PROFILE (1" = 30')
- C-6 CONSTRUCTION DETAILS

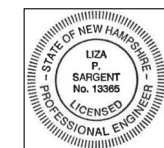
*PLANS BY HUNTELY SURVEY & DESIGN, PLLC

Project K2740
PREPARED BY

Land Surveyor:
Huntley Survey & Design, PLLC
659 WEST ROAD
TEMPLE, NH 03084
www.huntleysurvey.com
PHONE (603) 924-1669

Civil Engineer:
SVE Associates
439 WEST RIVER ROAD
BRATTLEBORO, VT 05302
PHONE (802) 257-0561

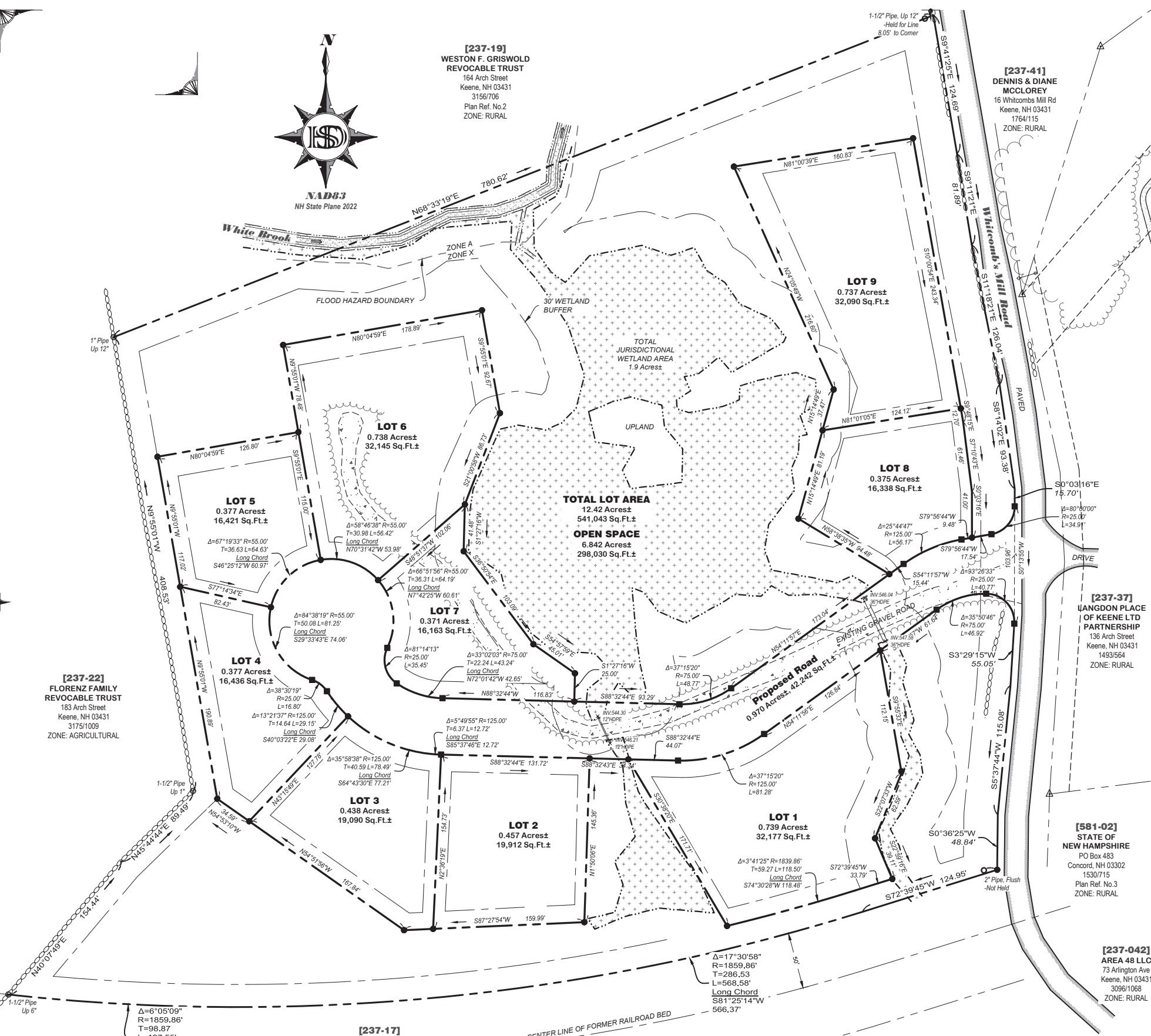
Development Consultant:
Brickstone Land Use Consultants
185 WINCHESTER ST.
KEENE, NH 03431
PHONE (603) 357-0116



Liza Sargent 4/13/23

LIZA P. SARGENT R.C.E. NUMBER: 13365 DATE

April 12, 2023



NO.	DATE	REVISION	BY

NO. DATE REVISION BY

[237-19]
WESTON F. GRISWOLD
REVOCABLE TRUST
 164 Arch Street
 Keene, NH 03431
 3156706
 Plan Ref. No.2
 ZONE: RURAL

[237-41]
DENNIS & DIANE
MCCLUREY
 16 Whitcombs Mill Rd
 Keene, NH 03431
 1764/115
 ZONE: RURAL

[237-22]
FLORENZ FAMILY
REVOCABLE TRUST
 183 Arch Street
 Keene, NH 03431
 3175/1009
 ZONE: AGRICULTURAL

[237-37]
LANGDON LTD
PARTNERSHIP
 136 Arch Street
 Keene, NH 03431
 1493/564
 ZONE: RURAL

[581-02]
STATE OF
NEW HAMPSHIRE
 PO Box 483
 Concord, NH 03302
 1530/715
 Plan Ref. No.3
 ZONE: RURAL

[237-042]
AREA 48 LLC
 73 Arlington Ave
 Keene, NH 03431
 3096/1068
 ZONE: RURAL

[237-17]
STATE OF NEW HAMPSHIRE
 PO Box 483
 Concord, NH 03302
 1530/715
 Plan Ref. No.3
 ZONE: RURAL

[237-016]
EASTWOOD PROPERTIES LLC
 43 Daniels Hill Road
 Keene, NH 03431
 2658/775
 ZONE: RURAL

Symbol Legend

○	UTILITY POLE	⊖	STONE WALL
○	IRON PIN/PIPE	—	EDGE OF WATER
○	CAPPED 5/8" REBAR	—	TREE LINE
●	5/8" REBAR WITH CAP (SET)	—	EDGE OF PAVEMENT
■	4" X 4" GRANITE MONUMENT	—	EDGE OF GRAVEL
■	CHESHIRE REGISTRY OF DEEDS	—	EDGE OF WETLANDS
■	TAX MAP PARCEL NUMBER	Ⓞ	SOILS TYPE KEY LETTER
■	DEED VOLUME & PAGE		

ROW Notes

WHITCOMB MILLS ROAD - A CLASS V PUBLIC WAY. RE-SURVEYED 1836, Vol.1 Pg.53. 2 RODS WIDE. SIDELINES ARE SHOWN FROM A 16.5' OFFSET FROM THE TRAVELED WAY CENTERLINE AND CONFIRMED BY THE LOCATIONS OF STONEWALLS ALONG EITHER SIDE OF SAID ROAD.

Zoning Districts
LD-1 (LOW DENSITY 1)
REQUIREMENTS

MAX HEIGHT	# STORIES/#
LOT SIZE	1 ACRE
FRONTAGE	100/160' CUL-DE-SAC
LOT WIDTH	75'
BUILDING SETBACKS	
FRONT	15'
SIDE	10'
REAR	20'
MAX BUILDING COVERAGE	
MAX IMPERMEABLE COVERAGE	35%

Overlay Districts

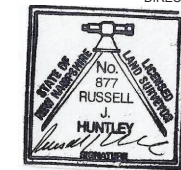
Surface Water Protection District:
 30' SETBACKS FROM SURFACE WATERS
 10' WITH CU PERMIT

Hillside Protection District:
 PRECAUTIONARY - SLOPES BETWEEN 15 & 25%: 20,000 SF
 MAXIMUM DISTURBANCE
 PROHIBITIVE - SLOPES 25% OR GREATER : NO BUILDING OR IMPROVEMENTS

SEE CITY OF KEENE LAND DEVELOPMENT CODE CONCERNING ADDITIONAL REQUIREMENTS PERTAINING TO PARCEL.

Surveyor's Certification

PURSUANT TO RSA 676: 18 III AND RSA 672: 14, I CERTIFY THAT THIS PLAN WAS PRODUCED BY ME OR THOSE UNDER MY DIRECT SUPERVISION.



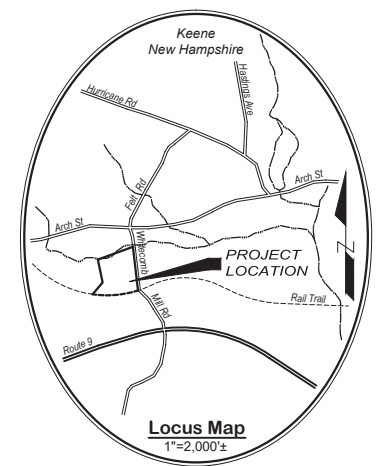
Owner of Record
SANDRA R. HENRY TRUST
 PO Box 9
 Keene, NH 03431

TOTAL AREA
 12.42 Acres±
 541,043 Sq.Ft.±
 764' Frontage

Owner Certification

I CERTIFY THAT I AM THE CURRENT OWNER OF THE TRACTS SHOWN HEREON AND THAT I APPROVE OF THE SUBDIVISION.

OWNER'S SIGNATURE _____ DATE _____



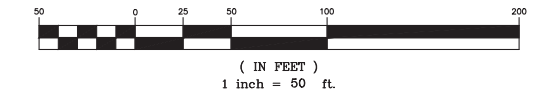
Plan References

- REFERENCES INCLUDE ALL INFORMATION REFERRED TO ON ANY OF THE FOLLOWING PLANS
- PRELIMINARY SUBDIVISION PLAN OF LAND, SANDRA R. HENRY TRUST, TAX MAP 237-LOT 18, 19 WHITCOMBS MILL ROAD, KEENE, NH, DATED MAY 29, 2022, BY CHRISTOPHER PATON, PATON LAND SURVEYING (Obtained from Client and used with permission of Surveyor).
 - SUBDIVISION PLAN OF LAND OWNED BY WESTON & NANCY GRISWOLD, WHITCOMBS MILL ROAD, KEENE, NH, DATED APRIL 18, 1987, BY WAYNE MCCUTCHEON ASSOC. (CCRD)
 - RIGHT OF WAY AND TRACK MAP, FITCHBURG R.R. CO., OPERATED BY THE BOSTON & MAINE R.R., VALUATION SHEET V 39 NH/35.

Notes

- THE BEARINGS SHOWN ON THIS PLAN IS/ARE REFERENCED TO NAD83 NH STATE PLANE GRID, BASED THE DATUM STATED ON PLAN REFERENCE No.1.
- THE PERIMETER BOUNDARY LINES SHOWN ON THIS PLAN ARE SHOWN FROM PLAN REFERENCE No.1. INTERIOR LINES WERE CALCULATED BY THIS OFFICE.
- UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES HAVE BEEN PLOTTED FROM PLAN REFERENCE No.1. THEIR EXISTENCE AND LOCATIONS MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES THE EXISTENCE OF WHICH ARE NOT KNOWN. THE SIZE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG-SAFE PRIOR TO ANY CONSTRUCTION.
- JURISDICTIONAL WETLANDS WERE DELINEATED BY CHRIS SPAULDING OF ECO ENVIRONMENTAL SOLUTIONS, LLC DURING THE MONTH OF APRIL, 2021 USING THE THREE PARAMETER APPROACH DESCRIBED IN TECHNICAL MANUAL Y-87-1, THE CORPS OF ENGINEERS 1987 WETLAND DELINEATION MANUAL AND SUPPLEMENTED BY THE JANUARY 2012, REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION U.S. ARMY CORPS OF ENGINEERS, V.2.
- PORTIONS THE PARCEL(S) SHOWN ARE LOCATED IN ZONE A AND ARE WITHIN A SPECIAL FLOOD HAZARD AREA PER FEMA PANEL 33005C0262E EFFECTIVELY DATED MAY 23, 2006.
- THE SUBDIVISION REGULATIONS OF THE CITY OF KEENE ARE A PART OF THIS PLAN AND APPROVAL OF THIS PLAN IS CONTINGENT ON COMPLETION OF ALL THE REQUIREMENTS OF SAID SUBDIVISION REGULATIONS EXCEPTING ONLY ANY VARIANCES OR MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

GRAPHIC SCALE



APPROVED BY THE
KEENE PLANNING BOARD

BY _____ CHAIRMAN
 AND _____ SECRETARY
 ON _____

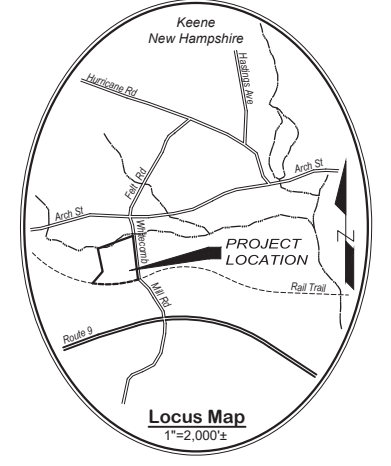
Plan of CRD Subdivision

LAND OF
Sandra R. Henry Trust
 located at
 Tax Map 237 Lot 18
 19 Whitcombs Mill Road, Keene, Cheshire County, New Hampshire
 Book 2060, Page 599

Scale 1"= 50'

Surveyed See Note 1 Plan prepared 03/24/2023
 Project No. H23-007 Cad File No. H23-007 CRD.dwg

Huntley Survey & Design, PLLC
 NH & VT Land Surveying, Wetlands & NH Septic System Design
 659 West Road, Temple, NH 03084 (603) 924-1669 www.huntleysurvey.com



Soils Key

22C	COLTON GRAVELLY SANDY LOAM	8-15% SLOPES
29B	GRAVEL PITS	

Zoning Districts
LD-1 (LOW DENSITY 1) REQUIREMENTS

MAX HEIGHT	# STORIES/#
LOT SIZE	1 ACRE
FRONTAGE	100/160' CUL-DE-SAC
LOT WIDTH	75'

BUILDING SETBACKS

FRONT	15'
SIDE	10'
REAR	20'

MAX BUILDING COVERAGE 30%
MAX IMPERMEABLE COVERAGE 35%

- Plan References**
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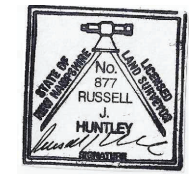
- Notes**
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 - THE PERIMETER BOUNDARY LINES SHOWN ON THIS PLAN ARE SHOWN FROM PLAN REFERENCE No.1. INTERIOR LINES WERE CALCULATED BY THIS OFFICE.
 - TOPOGRAPHY SHOWN ON THIS PLAN IS FROM LIDAR SURVEY AND MAPPING OBTAINED FROM <http://lidar.unh.edu/map/>. THE VERTICAL DATUM IS NAVD 88. CONTOUR INTERVAL IS TWO (2) FEET.
 - UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES HAVE BEEN PLOTTED FROM PLAN REFERENCE No.1. THEIR EXISTENCE AND LOCATIONS MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES THE EXISTENCE OF WHICH ARE NOT KNOWN. THE SIZE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED PRIOR TO ANY AND ALL CONSTRUCTION. CALL DIG-SAFE PRIOR TO ANY CONSTRUCTION.
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 - PORTIONS THE PARCEL(S) SHOWN ARE LOCATED IN ZONE A AND ARE WITHIN A SPECIAL FLOOD HAZARD AREA PER FEMA PANEL 33005C0262E EFFECTIVELY DATED MAY 23, 2006.
 - SOILS LINES AND TYPES SHOWN HEREON WERE OBTAINED FROM NRCS WEB SOIL SURVEY ONLINE PROGRAM, SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY, AVAILABLE ONLINE AT [HTTPS://WEBSOILSURVEY.SC.EGOV.USDA.GOV/](https://websoilsurvey.sc.egov.usda.gov/), ACCESSED MARCH 24, 2023.
 - THE SUBDIVISION REGULATIONS OF THE CITY OF KEENE ARE A PART OF THIS PLAT AND APPROVAL OF THIS PLAT IS CONTINGENT ON COMPLETION OF ALL THE REQUIREMENTS OF SAID SUBDIVISION REGULATIONS EXCEPTING ONLY ANY VARIANCES OR MODIFICATIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

Overlay Districts
Surface Water Protection District:
30' SETBACKS FROM SURFACE WATERS
10' WITH CU PERMIT

Hillside Protection District:
PRECAUTIONARY - SLOPES BETWEEN 15 & 25%: 20,000 SF
MAXIMUM DISTURBANCE
PROHIBITIVE - SLOPES 25% OR GREATER : NO BUILDING OR IMPROVEMENTS

SEE CITY OF KEENE LAND DEVELOPMENT CODE CONCERNING ADDITIONAL REQUIREMENTS PERTAINING TO PARCEL.

Surveyor's Certification
PURSUANT TO RSA 676: 18 III AND RSA 672: 14, I CERTIFY THAT THIS PLAT WAS PRODUCED BY ME OR THOSE UNDER MY DIRECT SUPERVISION.



APPROVED BY THE KEENE PLANNING BOARD

BY _____ CHAIRMAN
AND _____ SECRETARY
ON _____

**Supplemental Soils and Topography Plan
Plan of CRD Subdivision**

LAND OF
Sandra R. Henry Trust
located at
Tax Map 237 Lot 18
19 Whitcombs Mill Road, Keene, Cheshire County, New Hampshire
Book 2060, Page 599

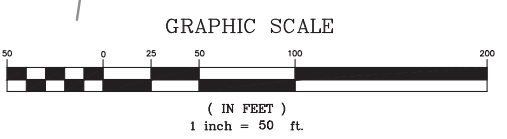
Scale 1"= 50'

Surveyed See Note 1 Plan prepared 03/24/2023
Project No. H23-007 Cad File No. H23-007 CRD.dwg

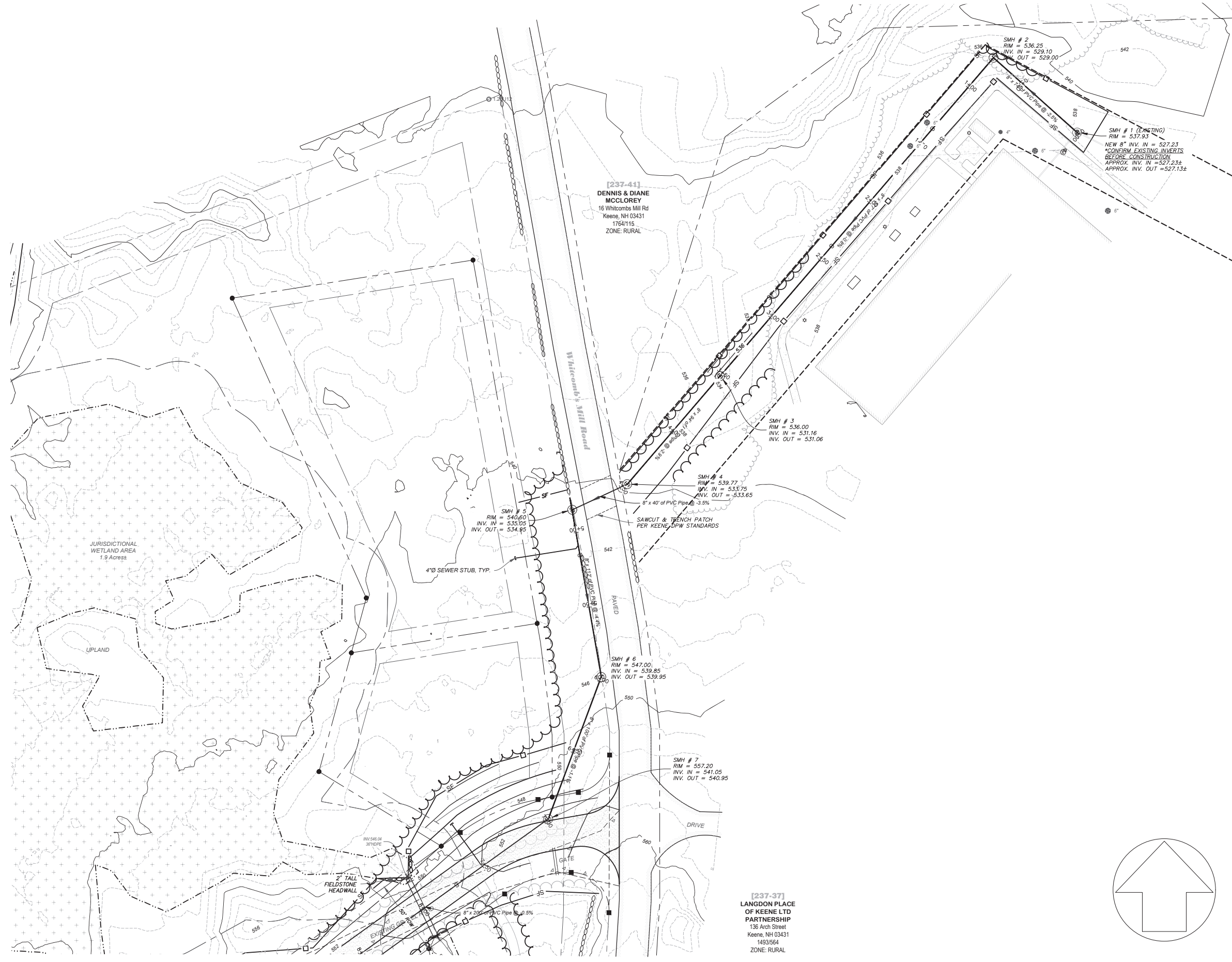
Huntley Survey & Design, PLLC
NH & VT Land Surveying, Wetlands & NH Septic System Design
659 West Road, Temple, NH 03084 (603) 924-1669 www.huntleysurvey.com

Symbol Legend

○	UTILITY POLE	▬▬▬▬▬▬▬▬	STONE WALL
○	IRON PIN/PIPE	▬▬▬▬▬▬▬▬	EDGE OF WATER
CRB	CAPPED 5/8" REBAR	▬▬▬▬▬▬▬▬	TREE LINE
●	5/8" REBAR WITH CAP (SET)	▬▬▬▬▬▬▬▬	EDGE OF PAVEMENT
■	4" X 4" GRANITE MONUMENT	▬▬▬▬▬▬▬▬	EDGE OF GRAVEL
■	CHESHIRE REGISTRY OF DEEDS	▬▬▬▬▬▬▬▬	EDGE OF WETLANDS
■	TAX MAP PARCEL NUMBER	▬▬▬▬▬▬▬▬	SOILS TYPE KEY LETTER
■	DEED VOLUME & PAGE		




NO.	DATE	REVISION	BY



[237-41]
**DENNIS & DIANE
 MCCLOREY**
 16 Whitcombs Mill Rd
 Keene, NH 03431
 1764115
 ZONE: RURAL

[237-37]
**LANGDON PLACE
 OF KEENE LTD
 PARTNERSHIP**
 136 Arch Street
 Keene, NH 03431
 1493564
 ZONE: RURAL


 Liza Sargent 4/13/23
 LIZA P. SARGENT DATE
 R.C.E. NUMBER: 13365

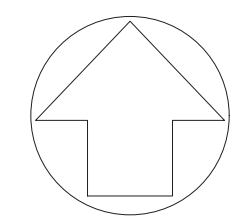
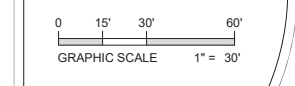
PLANNER:
Brickstone
 Land Use Consultants, LLC
 Site Planning, Permitting and Development Consulting
 155 Winchester Street, Keene, NH 03431
 Phone: (603) 357-0116

NO.	REVISION	DATE	DWN	CHK

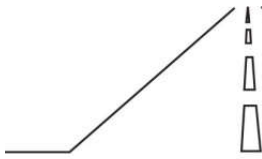
SVE ©2023
 Engineering
 Planning
 Landscape Architecture
 Surveying

 SVE Associates
 P.O. Box 1818
 439 West River Road
 Brattleboro, VT 05302
 T 802.257.0561
 F 802.257.0721
 www.sveassoc.com

**PROPOSED
 SEWER PLAN**
 WHITCOMB'S MILL
 ESTATES
 SANDRA R HENRY TRUST
 19 WHITCOMB'S MILL ROAD
 KEENE, NEW HAMPSHIRE



PROJ. #
 K2740
 DATE:
 12-APR-23
 DESIGN: LPS SHEET
 DRAWN: AJG
 CHECKED: LPS
C-4
 Page 34 of 72



MEMORANDUM

Ref: 2247A

To: James Phippard
Brickstone Land Use Consultants, LLC

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Conservation Residential Development
Keene, New Hampshire

Date: February 13, 2023

As requested, Pernaw & Company, Inc. has conducted this “trip generation analysis” for the proposed Conservation Residential Development (CRD) project that will be located on the west side of Whitcomb’s Mill Road in Keene, New Hampshire. The subject site is located directly across from the Langdon Place of Keene driveway (see Figure 1). Available traffic count data was also researched at the NHDOT. The purpose of this memorandum is to summarize the available count data and the trip generation analyses for the subject site. To summarize:

Proposed Development – The development proposal involves the construction of eight single-family dwelling units and two duplexes, for a total of 12 dwelling units (see Attachment 1). Vehicular access to/from eleven dwelling units will be provided via a new full-access private site access road that will intersect the west side of Whitcomb’s Mill Road directly across from the Langdon Place of Keene driveway. One dwelling unit will have driveway access via Whitcomb’s Mill Road. The private access road for the proposed units will be maintained by the Home Owners Association. Whitcomb’s Mill Road is a relatively narrow local road, and there is a one-lane bridge where it crosses over White Brook. The Whitcomb Mill Road approaches to NH9 and Arch Street operate under stop sign control.

Existing Traffic Volumes – Research at the NHDOT revealed that a short-term NHDOT traffic count was conducted on Whitcomb’s Mill Road approximately 550-feet to the north of the proposed private road in August 2021. This section of the Whitcomb’s Mill Road carried an estimated Annual Average Daily Traffic (AADT) volume of approximately 806 vehicles per day (vpd) in 2021, up slightly from 784 vpd in 2019. As an aside, the 2020 AADT (681 vpd) clearly shows the effects of the ongoing pandemic (see Attachment 2).

The 2021 hourly traffic volume data revealed that weekday volumes on Whitcomb’s Mill Road typically reached peak levels from 7:00 to 8:00 AM and from 5:00 to 6:00 PM (see Attachment 3). The diagrams on Page 3 summarize the daily and hourly variations in traffic demand on this section of the street. The historical count data summarized on Page 4 shows that the AADT traffic volumes in 2021 are significantly lower than occurred in 2015 (approximately half).



 = AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)

NORTH 

2247A

Figure 1

Site Location

Traffic Evaluation, Proposed Conservation Residential Development, Keene, New Hampshire

Drainage Summary

for

Whitcomb's Mill Estates 19 Whitcombs Mill Road, Keene, NH

**Prepared by SVE Associates
April 11, 2023**

A comparison of peak stormwater runoff for the 25-year rainfall events in the post-development conditions was completed by SVE Associates using HydroCad 10.0 software. The storm event used in the model was Type III, 24-hour storm with the following rainfall depths for Keene, NH:

25 Year Event: 4.88 inches

OVERVIEW:

This project will consist of developing the 19 Whitcombs Mill Road property, constructing a 20' wide, 900' long road, with cul-de-sac, constructing an extension of the City sewer main from the existing sewer manhole behind Langdon Place to the proposed cul-de-sac. Each lot will have its own individual drilled well for potable water.

EXISTING CONDITIONS:

The existing condition of this property is a former gravel pit, with an existing gravel access road and two existing culverts. There is a wetland complex, approximately 1.9 acres in size that drains to White Brook. Currently stormwater runoff sheet flows generally from the south to the north, and the two wetlands on the south side of the existing gravel access road, flow through the existing 12" and 36" diameter culverts to the wetland on the north side of the access road, and eventually flow into White Brook.

PROPOSED CONDITIONS:

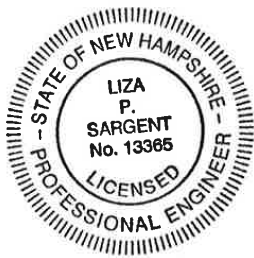
The proposed conditions, modeled in the "Post-Development" drainage model, consist of the proposed 20' wide road with cul-de-sac. Once developed, most of the stormwater runoff will sheet flow off the proposed access road and infiltrate into the existing ground. The cul-de-sac will be curbed and sheet flow to the proposed stormwater detention basin, and infiltrate into the ground. Vegetated roadside buffers will be maintained within the right-of-way to treat the stormwater runoff.

SVE Associates

	25 year	
	<i>Existing</i>	<i>Proposed</i>
	<i>Runoff (cfs)</i>	<i>Runoff (cfs)</i>
<i>Summary Node 100R</i>	0.38	0.94

CONCLUSION:

There will be no adverse impact to downstream abutters due to stormwater runoff from the proposed road. Overall, there is no significant change in stormwater runoff post development, the total runoff is less than 1 cfs from the site in the 25 year storm event.



SVE Associates

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	42.934 degrees North
Longitude	72.333 degrees West
Elevation	160 feet
Date/Time	Mon Apr 10 2023 14:27:37 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.70	0.87	1.08	1yr	0.75	1.01	1.25	1.54	1.91	2.35	2.61	1yr	2.08	2.51	2.88	3.52	4.09	1yr
2yr	0.34	0.52	0.65	0.85	1.07	1.33	2yr	0.92	1.20	1.53	1.87	2.27	2.76	3.11	2yr	2.44	2.99	3.49	4.16	4.76	2yr
5yr	0.40	0.63	0.78	1.05	1.34	1.68	5yr	1.16	1.51	1.93	2.35	2.83	3.39	3.87	5yr	3.00	3.72	4.32	5.10	5.81	5yr
10yr	0.45	0.71	0.90	1.23	1.59	2.01	10yr	1.37	1.79	2.30	2.79	3.34	3.96	4.57	10yr	3.51	4.39	5.08	5.96	6.77	10yr
25yr	0.54	0.86	1.09	1.51	2.00	2.53	25yr	1.72	2.25	2.90	3.51	4.17	4.88	5.69	25yr	4.32	5.47	6.31	7.32	8.28	25yr
50yr	0.61	0.98	1.26	1.76	2.37	3.02	50yr	2.05	2.68	3.47	4.18	4.92	5.72	6.73	50yr	5.06	6.47	7.42	8.55	9.64	50yr
100yr	0.70	1.14	1.47	2.07	2.82	3.60	100yr	2.44	3.18	4.13	4.96	5.81	6.70	7.96	100yr	5.93	7.66	8.74	10.00	11.24	100yr
200yr	0.80	1.31	1.69	2.43	3.35	4.29	200yr	2.89	3.79	4.93	5.89	6.86	7.86	9.43	200yr	6.96	9.07	10.30	11.69	13.10	200yr
500yr	0.97	1.59	2.07	3.01	4.22	5.41	500yr	3.64	4.77	6.21	7.38	8.55	9.71	11.80	500yr	8.59	11.35	12.81	14.39	16.06	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.41	0.56	0.68	0.90	1yr	0.59	0.88	0.92	1.20	1.51	2.14	2.48	1yr	1.89	2.38	2.73	3.38	3.87	1yr
2yr	0.33	0.50	0.62	0.84	1.03	1.18	2yr	0.89	1.16	1.34	1.70	2.15	2.70	3.06	2yr	2.39	2.94	3.43	4.08	4.67	2yr
5yr	0.37	0.57	0.71	0.97	1.24	1.40	5yr	1.07	1.37	1.57	1.99	2.50	3.24	3.69	5yr	2.87	3.55	4.12	4.89	5.54	5yr
10yr	0.41	0.63	0.78	1.09	1.41	1.59	10yr	1.21	1.55	1.77	2.22	2.78	3.70	4.27	10yr	3.27	4.10	4.74	5.61	6.31	10yr
25yr	0.47	0.71	0.89	1.27	1.66	1.87	25yr	1.44	1.83	2.08	2.56	3.21	4.44	5.15	25yr	3.93	4.95	5.70	6.72	7.47	25yr
50yr	0.52	0.78	0.98	1.41	1.89	2.12	50yr	1.63	2.07	2.34	2.85	3.57	5.10	5.94	50yr	4.51	5.71	6.58	7.73	8.51	50yr
100yr	0.57	0.86	1.08	1.55	2.13	2.38	100yr	1.84	2.33	2.65	3.17	3.97	5.86	6.86	100yr	5.19	6.59	7.61	8.89	9.70	100yr
200yr	0.63	0.95	1.20	1.74	2.42	2.69	200yr	2.09	2.63	2.99	3.52	4.42	6.74	7.93	200yr	5.97	7.63	8.79	10.24	11.06	200yr
500yr	0.73	1.08	1.39	2.02	2.87	3.14	500yr	2.48	3.07	3.51	4.03	5.08	8.13	9.62	500yr	7.20	9.25	10.65	12.38	13.16	500yr

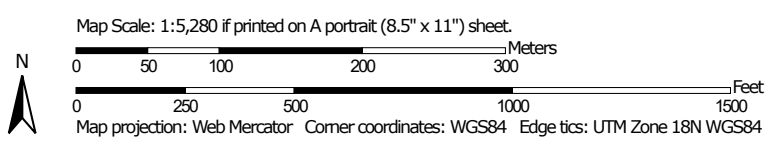
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.78	0.96	1.13	1yr	0.83	1.10	1.25	1.59	1.99	2.48	2.73	1yr	2.19	2.62	3.02	3.67	4.28	1yr
2yr	0.35	0.55	0.67	0.91	1.12	1.29	2yr	0.97	1.26	1.44	1.84	2.29	2.80	3.19	2yr	2.48	3.06	3.58	4.24	4.87	2yr
5yr	0.44	0.67	0.84	1.15	1.46	1.69	5yr	1.26	1.65	1.89	2.34	2.89	3.55	4.06	5yr	3.14	3.91	4.52	5.36	6.09	5yr
10yr	0.52	0.80	0.99	1.39	1.79	2.08	10yr	1.55	2.04	2.31	2.82	3.45	4.23	4.90	10yr	3.74	4.71	5.42	6.38	7.24	10yr
25yr	0.66	1.00	1.24	1.77	2.33	2.77	25yr	2.01	2.71	3.04	3.64	4.38	5.35	6.27	25yr	4.74	6.03	6.89	8.02	9.11	25yr
50yr	0.78	1.19	1.48	2.13	2.87	3.44	50yr	2.47	3.36	3.74	4.43	5.23	6.40	7.56	50yr	5.66	7.27	8.25	9.55	10.83	50yr
100yr	0.94	1.42	1.78	2.57	3.52	4.26	100yr	3.04	4.17	4.61	5.39	6.28	7.65	9.14	100yr	6.77	8.79	9.90	11.37	12.89	100yr
200yr	1.13	1.70	2.15	3.11	4.34	5.30	200yr	3.75	5.18	5.67	6.57	7.52	9.13	11.05	200yr	8.08	10.62	11.87	13.53	15.36	200yr
500yr	1.44	2.14	2.76	4.01	5.70	7.07	500yr	4.92	6.91	7.49	8.54	9.57	11.54	14.17	500yr	10.21	13.62	15.08	17.03	19.36	500yr

Soil Map—Cheshire County, New Hampshire
(Whitcomb's Mill)




Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cheshire County, New Hampshire
Survey Area Data: Version 26, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Pootatuck fine sandy loam	1.2	1.0%
5	Rippowam fine sandy loam	9.6	8.1%
22A	Colton gravelly sandy loam, 0 to 3 percent slopes	1.3	1.1%
22B	Colton gravelly sandy loam, 3 to 8 percent slopes	15.4	13.0%
22C	Colton gravelly sandy loam, 8 to 15 percent slopes	29.0	24.5%
26A	Windsor loamy sand, 0 to 3 percent slopes	2.0	1.7%
143C	Monadnock fine sandy loam, 8 to 15 percent slopes, very stony	23.9	20.2%
169B	Sunapee fine sandy loam, 0 to 8 percent slopes, very stony	0.0	0.0%
298	Pits, gravel	30.8	26.0%
395	Chocorua mucky peat	0.7	0.6%
401	Occum fine sandy loam	4.6	3.9%
Totals for Area of Interest		118.5	100.0%

Cheshire County, New Hampshire

298—Pits, gravel

Map Unit Composition

Pits: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 26, Sep 9, 2022

Cheshire County, New Hampshire

22C—Colton gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yjf

Elevation: 10 to 2,000 feet

Mean annual precipitation: 31 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Colton and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colton

Setting

Landform: Outwash terraces

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope, base slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy-skeletal glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: gravelly sandy loam

Bs - 7 to 14 inches: gravelly loamy sand

BC - 14 to 24 inches: very gravelly coarse sand

C - 24 to 65 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (1.42 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Ecological site: F146XY071ME - Sandy

Hydric soil rating: No

Minor Components

Adams

Percent of map unit: 10 percent

Landform: Outwash terraces

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Sheepscot

Percent of map unit: 3 percent

Landform: Outwash terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Croghan

Percent of map unit: 2 percent

Landform: Outwash terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Data Source Information

Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 26, Sep 9, 2022

Cheshire County, New Hampshire

5—Rippowam fine sandy loam

Map Unit Setting

National map unit symbol: 9d0w

Elevation: 200 to 1,380 feet

Mean annual precipitation: 44 to 48 inches

Mean annual air temperature: 45 to 46 degrees F

Frost-free period: 140 to 150 days

Farmland classification: Farmland of local importance

Map Unit Composition

Rippowam and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rippowam

Setting

Landform: Flood plains

Parent material: Sandy and/or coarse-loamy alluvium derived from granite, gneiss or schist

Typical profile

H1 - 0 to 9 inches: fine sandy loam

H2 - 9 to 30 inches: fine sandy loam

H3 - 30 to 60 inches: stratified loamy fine sand to very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.60 to 6.00 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: NoneFrequent

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: A/D

Ecological site: F144BY110ME - Broad Floodplain Riparian

Complex, F144BY120ME - Small Floodplain Riparian Complex (reserved)

Hydric soil rating: Yes

Minor Components

Pootatuck

Percent of map unit: 4 percent

Hydric soil rating: No

Occum

Percent of map unit: 3 percent

Hydric soil rating: No

Saco

Percent of map unit: 3 percent

Landform: Flood plains

Hydric soil rating: Yes

Data Source Information

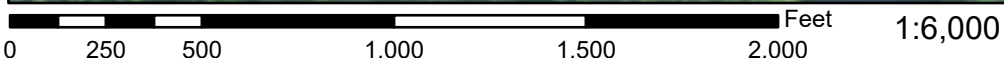
Soil Survey Area: Cheshire County, New Hampshire

Survey Area Data: Version 26, Sep 9, 2022

National Flood Hazard Layer FIRMette



72°20'19"W 42°56'14"N



72°19'42"W 42°55'48"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

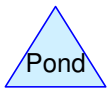
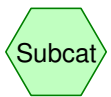
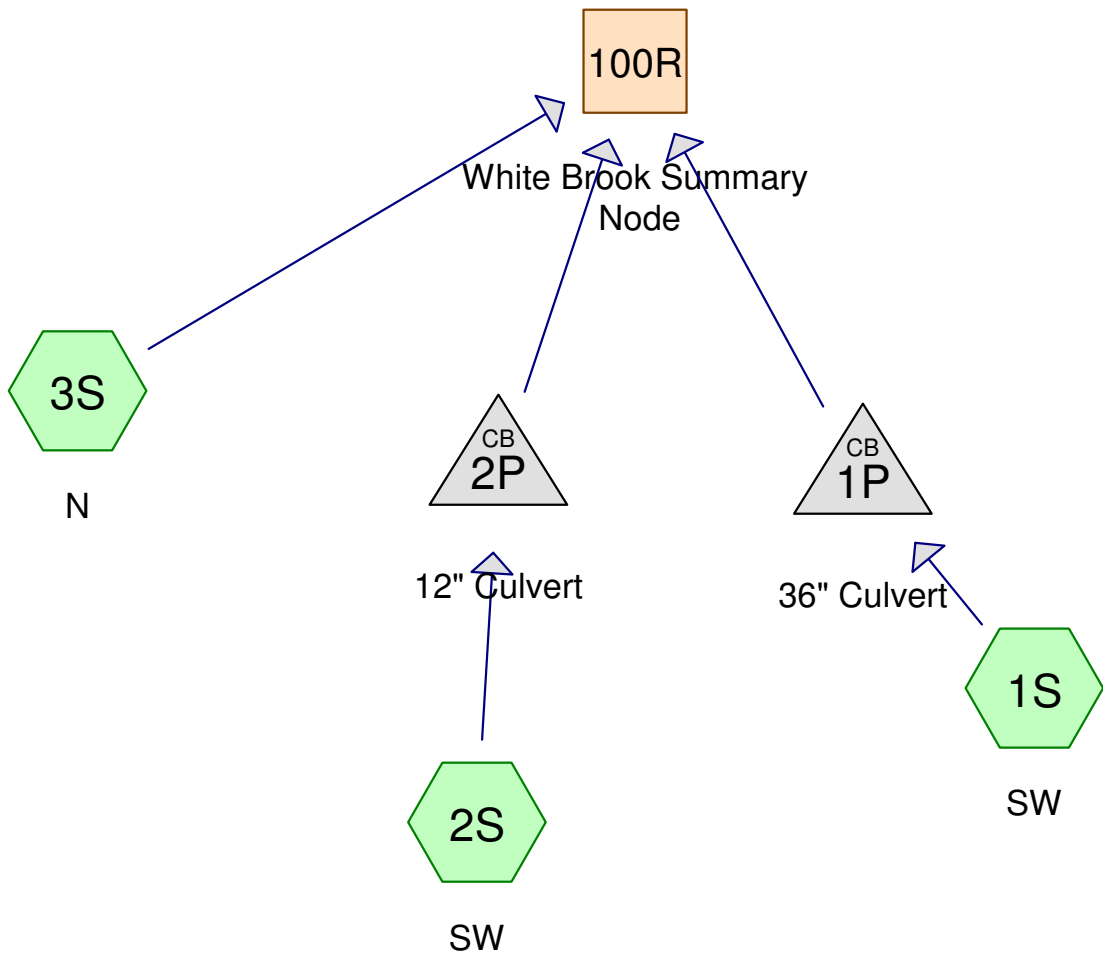
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **4/4/2023 at 12:10 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.264	96	Gravel surface, HSG A (1S, 2S, 3S)
0.225	98	Paved roads, HSG A (1S, 3S)
1.821	77	Wetland, HSG D (1S, 2S, 3S)
10.747	30	Woods, Good, HSG A (1S, 2S, 3S)
13.056	39	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.235	HSG A	1S, 2S, 3S
0.000	HSG B	
0.000	HSG C	
1.821	HSG D	1S, 2S, 3S
0.000	Other	
13.056		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.264	0.000	0.000	0.000	0.000	0.264	Gravel surface	1S, 2S, 3S
0.225	0.000	0.000	0.000	0.000	0.225	Paved roads	1S, 3S
0.000	0.000	0.000	1.821	0.000	1.821	Wetland	1S, 2S, 3S
10.747	0.000	0.000	0.000	0.000	10.747	Woods, Good	1S, 2S, 3S
11.235	0.000	0.000	1.821	0.000	13.056	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1P	547.58	546.04	42.0	0.0367	0.013	0.0	36.0	0.0
2	2P	546.21	544.30	27.0	0.0707	0.013	0.0	12.0	0.0

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Type III 24-hr 25 yr Rainfall=4.88"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SW

Runoff Area=43,930 sf 8.70% Impervious Runoff Depth=0.24"
Flow Length=320' Tc=9.9 min CN=41 Runoff=0.06 cfs 0.021 af

Subcatchment 2S: SW

Runoff Area=85,340 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=780' Tc=20.7 min CN=35 Runoff=0.02 cfs 0.011 af

Subcatchment 3S: N

Runoff Area=439,445 sf 1.36% Impervious Runoff Depth=0.21"
Flow Length=970' Tc=23.2 min CN=40 Runoff=0.34 cfs 0.176 af

Reach 100R: White Brook Summary Node

Inflow=0.38 cfs 0.208 af
Outflow=0.38 cfs 0.208 af

Pond 1P: 36" Culvert

Peak Elev=547.68' Inflow=0.06 cfs 0.021 af
36.0" Round Culvert n=0.013 L=42.0' S=0.0367 '/ Outflow=0.06 cfs 0.021 af

Pond 2P: 12" Culvert

Peak Elev=546.28' Inflow=0.02 cfs 0.011 af
12.0" Round Culvert n=0.013 L=27.0' S=0.0707 '/ Outflow=0.02 cfs 0.011 af

Total Runoff Area = 13.056 ac Runoff Volume = 0.208 af Average Runoff Depth = 0.19"
98.28% Pervious = 12.831 ac 1.72% Impervious = 0.225 ac

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Type III 24-hr 25 yr Rainfall=4.88"

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Summary for Subcatchment 1S: SW

Runoff = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 3,820	98	Paved roads, HSG A
1,465	96	Gravel surface, HSG A
35,580	30	Woods, Good, HSG A
* 3,065	77	Wetland, HSG D
43,930	41	Weighted Average
40,110		91.30% Pervious Area
3,820		8.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	70	0.1100	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
1.1	250	0.0650	3.82		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.9	320	Total			

Summary for Subcatchment 2S: SW

Runoff = 0.02 cfs @ 15.57 hrs, Volume= 0.011 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
1,800	96	Gravel surface, HSG A
77,710	30	Woods, Good, HSG A
* 5,830	77	Wetland, HSG D
85,340	35	Weighted Average
85,340		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0600	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
4.0	400	0.0125	1.68		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.8	100	0.1900	2.18		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	180	0.0380	2.92		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
20.7	780	Total			

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Type III 24-hr 25 yr Rainfall=4.88"

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Summary for Subcatchment 3S: N

Runoff = 0.34 cfs @ 12.81 hrs, Volume= 0.176 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 5,975	98	Paved roads, HSG A
8,215	96	Gravel surface, HSG A
354,835	30	Woods, Good, HSG A
* 70,420	77	Wetland, HSG D
439,445	40	Weighted Average
433,470		98.64% Pervious Area
5,975		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	100	0.1600	0.17		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
13.1	870	0.0490	1.11		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
23.2	970	Total			

Summary for Reach 100R: White Brook Summary Node

Inflow Area = 13.056 ac, 1.72% Impervious, Inflow Depth = 0.19" for 25 yr event
 Inflow = 0.38 cfs @ 12.77 hrs, Volume= 0.208 af
 Outflow = 0.38 cfs @ 12.77 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 36" Culvert

Inflow Area = 1.008 ac, 8.70% Impervious, Inflow Depth = 0.24" for 25 yr event
 Inflow = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af
 Outflow = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 547.68' @ 12.49 hrs

Flood Elev= 552.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	547.58'	36.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 547.58' / 546.04' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.06 cfs @ 12.49 hrs HW=547.68' (Free Discharge)

↳1=Culvert (Inlet Controls 0.06 cfs @ 0.85 fps)

Summary for Pond 2P: 12" Culvert

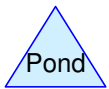
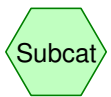
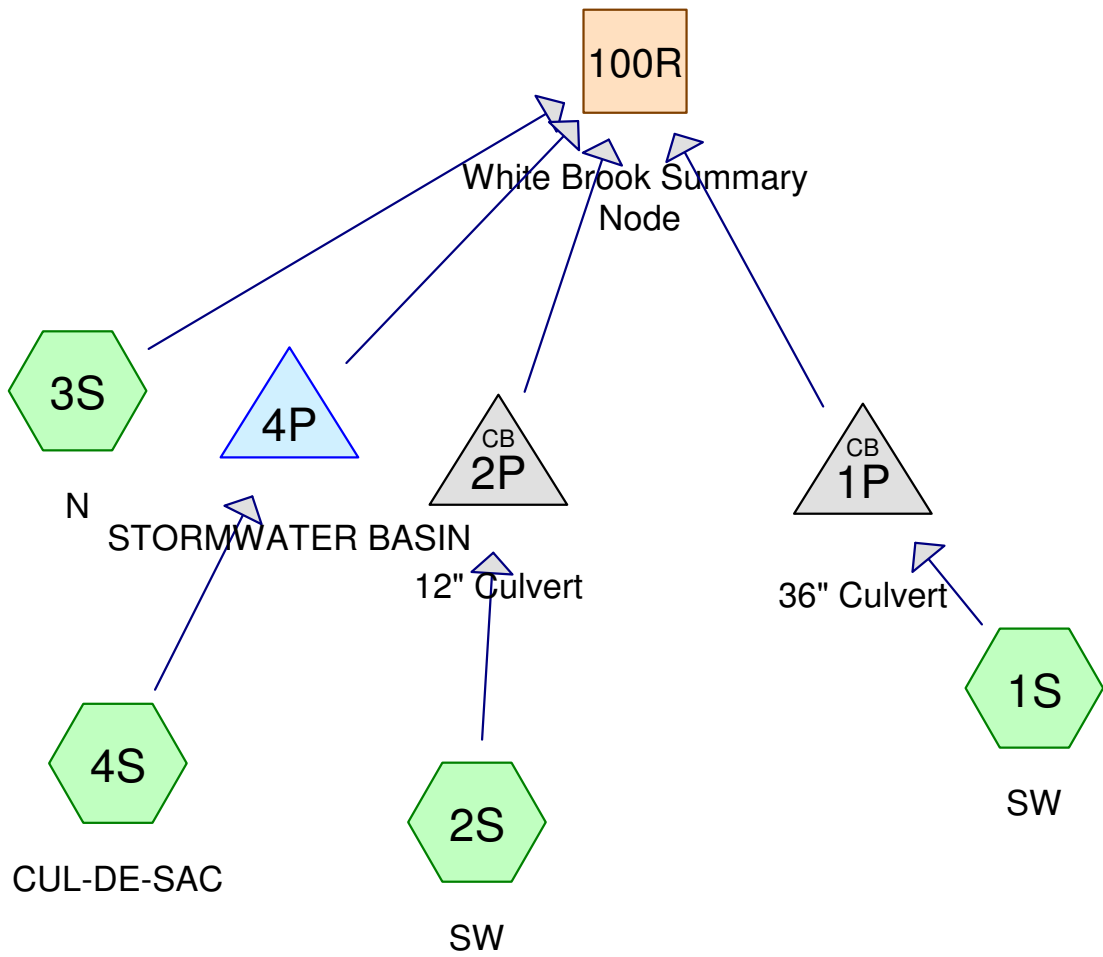
Inflow Area = 1.959 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25 yr event
 Inflow = 0.02 cfs @ 15.57 hrs, Volume= 0.011 af
 Outflow = 0.02 cfs @ 15.57 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.02 cfs @ 15.57 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 546.28' @ 15.57 hrs
 Flood Elev= 548.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	546.21'	12.0" Round Culvert L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 546.21' / 544.30' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 15.57 hrs HW=546.28' (Free Discharge)

↳1=Culvert (Inlet Controls 0.02 cfs @ 0.71 fps)



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.329	49	50-75% Grass cover, Fair, HSG A (3S, 4S)
0.652	98	Paved roads, HSG A (1S, 2S, 3S, 4S)
1.821	77	Wetland, HSG D (1S, 2S, 3S)
10.255	30	Woods, Good, HSG A (1S, 2S, 3S)
13.056	40	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.235	HSG A	1S, 2S, 3S, 4S
0.000	HSG B	
0.000	HSG C	
1.821	HSG D	1S, 2S, 3S
0.000	Other	
13.056		TOTAL AREA

K2740 POST

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.329	0.000	0.000	0.000	0.000	0.329	50-75% Grass cover, Fair	3S, 4S
0.652	0.000	0.000	0.000	0.000	0.652	Paved roads	1S, 2S, 3S, 4S
0.000	0.000	0.000	1.821	0.000	1.821	Wetland	1S, 2S, 3S
10.255	0.000	0.000	0.000	0.000	10.255	Woods, Good	1S, 2S, 3S
11.235	0.000	0.000	1.821	0.000	13.056	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1P	547.58	546.04	42.0	0.0367	0.013	0.0	36.0	0.0
2	2P	546.21	544.30	27.0	0.0707	0.013	0.0	12.0	0.0

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Type III 24-hr 25 yr Rainfall=4.88"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SW Runoff Area=45,430 sf 10.96% Impervious Runoff Depth=0.24"
 Flow Length=320' Tc=9.9 min CN=41 Runoff=0.06 cfs 0.021 af

Subcatchment 2S: SW Runoff Area=201,365 sf 2.65% Impervious Runoff Depth=0.03"
 Flow Length=510' Tc=15.9 min CN=33 Runoff=0.02 cfs 0.012 af

Subcatchment 3S: N Runoff Area=305,020 sf 3.94% Impervious Runoff Depth=0.36"
 Flow Length=450' Tc=17.1 min CN=44 Runoff=0.88 cfs 0.211 af

Subcatchment 4S: CUL-DE-SAC Runoff Area=16,900 sf 35.89% Impervious Runoff Depth=1.72"
 Flow Length=90' Tc=7.1 min CN=67 Runoff=0.72 cfs 0.056 af

Reach 100R: White Brook Summary Node Inflow=0.94 cfs 0.245 af
 Outflow=0.94 cfs 0.245 af

Pond 1P: 36" Culvert Peak Elev=547.68' Inflow=0.06 cfs 0.021 af
 36.0" Round Culvert n=0.013 L=42.0' S=0.0367 '/ Outflow=0.06 cfs 0.021 af

Pond 2P: 12" Culvert Peak Elev=546.28' Inflow=0.02 cfs 0.012 af
 12.0" Round Culvert n=0.013 L=27.0' S=0.0707 '/ Outflow=0.02 cfs 0.012 af

Pond 4P: STORMWATER BASIN Peak Elev=548.74' Storage=2,422 cf Inflow=0.72 cfs 0.056 af
 Outflow=0.00 cfs 0.000 af

Total Runoff Area = 13.056 ac Runoff Volume = 0.300 af Average Runoff Depth = 0.28"
95.01% Pervious = 12.404 ac 4.99% Impervious = 0.652 ac

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Type III 24-hr 25 yr Rainfall=4.88"

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Summary for Subcatchment 1S: SW

Runoff = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 4,980	98	Paved roads, HSG A
37,385	30	Woods, Good, HSG A
* 3,065	77	Wetland, HSG D
45,430	41	Weighted Average
40,450		89.04% Pervious Area
4,980		10.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	70	0.1100	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
1.1	250	0.0650	3.82		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.9	320	Total			

Summary for Subcatchment 2S: SW

Runoff = 0.02 cfs @ 17.40 hrs, Volume= 0.012 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 5,335	98	Paved roads, HSG A
190,200	30	Woods, Good, HSG A
* 5,830	77	Wetland, HSG D
201,365	33	Weighted Average
196,030		97.35% Pervious Area
5,335		2.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.1200	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
4.2	330	0.0670	1.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.4	80	0.0470	3.25		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.9	510	Total			

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Type III 24-hr 25 yr Rainfall=4.88"

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Summary for Subcatchment 3S: N

Runoff = 0.88 cfs @ 12.52 hrs, Volume= 0.211 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 12,015	98	Paved roads, HSG A
3,480	49	50-75% Grass cover, Fair, HSG A
219,105	30	Woods, Good, HSG A
* 70,420	77	Wetland, HSG D
305,020	44	Weighted Average
293,005		96.06% Pervious Area
12,015		3.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.1200	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
5.8	350	0.0400	1.00		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.1	450	Total			

Summary for Subcatchment 4S: CUL-DE-SAC

Runoff = 0.72 cfs @ 12.11 hrs, Volume= 0.056 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=4.88"

Area (sf)	CN	Description
* 6,065	98	Paved roads, HSG A
10,835	49	50-75% Grass cover, Fair, HSG A
16,900	67	Weighted Average
10,835		64.11% Pervious Area
6,065		35.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	40	0.0200	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.76"
0.4	20	0.0200	0.93		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.76"
1.6	30	0.2000	0.31		Sheet Flow, Grass: Short n= 0.150 P2= 2.76"
7.1	90	Total			

Summary for Reach 100R: White Brook Summary Node

Inflow Area = 13.056 ac, 4.99% Impervious, Inflow Depth = 0.22" for 25 yr event
 Inflow = 0.94 cfs @ 12.52 hrs, Volume= 0.245 af
 Outflow = 0.94 cfs @ 12.52 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: 36" Culvert

Inflow Area = 1.043 ac, 10.96% Impervious, Inflow Depth = 0.24" for 25 yr event
 Inflow = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af
 Outflow = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.06 cfs @ 12.49 hrs, Volume= 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 547.68' @ 12.49 hrs

Flood Elev= 554.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	547.58'	36.0" Round Culvert L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 547.58' / 546.04' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.06 cfs @ 12.49 hrs HW=547.68' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.06 cfs @ 0.84 fps)

Summary for Pond 2P: 12" Culvert

Inflow Area = 4.623 ac, 2.65% Impervious, Inflow Depth = 0.03" for 25 yr event
 Inflow = 0.02 cfs @ 17.40 hrs, Volume= 0.012 af
 Outflow = 0.02 cfs @ 17.40 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.02 cfs @ 17.40 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 546.28' @ 17.40 hrs

Flood Elev= 550.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	546.21'	12.0" Round Culvert L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 546.21' / 544.30' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 17.40 hrs HW=546.28' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.02 cfs @ 0.70 fps)

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Type III 24-hr 25 yr Rainfall=4.88"

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Summary for Pond 4P: STORMWATER BASIN

Inflow Area = 0.388 ac, 35.89% Impervious, Inflow Depth = 1.72" for 25 yr event
 Inflow = 0.72 cfs @ 12.11 hrs, Volume= 0.056 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 548.74' @ 24.42 hrs Surf.Area= 3,646 sf Storage= 2,422 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	548.00'	7,800 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
548.00	2,940	0	0
550.00	4,860	7,800	7,800

Device	Routing	Invert	Outlet Devices
#1	Primary	549.50'	10.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=548.00' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Ashuelot River Local Advisory Committee

Washington Lempster Marlow Gilsum Sullivan Surry Keene Swanzey Winchester Hinsdale

April 24, 2023

Keene Conservation Commission
3 Washington Street
Keene, NH 03431

RE: Ashuelot River monitoring program

Dear Conservation Commissioners:

Another successful river monitoring season was completed by 18 volunteers May through September this past year. The Ashuelot River, classified as "Class B," meaning that it is considered suitable for fishing, swimming and other recreational uses, continues to maintain its designation for **Dissolved Oxygen, Chloride and Turbidity**.

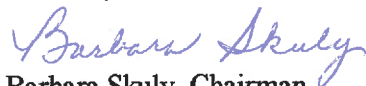
Large storm events resulted in elevated E.coli levels found even 48 hours after the rainfall. The characterization of the River differs overall with the upper reaches above Surry Dam having lower, more acidic pH but lower E.coli and **Specific Conductance** (measures ions in the water). Keene and downstream exhibit slightly better pH levels, but more frequent elevations of E.coli and **Specific Conductance**. Non-point source pollution along with low pH remain the areas of concern for our river. **Total Phosphorus** levels remained mostly at acceptable levels with the exception of a slight elevation in Marlow in August, perhaps related to beaver activity, and in Washington in July. Complete data can be viewed under annual reports at <https://www.des.nh.gov/water/rivers-and-lakes/river-and-lake-monitoring>.

All collected data is used by the NHDES in assessing the status of the river, and in their reporting to the USEPA.

The Ashuelot River Local Advisory Committee thanks you for your past support enabling us to continue our surveillance of E.coli in the River. Your support shows you value the river as an important asset to your community. We plan to continue our full schedule this season, monitoring monthly May through September. With this in mind, ARLAC will appreciate your continued support of \$125 once again assuring that our bacteria monitoring continues and our equipment is maintained.

Our season starts May 23rd and we hope we can count on your support! If you are interested in joining as a volunteer, let me know, we'd love to see you!

Sincerely,



Barbara Skuly, Chairman
bskuly@ne.rr.com