StoneHill
Environmental, Inc.

600 State Street, Suite 2
Portsmouth, NH 03801
tel 603-433-1935
fax 603-433-1942

July 2, 2010

StoneHill Project No. 10058

Mr. Christian Strickler
Chesapeake Development
501 Daniel Webster Highway, Unit F
Merrimack, NH 03054

RE: Groundwater Resource Impact Assessment
Highfield Commons Subdivision, NH Route 202
Rochester, New Hampshire

Dear Mr. Strickler:

In accordance with our proposal to Highfield Commons Development, LLC (HCD), StoneHill Environmental, Inc. (StoneHill) has completed an assessment of the potential groundwater resource impacts of the proposed subdivision (Site) referenced above on individual water supply wells at abutting properties. As part of our assessment, StoneHill reviewed readily available groundwater, geologic and supply well information from public sources, as well as the subdivision plans for the Site provided by HCD. StoneHill also conducted a Site reconnaissance on June 15, 2010 to observe first hand the lay of the land, any distinctive surface and drainage features, and the proximity of the proposed development to adjacent residences. Reference documents used as part of our assessment are cited in the attached reference list.

Background

The subject subdivision consists of approximately 200 acres situated along Hayes Hill on the northwest side of NH Route 202 in the west part of Rochester, New Hampshire. The Site is identified as Lots 3, 3-1 and 8 on City of Rochester Tax Map 237. Figure 1 depicts the Site location on the Rochester, NH USGS Topographical Quadrangle. The Site is currently undeveloped and consists primarily of woods and a cleared field. Based on plans provided by HCD, 88 single family homes and 47 town houses will be constructed in the central portion of the Site. The access road for the development is proposed to originate off NH Route 202 approximately 2,000 feet southwest of the intersection with the Spaulding Turnpike (NH Route 16). An aerial map of the Site area is depicted on Figure 2 and the proposed Site layout is shown in Figure 3. As proposed by HCD, the homes in the development will be provided water by individual bedrock water supply wells. Geothermal heating and cooling systems will be installed in each of the homes with the source of water for the geothermal units being the same individual supply wells serving each property. The sanitary wastewater from the homes is planned to be discharged to the municipal wastewater disposal system which will be extended to the development.

The Site topography ranges from an elevation of approximately 470 feet above mean sea level (msl) at the summit of Hayes Hill to approximately 240 feet above msl in the southern portion of the Site. There are several mapped wetlands on the Site as shown on Figure 3. The southwest portion of the Site is bounded by Rickers Brook and Axe Handle Brook.

Site Area Geology

According to the "Bedrock Geologic Map of New Hampshire (USGS, 1997)", bedrock underlying the Site consists of biotite tonalite. The "Lineament Map of Area 4 of the New Hampshire Bedrock Aquifer Assessment, Southeast-Central New Hampshire (USGS, 1997)" does not depict the presence of lineaments within the Site boundary, however predominant lineament trends in the Site vicinity are north-south and northeast-southwest. Mapped lineaments likely represent underlying zones of vertical or high-angle bedrock fractures which may indicate preferential pathways for groundwater flow.

Based on the "Soil Survey of Strafford County NH", the soils beneath the majority of the Site are mapped as the Gloucester Complex with the exception of the southeast portion of the Site which is mapped as the Acton and Leicester Complexes. The Gloucester Complex is characterized as very fine sandy loam, with slopes ranging from 3 to 25 percent, while the Acton and Leicester Complexes are characterized as fine sandy loam with 0 to 8 percent slopes. These soil slopes are indicative of gently to moderately sloping hills and generally are not conducive to significant soil erosion and storm water runoff, therefore surface water infiltration to groundwater should not be significantly limited at the Site.

Site Area Hydrogeology

Based on Site area topography and surface water drainage patterns, the sub-regional drainage basin divides which encompass the Site area have been drawn on Figure 1. The southwestern half of the subject property is located within the drainage basins associated with Rickers Brook and Axe Handle Brook; while the northeastern half of the subject property is located within the larger drainage basin associated with the Cocheco River, located more than one mile east of the Site. The surface water drainage divide and the inferred groundwater divide, which essentially divides the Site in half, are located along the topographic high of Hayes Hill which trends northwest-southeast through the Site.

Based on Site topography and the above described drainage basin configuration, surface water and shallow groundwater is likely to flow in a radial pattern from the summit of Hayes Hill. The inferred shallow groundwater flow directions are depicted on Figures 1 and 3. As depicted on Figure 3, approximately 70 of the 88 proposed single-family homes and all of the 37 town houses, are located on the northeast and southwest flanks of the ridge representing the inferred drainage divide at the Site. Groundwater on the southwest flank of the hill is inferred to flow southwest to Rickers Brook and southeast to Axe Handle Brook, while groundwater on the northeast flank of the hill is inferred to flow northeast toward the mapped wetlands. There are no residential properties between the Site and these surface water bodies which are natural groundwater flow discharge boundaries. Therefore,

the proposed supply wells in the development are not expected to have any impacts on these outlying residential properties. The remaining 18 house lots are located on the southern and eastern sides of Hayes Hill in an area where groundwater is inferred to flow to the south and southeast toward Axe Handle Brook. While the nearby residences along Hussey Hill Road and Route 202 are likely downgradient with respect to groundwater flow, the homes are 20 to 80 feet lower in elevation such that water levels will not likely be adversely affected by typical domestic water uses within the proposed development. In addition, there is significant green space surrounding the entire development, therefore the recharge in the lower lying areas will be not be impacted by the development in the upland area.

Site Area Water Supply Well Data

StoneHill reviewed readily available water supply well data for properties in the immediate Site area which were listed in the New Hampshire Water Well Board well inventory database. Information for 35 private water supply wells in the immediate Site area, within approximately one half mile of the Site for which data was readily available was obtained and is summarized in Table 1. The wells are listed by their respective tax map and lot designation, street address, and by the state well identification number which is cross-referenced with the New Hampshire Department of Environmental Services (NHDES) OneStop Program Geographic Information System (GIS) map. The Site area GIS map with the private wells shown is attached for reference. The static water level and well yield information provided on Table 1 is typically derived from initial readings taken by the well driller immediately after well installation and may not reflect current well yields which may decrease over time as well performance changes. However, this information is useful in assessing general characteristics of well yields at surrounding properties.

Reported well depths ranged from 110 feet below ground surface (bgs) to 580 feet bgs, and reported initial well yields from drilling data ranged from 2 gallons per minute (gpm) to 100 gpm. The average depth of the wells is 237 feet which is within the range of typical well depths for this area of New Hampshire, and only two of the wells have depths exceeding 500 feet. Typically, numerous well depths over 500 feet in the same geographic area are an indicator of low water yielding bedrock formations. This does not appear to be the case for the Site area. The average well yield calculated for the Site area water supply wells, not including wells with reported yields of greater than 30 gpm, is 14 gpm, which is on the high end of water supply well yields for this area of New Hampshire. The two closest supply wells to the Site for which data was available, located on Hussey Hill Road, had yields of 8 gpm and 20 gpm. The NH Water Well Board recommends a minimum flow rate of 4 gpm for a period of 4 hours for a private domestic supply. Approximately 94 percent of the wells, 33 of 35, have recorded yields of 4 gpm or greater. Both of these low yield wells (2 gpm and 3.5 gpm), are located approximately one half mile from the Site on the south side of Axe Handle Brook and as such are unlikely to be influenced by any development on the subject Site. While it is expected that well yields may decrease over time due to mechanical factors (such as reduction in pump performance), changes in well borehole conditions and hydrogeologic factors, the well data summarized in Table 1 indicates that with only a couple possible exceptions, the private water supply wells in the Site area have exceptional yields for domestic use purposes.

In addition to the individual water supply wells listed in Table 1, there is a condominium community located on Bickford Road approximately 2,000 feet northeast of the Site which is supplied water from four bedrock water supply wells. The approximate locations of these public supply wells are shown on the attached NHDES OneStop Program GIS Map. This public water supply source serves 120 people via 60 connections. StoneHill contacted a representative of Forest Pump and Filter (FPF) who maintains the wells and they indicated the depths of the bedrock wells range from 305 feet bgs to 365 feet bgs and have a total yield of 80 gpm with individual well yields ranging from 16 gpm to 24 gpm. The FPF representative indicated that the wells were installed in 1987 and no water availability issues have ever been reported since installation of the water supply system. As depicted on Figure 1, this public water supply source is located on the opposite side of the northern sub-drainage basin and groundwater divide from the subject property and the wells are approximately 100 feet lower than the elevation of the proposed development.

Groundwater Recharge vs. Subdivision Water Use Estimates

StoneHill completed a comparison of the estimated annual groundwater recharge at the Site to the anticipated domestic water usage associated with the proposed subdivision (see Table 2 - Groundwater Recharge vs. Water Use Estimates). Since the vast majority of the land area of the subdivision will be unpaved and, according to HCD, surface water falling on any paved areas will be directed to small retention ponds or rip rap swales and aprons, conditions are favorable for the infiltration of precipitation which falls on the Site to recharge the bedrock aquifer. No additional surface water is expected to enter the Site from the surrounding areas based on the topography of the Site. As such, it is assumed that the major contributing factor for Site groundwater recharge is from precipitation falling within the Site boundaries. Average annual precipitation for this area of New Hampshire is 43 inches per year. Precipitation which does not flow off site as overland flow or evaporate is likely to infiltrate into the overburden soils and to the shallow groundwater table, if present, and then either enter the underlying bedrock, discharge from the overburden to nearby surface water bodies, or be taken up by vegetation. Recent modeling studies performed by the New Hampshire Geological Survey (NHGS) have indicated overburden aquifer recharge values ranging from 30 to 40 percent of total precipitation with 10 to 20 percent of total precipitation recharging the underlying bedrock. Using these bedrock recharge percentages, 43 inches of annual precipitation, and the Site area of 200 acres, the calculated recharge to the bedrock aquifer from precipitation falling on the subdivision ranges from approximately 64,000 gallons per day (gpd) to 128,000 gpd.

To compare these recharge estimates to water usage anticipated in the 135-home development, StoneHill selected household consumption rates used by the New Hampshire Department of Environmental Services (NHDES) for single family houses and town houses of 150 gallons per day (gpd) per bedroom. HCD indicated that the majority of the 88 single family homes will contain three bedrooms while the town houses will likely contain two or three bedrooms. Therefore, StoneHill selected three bedrooms per home as a conservative estimate for our water use calculations. For the entire subdivision, the calculated water usage is 60,750 gpd which is slightly less than the more conservative 10 percent of total precipitation recharge value. It should be noted that the above estimates are based on average annual precipitation, and recharge will vary seasonally and be lower

during drought conditions. Additionally, it is difficult to anticipate and assess potential impacts from other discretionary residential water uses such as landscape irrigation which can result in significant increases in groundwater withdrawals during summer months as compared to typical daily domestic water use. Finally, it should be noted that the above calculations are provided only to illustrate that precipitation falling onto the ground within the Site boundaries and inferred recharge to the bedrock aquifer is greater than the volume of water proposed to be pumped from the Site supply wells.

Local Water Quality and Quantity

In general, recharge from precipitation is reduced by evaporation and transpiration from lawns and shrubbery, evaporation off roadways and impervious surfaces, and when runoff from impervious surfaces is routed directly to surface water bodies. The impact of the development on recharge to an aquifer is reduced when surface water runoff is recharged on site. In addition, while any development which involves vehicle parking may result in an incidental releases of fuel and/or oil which could impact groundwater quality, barring a significant petroleum release a vehicle, impacts are likely to be minimal and limited to the immediate location of the release. Furthermore, due to the potential for the natural degradation of incidental contaminants commonly found in runoff, it is unlikely that the bedrock aquifer would be measurably impacted.

StoneHill reviewed the NHDES One-Stop GIS Map and environmental records database to identify State-regulated sites within one mile of the subject property. Two sites were identified including a hair salon with an underground injection control permit likely related to a registered floor drain/holding tank, and a vacant lot which formerly contained abandoned automobiles in 1994. The latter site has been closed by the NHDES with respect to any further environmental investigation. Both of these sites, which are located approximately three-quarters of a mile northeast and east of the Site, respectively, are located downgradient of the Site and are not considered sources of groundwater contamination. The One-Stop GIS Map showing the location of these sites is attached.

As previously discussed, four public water supply wells associated with a condominium development are located approximately 2,000 feet north of the Site. As a community water system, the NHDES requires periodic sampling and analysis of the water from the system. The most recent sampling results from November 2009 did not indicate any exceedances of NHDES drinking water quality standards. The only compliance violations associated with this public supply source were related to the presence of total coliform bacteria in 2006 and 2008. Additional sampling indicated that compliance was achieved within several months of the bacteria detections.

The subject development will require water for operation of the geothermal heating and cooling units for each home in addition to supplying water for typical domestic household needs. HCD indicated that the proposed geothermal systems are "open loop" systems where water is pumped from the well and then discharged back into the top of the well casing. Approximately 0.5 gpm of water is bled off the geothermal system which will be directed to the foundation drains of the homes and subsequently to a dry well on the property. Therefore, although this water is not directly discharged back into the bedrock well, the water is discharged directly to the subsurface and as such 100 percent of the water from the geothermal systems should recharge into the bedrock.

Finally, there are currently no plans for in-ground irrigation of the development. However, HCD indicated the option for irrigation systems will be offered as an upgrade to potential buyers. As such, it is unknown at this time what the potential impacts from irrigation could be on water withdrawals at the Site and it should be recognized that the operation of irrigation systems can significantly increase groundwater withdrawal volumes above typical domestic use volumes.

Summary and Conclusions

The proposed development consists of 135 homes located on approximately 200 acres in the area of Hayes Hill in Rochester NH. The southwestern half of the subject property is located within the drainage basins associated with Rickers Brook and Axe Handle Brook; while the northeastern half of the subject property is located within a smaller sub-drainage basin without a defined surface water feature which ultimately drains to the larger drainage basin associated with the Cocheco River, located more than one mile east of the Site. The surface water drainage divide and the inferred groundwater divide, which essentially divides the Site in half, are located along the topographic high of Hayes Hill which trends northwest-southeast through the Site. Based on Site topography and the above described drainage basin configuration, surface water and shallow groundwater is likely to flow in a radial pattern from the summit of Hayes Hill. Approximately 70 of the 88 proposed single-family homes and all of the 37 town houses, are located on the northeast and southwest flanks of the ridge representing the inferred drainage divide at the Site and are not expected to have any impacts on the outlying residential properties to the north, east and west of the Site. The remaining 18 house lots are located on the southern and southeastern sides of Hayes Hill in an area where groundwater is inferred to flow to the south and southeast toward Axe Handle Brook. While the nearby residences along Hussey Hill Road and Route 202 are located downgradient of this portion of the development, the homes are lower in elevation such that water levels will not likely be adversely affected by the upland development.

The small area of impervious surfaces (roadways, homes and driveways) resulting from site development as compared to the total acreage of the parcel is not expected to have a significant impact on aquifer recharge given the relatively small developed area, the large area of green space surrounding the developed area, and the fact that surface water falling on any paved areas will be directed to small retention ponds or rip rap swales and aprons. In addition, the general soil types and slopes mapped for the Site are not conducive to significant soil erosion and storm water runoff, therefore surface water infiltration to groundwater should not be significantly limited at the Site.

The water usage for the entire subdivision was estimated at 60,750 gpd which is less than the more conservative total precipitation recharge value of 10 percent estimated for the Site of 64,000 gpd. While geothermal systems are planned to be installed in every home, the majority of the water pumped from the well for geothermal use is discharged back into the top of the well casing, with a small volume, approximately 0.5 gpm, discharged directly to the subsurface via foundation drains. As such, nearly 100 percent of the water from the geothermal systems should recharge into the bedrock.

The available well depth and yield information for the study area reviewed during this assessment indicates that well depths and yields are relatively consistent in the general Site area and indicate that overall the bedrock water yields in the area are more than adequate for household uses. Of the 35 private wells in the Site area for which data was available, 33 wells had initial yields equal to or greater than the value of 4 gpm which is the NH Water Well Board recommended minimum yield for a domestic well. The average well depth of 237 feet for area wells is within typical well depth ranges expected for this area of New Hampshire. The available data do not suggest that extraordinary drilling depths were required to achieve acceptable well yields.

The water quality of the bedrock aquifer underlying the Site is unlikely to be measurably impacted by the development due to incidental contaminants commonly found in residential runoff. Low levels of naturally occurring compounds such as arsenic and iron may be detected in the individual wells consistent with concentrations typically reported in water supply wells in this area of the state; however, the addition of the new wells is unlikely to degrade the bedrock water quality or cause migration of these compounds to nearby wells. The most recent water quality data available for the community supply wells located approximately 2,000 feet north of the Site did not indicate any exceedances of NHDES drinking water quality standards. In addition, a review of NHDES database information did not indicate the presence of any documented contaminant source areas or active remediation sites within a mile of the subject property.

Based on the information and data reviewed, considering the high bedrock water yields in the Site area, and the abundance of rainfall in New Hampshire, it is not likely that the upland development will have a discernable impact on groundwater quality or quantity at downgradient properties. The absence of on-site septage disposal systems in the development further reduces the risk of water quality impacts. That said, it should be recognized that the absence of recharge to the aquifer from septic systems, the dense spacing of the proposed wells in the upland area, and the possible installation of irrigation systems, could result in reductions in water table levels within the upland area, particularly during drought conditions.

Limitations

The opinions presented in this letter are based solely upon the scope of work performed by StoneHill and information provided by Highfield Commons Development, the City of Rochester, and other readily available resources. Development of actual precipitation recharge values, bedrock yields, and documentation of the potential for abutter well impacts would require extensive aquifer studies which were not within the scope of this assessment. It should be noted that the findings and conclusions do not constitute scientific certainties but rather probabilities based upon our professional judgement concerning data reviewed during the course of this assessment. This report has been prepared on behalf of and for the exclusive use of Highfield Commons Development. StoneHill did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation. Information potentially obtained during further investigative activities beyond the scope of this evaluation could result in a modification of the findings stated above. No other warranty is made or implied.

Please feel free to contact us if you have any questions regarding the subject assessment.

Sincerely,

StoneHill Environmental, Inc.

Michael R. Towle, PG
Project Manager

Timothy S. Stone, PG, LSP
Principal

Attachments: References
Figure 1 - Site Location Map
Figure 2 - Aerial Map
Figure 3 - Site Plan and Inferred Groundwater Flow Map
Table 1 - Abutter Supply Well Data
Table 2 - Groundwater Recharge vs. Water Use
NHDES OneStop Program GIS Maps (Private & Public Wells and Environmental Sites)

References

Ferguson, Eric W., Clark, Stewart F., and Moore, Richard Bridge, 1997, Lineament Maps of Areas 3 and 4 of the New Hampshire Bedrock Aquifer Assessment, Southeast-Central New Hampshire, U.S. Geological Survey, Open-File Reports 97-762 and 97-763.

NHDES OneStop Data Retrieval System, Water Supply Well Construction Records, Public Water Supply Information and Environmental Sites, reviewed by StoneHill on the web at www.des.state.nh.us/onestop/, June 25, 2010.

Highfield Commons Development, LLC, Site Development Plans, Rochester NH.

Soil Survey of Strafford County, New Hampshire, U.S. Department of Agriculture, Soil Conservation Service, issued March 1973.

Stekl, Peter J. and Flanagan, Sarah M., 1992, Geohydrology and Water Quality of Stratified-Drift Aquifers in the Lower Merrimack and Coastal River Basins, Southeastern New Hampshire, U.S. Geological Survey, Water-Resources Investigations Report 91-4025.

USGS Topographic Quadrangle, 7.5 Minute Series, Rochester NH-ME, 1983 Edition.

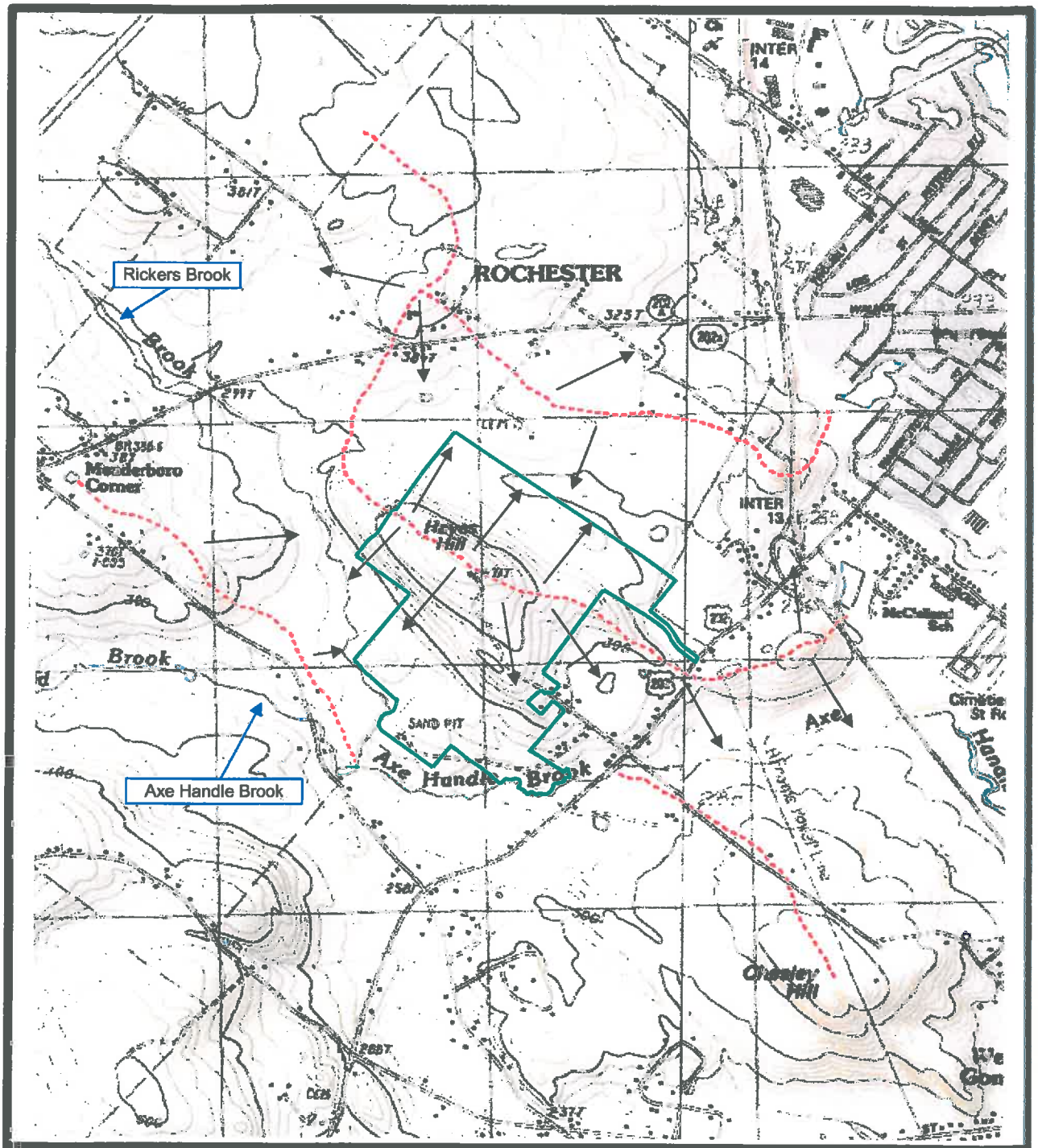


FIGURE 1

SITE LOCATION MAP

Highfield Commons
Route 202
Rochester, NH

Map Source:
U.S.G.S. Topographic Quadrangle
7.5 Minute Series
Baxter Lake, NH (1987 Edition)
Rochester, NH - ME (1983 Edition)

Prepared by:
StoneHill Environmental, Inc.
Project No. 10058

0 600 1200 2400

approximate scale in feet

N

FIGURE 2

AERIAL MAP

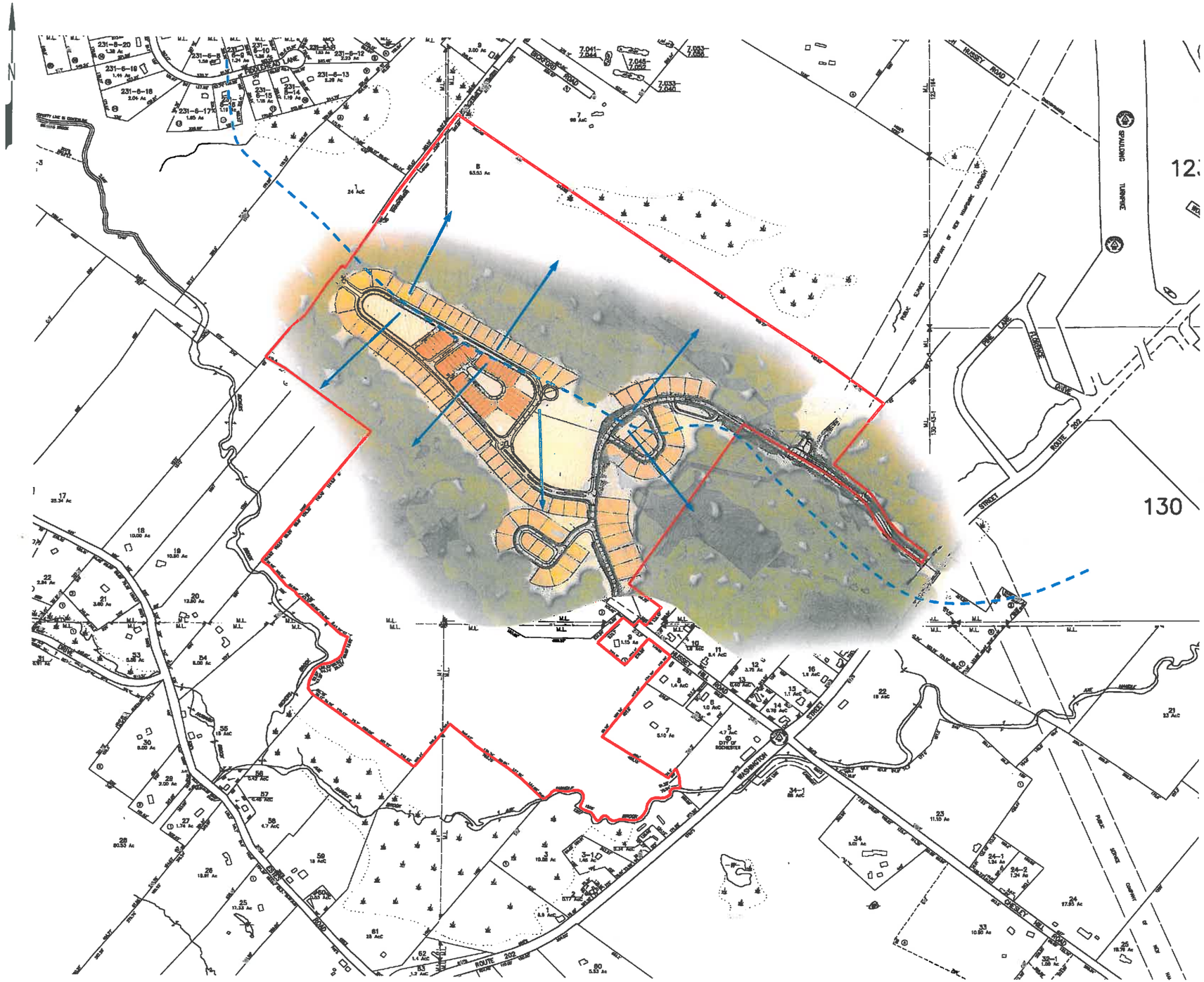
Highfield Commons
Route 202
Rochester, NH

Map Source:

Google Earth

Prepared by:
StoneHill Environmental, Inc.
Project No. 10058

File Name: SES/6(jobs)/10058_fig_3 | Revision Date: | Drafted By: DPA | Reviewed By: M. Towle | Approved By: T. Stone



LEGEND:

- Single Family
- Townhouse Lot
- Wetland
- Site Boundary
- Drainage Divide (Inferred Groundwater Flow Divide)
- Inferred Shallow Groundwater Flow Direction

0 350 700 1400

Approximate Scale in Feet
All Locations Are Approximate

Base Map Source:
Highfields Commons Existing Regulating Plan Phase I
Prepared by Donald Powers Architects

Rochester Tax Assessment Maps 236, 237, 246, and 247

Figure 3
Site Plan and Inferred Groundwater Flow Map

Highfield Commons
Route 202
Rochester, NH

Prepared By:
StoneHill Environmental, Inc.
Project No. 10058

Table 1
Site Area Supply Well Data
Highfield Commons Subdivision
Rochester, NH

Street Address	Map/Lot	State Well ID	Property Use	Date Installed	Approximate Well Depth (feet bgs)	Depth to Bedrock (feet bgs)	Static Water Depth (feet bgs)[1]	Reported Well Yield* (gpm)
23 Hussey Hill Rd.	-	203.0538	Single Family Res.	2/11/2002	283	18	5	8
Hussey Hill Rd.	7/16	203.0019	Single Family Res.	5/1/1984	162	-	-	20
301 Washington St.	247/22	203.0444	Single Family Res.	12/22/1999	280	34	-	40
Off Route 202	6/69E	203.0151	Single Family Res.	10/11/1984	222	5	15	50
Route 202A	230/14/1	203.0506	Single Family Res.	10/23/2001	145	15	16	30
248 Walnut St./Rte. 202A	-	203.0773	Single Family Res.	7/8/2005	300	11	-	10
159 Walnut St.	230/14	203.0901	Single Family Res.	7/1/2008	245	8	-	30
118 Walnut St.	230/1/4	203.0438	Single Family Res.	12/18/1999	150	8	8	10
204 Walnut St.	231/1	203.0346	Single Family Res.	5/5/1997	220	7	-	6.5
119 Walnut St.	-	203.0009	Single Family Res.	10/1/1984	120	-	-	13
248 Walnut St./Rte. 202A	-	203.0773	Single Family Res.	7/8/2005	300	11	-	10
61 Fiddlehead Lane	-	203.0803	Single Family Res.	1/27/2006	300	27	-	30
27 Fiddlehead Lane	-	203.0796	Single Family Res.	10/13/2005	380	9	-	4
52 Fiddlehead Lane	-	203.0832	Single Family Res.	9/22/2006	185	5	-	25
48 Fiddlehead Lane	-	203.0759	Single Family Res.	7/21/2005	125	9	18	100
65 Fiddlehead Lane	-	203.0699	Single Family Res.	11/4/2004	160	4	20	20
Fiddlehead Lane	Lot 9	203.0694	Single Family Res.	10/22/2004	200	3	-	20
Fiddlehead Lane	Lot 10	203.0695	Single Family Res.	10/22/2004	400	14	-	6
Fiddlehead Lane	Lot 3	203.0692	Single Family Res.	10/7/2004	120	16	-	15
Fiddlehead Lane	Lot 16	203.0658	Single Family Res.	8/30/2004	180	8	8	20
Fiddlehead Lane	231/6	203.0702	Single Family Res.	11/13/2004	160	4	6	15
Fiddlehead Lane	Lot 11	203.0665	Single Family Res.	8/18/2004	200	11	-	30
Fiddlehead Lane	231/14/6	203.0684	Single Family Res.	10/5/2004	200	5	-	5
Fiddlehead Lane	Lot 12	203.0666	Single Family Res.	8/19/2004	160	12	-	30
Fiddlehead Lane	Lot 13	203.0667	Single Family Res.	8/19/2004	120	12	-	25
French Hussey Rd.	-	203.0550	Single Family Res.	6/19/2002	580	9	15	6
42 French Hussey Rd.	122/87/2	203.0496	Single Family Res.	6/8/2001	500	8	20	4.5
56 Chesley Hill Rd.	246/27	203.0363	Single Family Res.	12/8/1997	522	14	-	2
66 Chesley Hill Rd.	246/28	203.0154	Single Family Res.	11/24/1987	300	18	-	6
Chesley Hill Rd.	-	203.0076	Single Family Res.	6/17/1986	243	15	-	5.5
Estes Rd.	-	203.0015	Single Family Res.	7/20/1984	160	-	-	15
Estes Rd.	-	203.0016	Single Family Res.	7/19/1984	110	-	-	12
Estes Rd.	-	203.0017	Single Family Res.	7/17/1984	202	-	-	3.5
87 Dry Hill Rd.	-	203.0379	Single Family Res.	7/1/1998	200	68	50	8
103 Dry Hill Rd.	-	203.0003	Single Family Res.	7/11/1984	150	70	35	6
AVERAGES:	-	-	-	-	237	15	18	14

Notes:
Source of Well Data = New Hampshire Water Well Board well inventory database.
- = Information not available or not provided to StoneHill.
* = Reported Well Yield Average excludes well yields in excess of 30 gallons per minute (gpm).

Table 2
Groundwater Recharge vs. Water Use Estimates
Highfield Commons Subdivision
Rochester, NH

RECHARGE			WATER USE	
Area of Site:	200 8,712,000	acres square feet	Number of Living Units (88 Single Family Homes & 47 Townhouses)	135
Total Precipitation	43[1]	in/yr		
Recharge as a Percentage of Total Precipitation:	10%[2]	20%[2]	Per Building Consumptive Water Use	
Inches/ Year	4.3	8.6	gallons/ day	450[3]
Recharge Calculations			Daily Subdivision Water Use	
gallons/day gallons/year	64,146 23,413,497	128,293 46,826,995	gallons/ day gallons/year	60,750 22,173,750

ses/27026/table2

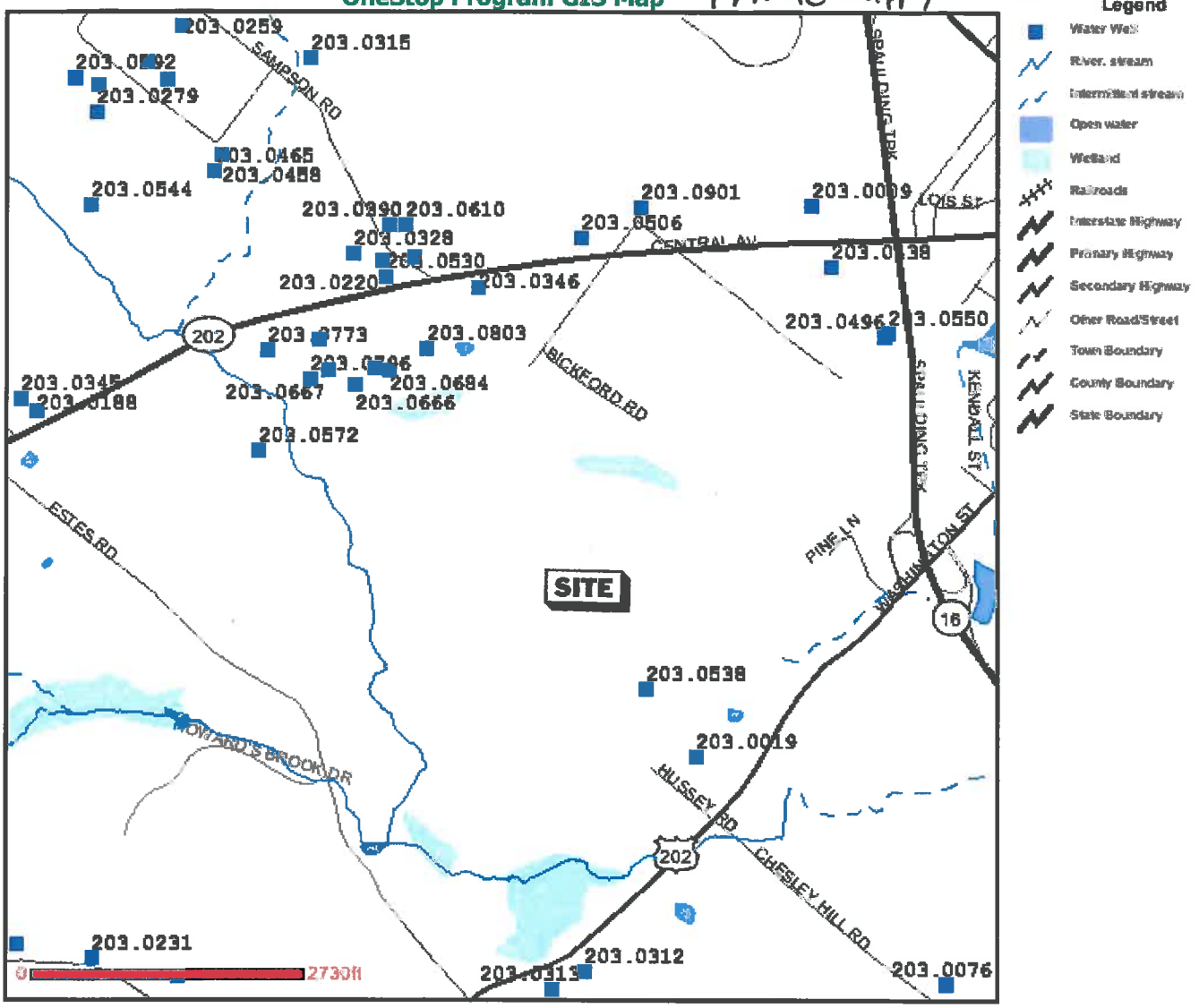
Notes:

1. The annual precipitation value was derived from "Monthly Station Normals of Temperature, Precipitation and Cooling Degree Days, 1971-2000", Climatography of the United States No. 81 (New Hampshire), National Data Climate Center of the NOAA, Revised February 2002.
2. A conservative estimate of the percentage of precipitation which is expected to recharge the aquifer at the Site. Recharge estimates of 30 to 40 percent have been documented in recent studies and models performed by the NH Geological Survey.
3. Typical domestic water use estimate based on New Hampshire Department of Environmental Services Anticipated Design Flows Table 372-1 of Env-Ws 372.10. Single Family Homes have anticipated design flows of 150 gallons per day per bedroom (the proposed development will consist primarily of three bedroom homes, and two to three bedroom townhouses thus water usage is conservatively estimated at 450 gpd per unit).

New Hampshire Department of Environmental Services

OneStop Program GIS

OneStop Program GIS Map - Private Supply Wells



Map Scale = 1 : 24359 (1" = 2030 feet or 0.4 miles)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

Map prepared 6/23/2010 3:18:50 PM

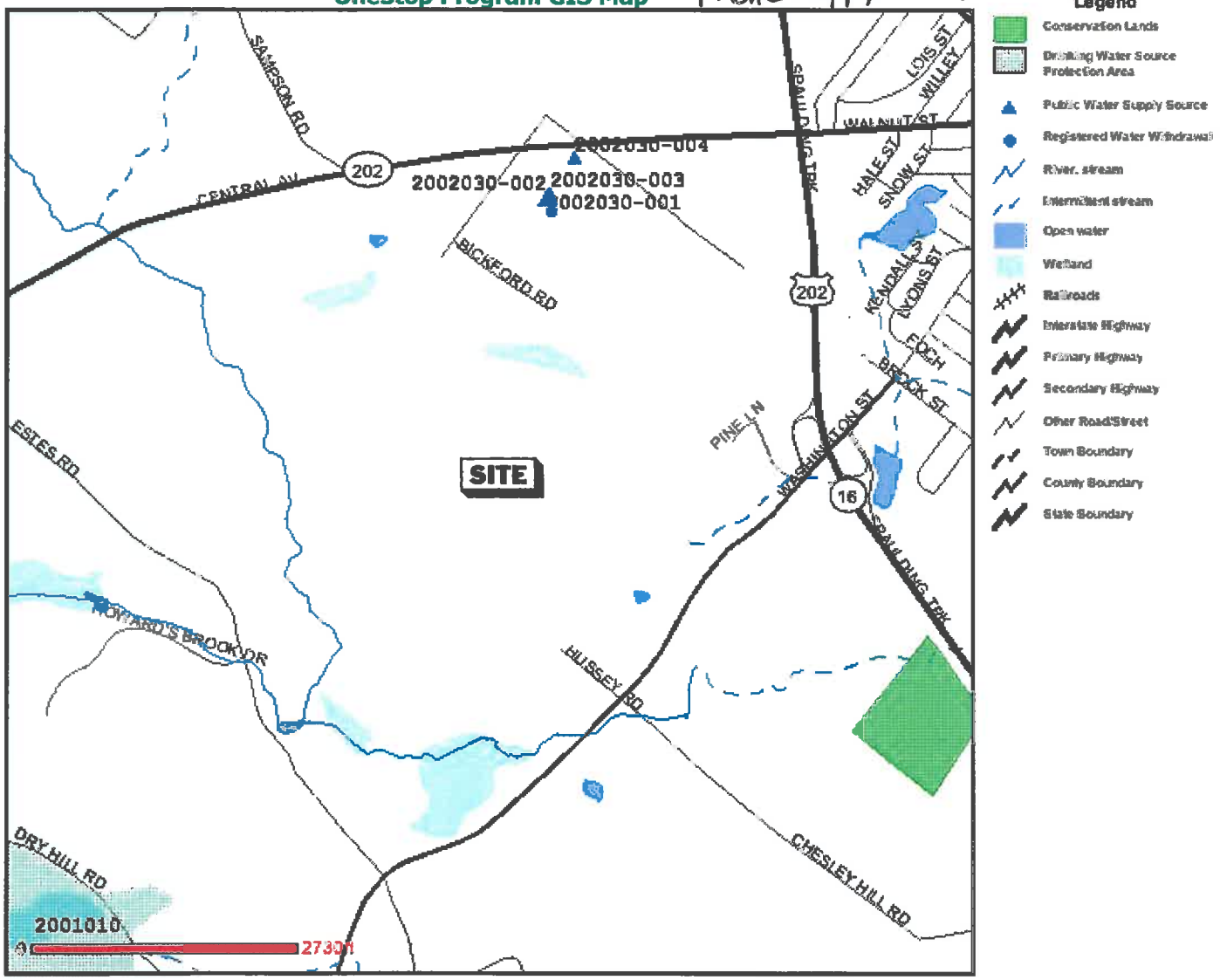
GRANIT Complex Systems Research Center

Developed in cooperation with NH GRANIT

New Hampshire Department of Environmental Services

OneStop Program GIS

OneStop Program GIS Map – Public Supply Wells



Map Scale = 1 : 24359 (1" = 2030 feet or 0.4 miles)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

Map prepared 6/23/2010 3:48:40 PM

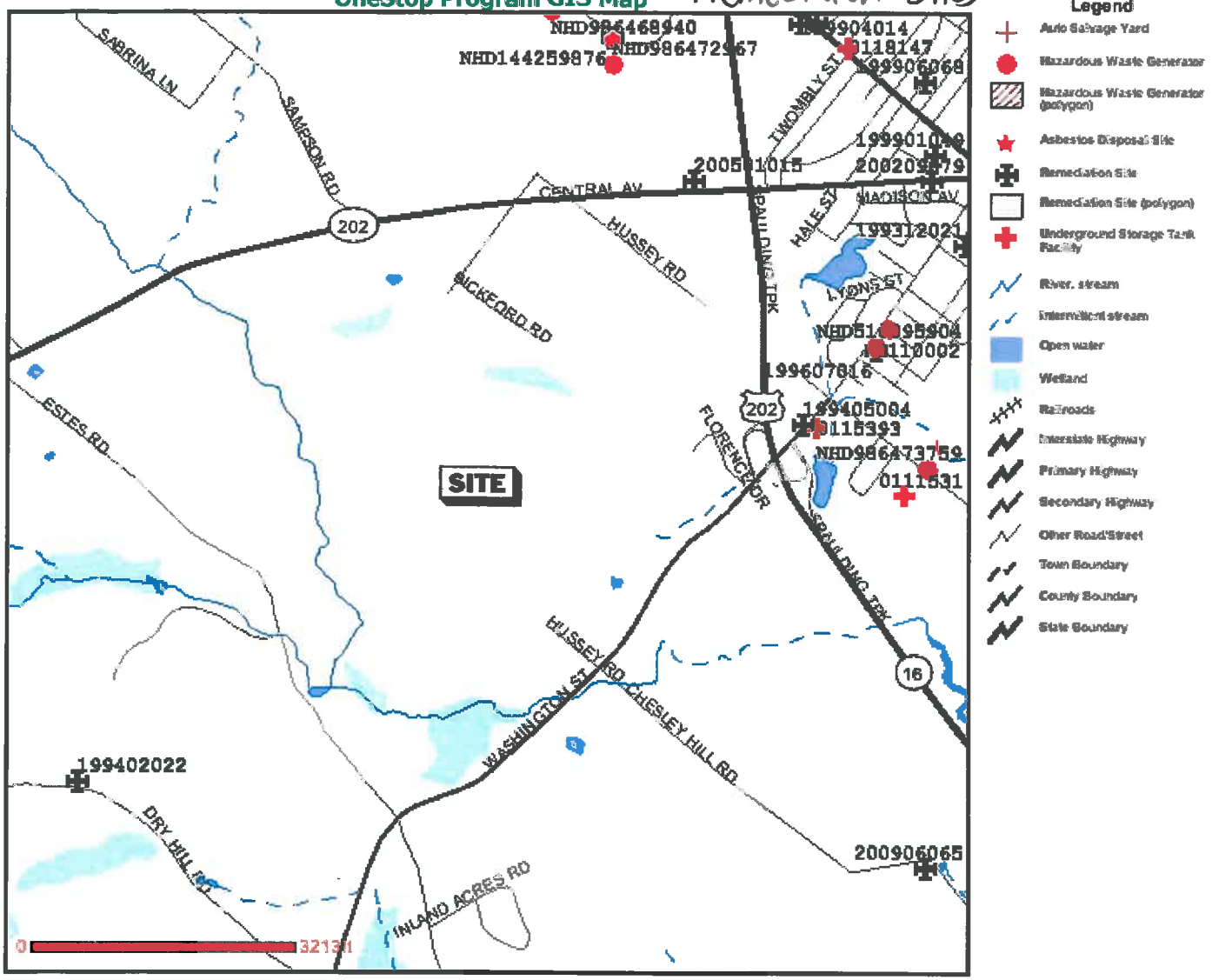
GRANIT Geographic Systems Research Center

Developed in cooperation with NH GRANIT

New Hampshire Department of Environmental Services

OneStop Program GIS

OneStop Program GIS Map - Remediation Sites



Map Scale = 1 : 28667 (1" = 0.5 miles or 2389 feet)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

Map prepared 6/23/2010 4:04:57 PM

GRANIT Complex Systems Research Center

Developed in cooperation with NH GRANIT