Acton Wakefield Watersheds Alliance Municipal Ordinance Review

Linking Development Rules to Water Quality Protection

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Aerial Photo of Wakefield, NH on Cover: Microsoft Live Search Maps (http://maps.live.com/)

1. INTRODUCTION

The border region between Acton, Maine and Wakefield, New Hampshire is host to a variety of relatively unspoiled natural resources. In particular, the exceptional water quality of the region's lakes has long been an attraction for people seeking rest, relaxation and recreation. As more people move to the area to enjoy its unique and special character, increasing development will likely place greater stress on lake water quality. This will primarily occur through polluted runoff, which originates from diffuse areas distributed across the landscape and is considered one of the leading threats to water quality in the United States. There are many potential types of activities and land uses that contribute polluted runoff to local water resources. These include construction sites, residential neighborhoods, commercial developments, and farm fields, among many others. Rainfall or snowmelt picks up pollutants – such as bacteria, nutrients and heavy metals – and carries them to nearby surface waters. The unfortunate result is often a decline in water quality.

The important efforts of the Acton Wakefield Watersheds Alliance (AWWA) and other affiliated lake associations have been critical for ensuring the long-term protection of the high quality waters in the AWWA region. However, in the absence of adequate land use controls on development, the potential exists for adverse impacts to the region's valuable water resources. Numerous studies have shown that the extent and type of development can degrade water quality. In particular, increases in ***impervious cover*** pose significant risks to aquatic ecosystems. Once the level of impervious cover in a developing watershed exceeds 10%, it is usually accompanied by a measureable decrease in water quality (CWP, 1998). Further increases in impervious cover continue this downward trend until it becomes difficult and costly to restore water quality to pre-development levels (Figure 1). The current extent of impervious cover in the AWWA region is less than 5%, well below the 10% threshold at which water quality begins to decline. However, poorly managed development can still have adverse impacts even at low impervious cover levels depending on how and where it occurs.

> ***Impervious cover*** *refers to any surface that will not allow water to soak into the ground. Examples include paved roads and driveways, parking lots and roofs.*

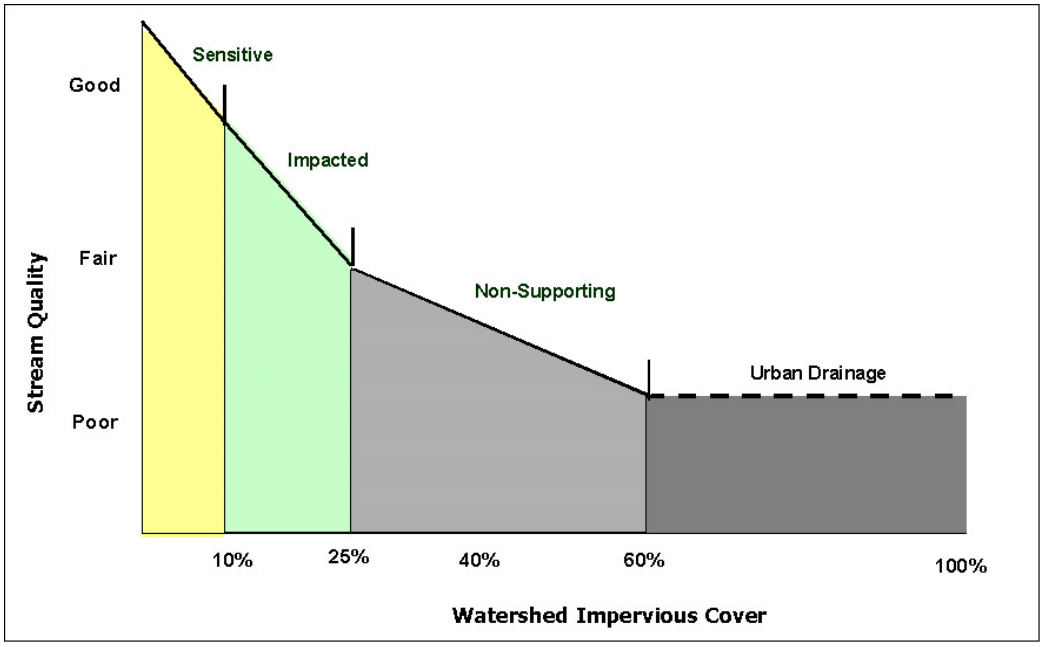

Figure 1. Relationship Between Stream Quality and Watershed Impervious Cover (Source: CWP, 2003).

The AWWA region has experienced considerable population growth over the last several decades (though increases in dwelling units have been more modest). From 1990-2005, Wakefield experienced the largest average annual and overall population growth rates – 3.4% and 56.5%, respectively – of all the communities in Strafford County (NHOEP, 2008). While Acton's population increase from 1990-2000 was more modest compared to other York County communities (it had 9th highest growth rate of the 29 towns in the county), its average annual and overall growth rates were 2.2% and 24.2%, respectively (SMRPC, 2004). Given the AWWA region's unique character and desirability as a residential and recreational destination, it is likely significant growth will continue to occur in Wakefield and Acton well into the future. Consequently, both communities should carefully consider the effects of current municipal land use regulations on local water resources.

2. METHODOLOGY

To help ensure that the AWWA region's water resources continue to be of high quality, FB Environmental conducted a review of municipal land use ordinances for Acton and Wakefield to provide recommendations for how these documents could be better aligned with more sustainable development practices. Acton's most recent Zoning Ordinance, Subdivision Regulations and Road Ordinance were included in the review as were Wakefield's most recent Zoning Ordinance, Subdivision Regulations and Site Plan Regulations. The reviews were based on model development principles created by the Center for Watershed Protection (CWP, 1998). These principles promote the reduction of impervious cover, conservation of natural areas, and prevention of stormwater pollution while simultaneously preserving and enhancing the quality of life in local communities. The model principles are grouped into the following three primary types of "habitat" as a means of facilitating comparisons with other municipal land use ordinances:

- Transportation infrastructure (car habitat)
- Residential and commercial development (parcel habitat)
- Open spaces and natural areas (wildlife habitat)

The CWP's Codes and Ordinance Worksheet (Appendix 1) was used to measure and compare local land use regulations for Acton and Wakefield against model development principles. The results of this comparison are presented below.

3. RESULTS / FINDINGS

The Codes and Ordinance Worksheet consists of 22 model development principles that are further subdivided into 66 site planning benchmarks (Appendix 1). Each benchmark measures a single site design practice and assigns a relative value or score depending on how closely local development regulations conform to the model ordinance. In some cases, determining scores for the ordinances was subject to interpretation since specific ordinance language could not be directly related to the model development principles. Additionally, while not all of the principles are entirely applicable to the rural nature of the AWWA region, they still provide a useful means for identifying opportunities for improving municipal land use regulations.

The highest possible overall score for the Codes and Ordinance Worksheet is 100 and the CWP generally recommends reforming local development rules if the score is less than 80. The overall scores for Acton and Wakefield are 71 and 64, respectively (Table 1, p. 3), suggesting there are considerable opportunities for improvement by both towns. A more detailed discussion of the scoring results for each of the three "habitat" types is provided immediately below. Completed worksheets for both communities are included in Appendix 2.

Table 1. Summary of Codes and Ordinance Worksheet scores for Acton and Wakefield

HABITAT TYPE	CWP Maximum	***Acton's Score***	Adequate	Needs Improvement	***Wakefield's Score***	Adequate	Needs Improvement
Transportation Infrastructure	40	21		√	15		√
Residential & Commercial Development	36	26		√	30		√
Open Spaces & Natural Areas	24	24	√		19		√
Totals:	**100**	**71**			**64**		

3.A. Transportation Infrastructure

This section of the worksheet focuses on the regulations specifying the size, shape and construction of roads, driveways and parking lots. The basic premises for optimizing the design of transportation infrastructure so that it does not adversely affect local water quality is to reduce impervious cover and effectively manage stormwater runoff. The maximum number of points allowed for this section is 40, although a few of the development principles are not very applicable to the AWWA region (e.g., queuing streets, mass transit and parking garages). Acton and Wakefield scored 21 and 15, respectively, which indicates considerable opportunity for improvement.

3.B. Residential and Commercial Development

This worksheet section addresses regulations that determine lot size and shape, housing density and overall neighborhood design. All of the development principles in the section are applicable to the AWWA region. As with transportation infrastructure, impervious cover reduction and stormwater management are the primary goals for local water quality protection along with open space preservation and protection. The maximum number of points allowed for this section is 36. Acton and Wakefield scored 26 and 30, respectively, indicating opportunities for improvement for both communities.

3.C. Open Spaces and Natural Areas

The preservation of wildlife habitat is the ultimate aim for this section of the worksheet. It seeks to assess how local land use regulations either promote (or hamper) efforts to protect natural areas and incorporate open spaces into new development projects. The primary means for providing this protection consist of maintaining adequate native vegetated buffers around shoreline and wetland areas, minimizing the extent of soil disturbance for new construction projects and preventing the discharge of untreated stormwater into sensitive aquatic habitats. The maximum number of points allowed for this section is 24. Acton and Wakefield scored 24 and 19, respectively, indicating that Acton's land use regulations are adequately protective of water quality from a natural areas perspective while Wakefield's regulations could benefit from some improvements.

4. RECOMMENDATIONS

The recommendations offered in this section should be viewed as the starting point to reforming municipal development rules as a means of providing improved protection to the AWWA region's water resources. They are intended to inform the public dialogue about which particular rules really need to be changed (or added) since considerable effort will be required to codify any potential changes. More research will likely be needed to determine how proposed changes to local land use rules may affect development costs, property values and public safety, among others.

It will be critical to involve key community members in this dialogue in order to strengthen municipal development rules. This includes participants from local government responsible for implementing land use rules, developers and real estate professionals, environmental groups and citizens, among others. A broad consensus will likely be needed to make any substantial changes and the process needed to achieve this

consensus could benefit from the assistance of an outside facilitator. Such a facilitator can ensure that all perspectives and views are included in the decision making process and can help guide the participants to action.

4.A. Transportation Infrastructure
Acton and Wakefield both scored well below the maximum of 40 points for this section of the Codes and Ordinance Worksheet (21 and 15, respectively). As such, both communities have numerous opportunities to strengthen their municipal development rules for enhanced protection of the AWWA region's water resources. Recommendations for each applicable model development principle are provided below.

Principle 1. Street Width: This development principle consists of two benchmarks, including minimum pavement width (4 points) and an allowance for queuing streets in municipal development rules (3 points). Both communities received 4 points for minimum pavement width since their land use rules allow for street widths of 20' or less. Narrower street widths will reduce the rate of increase in impervious cover for future development projects and thereby decrease potential impacts to local water quality. Neither community has provisions in their land use rules for queuing lanes and therefore received no points for the second benchmark of this design principle.

RECOMMENDATION 1: Acton and Wakefield both allow for minimum street widths of 20' and are therefore in keeping with this design principle. Both communities could consider establishing allowances or requirements for queuing lanes for new development projects (particularly for subdivisions).

Principle 2. Street Length: This development principle is intended to decrease the creation of impervious cover for new development projects and accounts for 1 point in the overall worksheet score. Neither community has provisions in their respective land use rules requiring or promoting the reduction of street lengths for new projects and therefore received no points for this development principle.

RECOMMENDATION 2: Acton and Wakefield should both consider establishing mechanisms that encourage or require the use of shorter street lengths in new development projects as a means of reducing potential impacts to water quality from increases in impervious cover.

Principle 3. Right-of-Way Widths: This development principle consists of two benchmarks, including minimum overall right-of-way width (3 points) and an allowance for the placement of utilities under pavement (1 point). Land use rules for both Acton and Wakefield do not allow for minimum right-of-way widths of 45' or less and therefore received no points for the first benchmark. Both communities do, however, allow for utilities to be placed under pavement and therefore received 1 point for the second benchmark.

RECOMMENDATION 3: Both communities should consider allowing narrower right-of-ways for new development projects. This could be accomplished by allowing for pavement width reductions (Principle 1), sidewalk width reductions, placing sidewalks on only one side of new streets, and by reducing border width requirements between sidewalks and streets. No further action is recommended for utility placement.

Principle 4. Street Cul-de-sac Design: This development principle consists of three benchmarks, including minimum allowable cul-de-sac radius (1 point); allowances for landscaped center islands (1 point); and allowances for alternative turnarounds (1 point). Acton's land use rules allow for a minimum radius of 38' for new cul-de-sacs and therefore earned 1 point for the first benchmark; Wakefield's land use rules exceed the minimum criteria established in the Codes and Ordinance Worksheet and therefore did not receive any

points. Both communities allow the center islands of cul-de-sacs to be landscaped and therefore received 1 point for the second benchmark. Acton allows for alternative turnarounds and therefore received 1 point for the third benchmark; Wakefield does not allow for alternative turnarounds and therefore received no points.

RECOMMENDATION 4: Wakefield should consider allowing for a reduction in cul-de-sac radius as a means of reducing impervious cover for new development projects. It should also consider allowing for alternative turnaround designs. Examples include T-shaped turnarounds, smaller radius turnarounds without center islands and loop roads.

Principle 5. Vegetated Open Channels: This development principle consists of two benchmarks, including curb and gutter requirements (2 points) and swale design criteria (2 points). The underlying premise for this principle is that paved streets generally produce stormwater runoff with higher pollutant loads than runoff from vegetated swales. Acton allows for new developments to be built without curbs and gutters provided the road shoulders will not be prone to erosion as a result. Therefore, it received 1 point for the first benchmark. Wakefield requires all new developments to be built with curbs and gutters and therefore received no points. Acton also has established design criteria for vegetated swales to convey stormwater and therefore received 1 point for the second benchmark. Wakefield has no such criteria and therefore received no points.

RECOMMENDATION 5: Wakefield should consider allowing new developments to be built without curbs or gutters and establishing vegetated swale design criteria for stormwater conveyance.

Principle 6. Parking Ratios: This development principle consists of four benchmarks including, minimum parking ratios for professional office buildings (1 point); minimum parking ratios for shopping centers (1 point); minimum parking requirement for single family homes (1 point); and maximum or median (rather than minimum) parking requirements (2 points). All of these benchmarks are intended to curb the construction of excess parking spaces as a means of minimizing impervious cover for future development projects.

Land use rules for Acton and Wakefield do not meet the minimum office building or shopping center parking ratios (<3 and <4.5, respectively) established by the Codes and Ordinance Worksheet and therefore received no points for either of these benchmarks. Both communities earned 1 point for allowing two or fewer parking spaces for single family homes. Neither community received any points for having maximum or median parking requirements.

RECOMMENDATION 6: When (and if) applicable, both communities should consider reducing parking ratios for professional office buildings and commercial shopping centers. Establishing maximum or median parking ratios (in lieu of minimum ratios) should also be considered by both communities.

Principle 7. Parking Codes: This development principle consists of four benchmarks, including promotion of shared parking areas (1 point); development of model shared parking agreements (1 point); allowance for reduced parking ratios with participation in shared parking agreements (1 point); and parking ratio reduction for connections to mass transit (also 1 point, though not very applicable for AWWA region). As with Principle 6, these practices are intended to minimize the extent of excess parking capacity built for new development projects.

Both communities promote the use of shared parking and therefore received 1 point for the first benchmark. Neither community has allowances for the use of shared parking agreements, reduced parking ratios for participating in shared parking agreements, nor reduced ratios for encouragement of mass transit use (which is not available in the AWWA region). Therefore, neither community received any points for these three benchmarks.

RECOMMENDATION 7: Both communities should consider allowing for shared parking agreements along with reduced parking ratios for participating in these agreements. The viability of mass transit for the AWWA region is questionable given the seasonality of residences and relatively low development densities (not enough commuters available to justify transit service).

Principle 8. Parking Lots: This development principle consists of four benchmarks, including minimum parking stall width (1 point); minimum parking stall length (1 point); percent allocation of parking lot for compact cars (1 point); and allowance for pervious materials for spillover parking areas (2 points). Both Acton and Wakefield earned 1 point for allowing minimum parking stall widths of 9'; however, neither community meets the minimum parking stall length of 18' established by the Codes and Ordinance Worksheet and therefore received no points for the second benchmark. Neither community requires parking lots to have 30% of the spaces set aside for compact cars and therefore received no points for this benchmark. Both communities received 1 point for allowing the use of pervious materials in spillover parking areas.

RECOMMENDATION 8: Both communities should consider reducing the requirements for parking stall length to 18' (or less). Both communities should also consider establishing a requirement for new parking lots to be constructed with 30% of the spaces set aside for compact cars.

Principle 9. Structured Parking: This development principle consists of establishing incentives for the construction of parking garages in lieu of surface parking lots and is not really applicable to the AWWA region given its relatively low development density and scarcity of commercial land uses. Consequently, neither community received the 1 point allowed for this principle.

RECOMMENDATION 9: This development principle does not apply well to the AWWA region and therefore no recommendation is warranted.

Principle 10. Parking Lot Runoff: This development principle consists of two benchmarks, including minimum percentage required for landscaping (2 points); and allowance for the use of stormwater BMPs (2 points). Both communities have provisions for both benchmarks in their land use rules and therefore received 2 points for each component.

RECOMMENDATION 10: Both communities may want to consider specifically promoting the use of Low Impact Development type BMPs for future development projects.

4.B. Residential and Commercial Development

Acton and Wakefield both scored below the maximum of 36 points for this section of the Codes and Ordinance Worksheet (26 and 30, respectively). Therefore, both communities have numerous opportunities to strengthen their development rules for enhanced protection of the AWWA region's water resources. Recommendations for each applicable model design principle are offered below.

Principle 11. Open Space Design: This development principle consists of five benchmarks, including allowance for open space / cluster design (3 points); establishing goals for land conservation and impervious cover reduction (1 point); extent of review requirements for open space design projects relative to conventional projects (1 point); allowance for open space / cluster projects to be a ***by-right*** form of development (1 point); and availability of flexible site design criteria in utilizing open space / cluster design options (2 points). All of these benchmarks are intended to promote smaller lot sizes as a means of reducing overall impervious cover (and stormwater runoff) for a particular development project. Indeed, one of the primary benefits of open space design relative to conventional development is impervious cover reduction (Figure 2). Additional benefits include decreased construction costs, conservation of natural areas, creation of community recreational space, and enhanced protection of local water resources. Land use rules for both communities address all the benchmarks of this development principle and therefore each received the maximum of 8 points allowed for it.

> ***By-right*** *open space development allows an open space plan that meets the requirements of the ordinance to go through the same permit and approval process as a conventional development. The by-right form of development prohibits denial of an open space plan in favor of a conventional plan assuming the open space plan meets the provisions of the ordinance (EPA, 2006).*

RECOMMENDATION 11: While ordinances for both communities allow for the creation of open space / cluster developments, both may want to consider actively promoting the use of open space projects to prospective developers for the numerous benefits they provide. Additionally, both towns may want to consider promoting infill development in their town centers, establishing designated growth areas for cluster development and identifying critical rural zones that limit development.

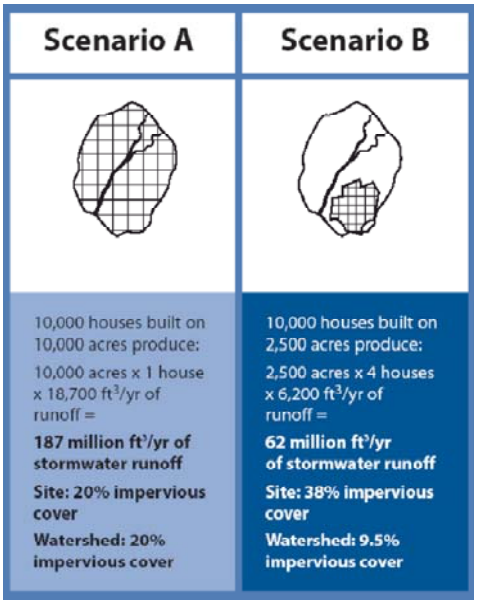

Figure 2. Effects of Development Density on Amounts of Impervious Cover and Stormwater Runoff Volumes (EPA, 2008).

Principle 12. Setbacks and Frontages: This development principle consists of five benchmarks and is primarily intended for developments with small lot sizes (~½ acre). These include an allowance for irregularly shaped lots (1 point); allowance for minimum front setback of 20' or less (1 point); allowance for minimum rear setback of 25' or less (1 point); allowance for minimum side setback of 8' or less (1 point); allowance for minimum frontage distance of less than 80' (2 points). The intent of this principle is to reduce setback distances as a means of decreasing road and driveway lengths in new developments.

Both Acton and Wakefield allow for irregularly shaped lots and each received 1 point for the first benchmark. Wakefield allows for minimum front setbacks of less than 20' and therefore received 1 point for this benchmark whereas Acton has no such allowance and received no points as a result. Both communities allow for minimum rear setbacks of less than 25' and therefore each received 1 point for the third benchmark. Neither community allows for minimum side setbacks of less than 8' and therefore received no points for this benchmark. Wakefield allows for a minimum frontage distance of less than 80' and therefore received 2 points for the final benchmark; Acton has no such allowance and received no points as a result.

RECOMMENDATION 12: Acton should consider allowing for minimum front setbacks of 20' or less, minimum side setbacks of 8' or less and minimum frontage distances of less than 80'. Wakefield should consider allowing for minimum side setbacks of 8' or less.

Principle 13. Sidewalk Design: This development principle consists of four benchmarks, including allowance for minimum width of 4' or less (2 points); allowance to provide sidewalks on only one side of the street (2 points); allowance to slope runoff to adjacent yards (1 point); and allowance for alternate pedestrian networks. The goals of this practice are to reduce the amount of impervious cover and direct stormwater runoff away from street and gutters to the pervious areas in new development projects (1 point).

Wakefield allows for a minimum sidewalk width of 4' or less and therefore received 2 points for the first benchmark; Acton does not allow for sidewalks this narrow and received no points as a result. Both communities allow for sidewalk placement on only one side of the street for new developments and therefore each received 2 points. Neither community has a provision allowing for sidewalks to be sloped to adjacent yards or pervious areas as a means of reducing stormwater runoff to streets or gutters and consequently neither received any points for the third benchmark. Both communities allow for alternate pedestrian networks (trails) and therefore received 1 point for the final benchmark.

RECOMMENDATION 13: Acton should consider allowing new developments to be built with minimum sidewalk widths of 4' or less. Both communities should consider provisions to allow sidewalks to be sloped to adjacent lawns or pervious areas to direct stormwater runoff away from streets or gutters.

Principle 14. Driveway Design: This development principle consists of four benchmarks, including allowance for minimum width of 9' or less (2 points); allowance for use of pervious materials (grass, gravel, porous pavement) for single family home driveways (2 points); allowance for use of "two track" driveway design (1 point); allowance for use of shared driveways in residential developments (1 point).

Neither community allows for driveways to be narrower than 9' and therefore received no points for this benchmark. Both communities allow driveways to be constructed with pervious materials and each received 2 points as a result. Neither community has provisions for the use of a "two track" driveway design.

RECOMMENDATION 14: Both communities should consider allowing driveways for new development or redevelopment projects to be built to a width of 9' or less while also creating provisions for the use of two track driveway designs as a means of reducing impervious cover.

Principle 15. Open Space Management: This development principle consists of five benchmarks, including allowance for establishing associations for the effective management of open spaces (2 points); requirement for consolidation of open spaces into larger units (1 point); requirement for minimum percentage of open space to be managed in natural condition (1 point); established definitions for allowable and prohibited uses for open spaces in residential developments (1 point); and allowance for management of open spaces by third party, land trust or conservation easement (1 point). The intent of this development principle is to ensure that designated open spaces are effectively managed and maintained while retaining as much open space as possible in a natural condition.

Both communities allow for the formation of associations as a means of effectively managing open spaces held in common and therefore both received 2 points for this benchmark. Acton has a requirement for the consolidation of open spaces into larger units and received 1 point for the second benchmark as a result. Wakefield has no such requirement and therefore received no points. Both communities have requirements or provisions for all of the remaining Open Space Management benchmarks and each received 3 points as a result.

RECOMMENDATION 15: Wakefield should consider establishing a requirement for the consolidation of open spaces into larger units as a means of protecting larger blocks of sensitive lands from development and enhancing wildlife habitat.

Principle 16. Rooftop Runoff: This development principle has two benchmarks, including allowance for discharge of rooftop runoff to adjacent yards or pervious areas (2 points); and allowance for site grading or drainage to provide temporary stormwater ponding in yards or on rooftops (2 points). The primary intent of this principle is to reduce the volume and intensity of stormwater runoff to paved areas and piped stormwater conveyance systems. Both communities have provisions in their development rules that allow for stormwater discharge from rooftops to yards or adjacent vegetated areas and temporary stormwater ponding for stormwater runoff reduction. Each town therefore received 4 points for this development principle.

RECOMMENDATION 16: Both communities meet the intent of this development principle. Therefore, no further action is recommended.

****ADDITIONAL RECOMMENDATION:*** Phosphorus is one of the most significant limiting nutrients in freshwater ecosystems and can result in unsightly and harmful algal blooms when it reaches excessive levels. Therefore, communities with sensitive or high value water bodies like Acton and Wakefield may want to consider incorporating phosphorus control measures into their local land use rules. There are numerous examples throughout the country that could serve as useful models for the developing similar measures in the AWWA region.

4.C. Open Spaces and Natural Areas

Acton scored the maximum of 24 points allowed for this section of the Codes and Ordinance Worksheet; Wakefield scored 19 of 24 points indicating some opportunities to strengthen development rules for enhanced protection of the AWWA region's water resources. Recommendations for each applicable model design principle are provided below.

Principle 17. Buffer Systems: This development principle consists of three benchmarks, including provisions in land use rules to provide stream buffers within which minimal development occurs (2 points); if such provisions are in effect, buffer requirement of 75' or greater (1 point); and inclusion of expanded buffer for freshwater wetlands, steep slopes or the 100 year floodplain (1 point). The intent of this principle is to provide a variable width naturally vegetated system that provides enhanced protection for adjacent shorelines, wetlands and streams. Acton's land use rules contain provisions for each of these benchmarks and therefore received the maximum allowable score of 4 points. Wakefield's land use rules contain provisions for the first and third benchmarks and therefore received 3 points for this practice.

RECOMMENDATION 17: Wakefield should consider increasing the buffer requirement for all significant local water resources to at least 75'.

Principle 18. Buffer Maintenance: This development principle consists of three benchmarks, including requirements in the land use ordinance to maintain part of the buffer system with native vegetation (2 points); identification of allowable (or prohibited) uses within the buffer area (1 point); and identification of post-construction enforcement and education mechanisms (1 point). The main intent of this principle is to ensure the preservation or restoration of native vegetation throughout the entire development process. Acton's development rules address all of these benchmarks and therefore received a score of 4 points. Wakefield does not have a requirement for the maintenance of native vegetation but does address the second and third benchmarks and therefore received 2 points.

RECOMMENDATION 18: For new or redevelopment projects, Wakefield should consider requiring that a portion of shoreline, wetland and stream buffers consists of native vegetation to provide for enhanced water quality protection.

Principle 19. Clearing and Grading: This development principle consists of two benchmarks, including requirements or encouragement in land use rules for preservation of natural vegetation at residential development sites (2 points); and allowance for reserve septic field areas to remain vegetated until they are needed for future use (1 point). The intent of this principle is to conserve as much of a development site in its natural state as possible thereby retaining most of the natural hydrologic characteristics. Clearing should be generally limited to the immediate area around the building footprint while allowing for construction access and setbacks to provide for adequate safety (Figure 3). Both communities address both benchmarks in their development rules and therefore each received 3 points for this development principle.

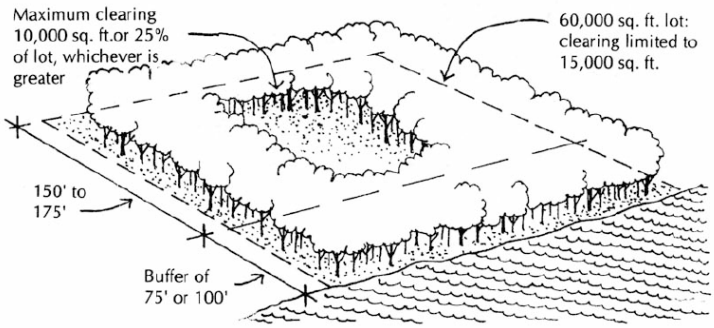

Figure 3. Example of Limits on Clearing for Shoreline Lot (Schueler, 2001 - drawing by Brian Kent)

RECOMMENDATION 19: Both communities meet the intent of this development principle. Therefore, no further action is recommended.

Principle 20. Tree Conservation: This development principle consists of two benchmarks, including requirements to preserve some of the forest or specimen trees at residential development sites (2 points); and requirements to adequately show limits of disturbance on construction plans to prevent clearing of natural vegetation during construction (1 point). As with the previous development principles in this section of the Codes and Ordinance assessment, the intent of this principle is to preserve existing natural vegetation and encourage the use of native plants for revegetation projects. Both communities have provisions in their development rules that address both of these benchmarks and therefore each received 3 points.

RECOMMENDATION 20: Both communities meet the intent of this development principle. Therefore, no further action is recommended.

Principle 21. Land Conservation Incentives: This development principle consists of two benchmarks, including the use of incentives to developers or landowners for the conservation of non-regulated land (2 points); and flexibility for developers to meet regulatory or conservation requirements (2 points). The intent of this development principle is to promote the conservation of vegetated buffers around significant water resources. Both communities provide incentives for land conservation and therefore each received 2 points for this benchmark. Acton allows for some flexibility in its land use rules for developers to meet regulatory or conservation requirements and therefore received 2 points for this benchmark. Wakefield does not allow for this flexibility and received no points as a result.

RECOMMENDATION 21: Wakefield should consider allowing developers some flexibility in meeting regulatory or conservation requirements. Examples include density compensation, buffer averaging, transferable development rights and off-site mitigation, among others.

Principle 22. Stormwater Outfalls: This development principle consists of four benchmarks, including requirements to treat stormwater before discharge to significant water resources (2 points); use of effective design criteria for stormwater BMPs (1 point); prohibition for discharge of untreated stormwater to jurisdictional wetland (1 point); and restriction or prohibition for development within 100 year floodplain (2 points). The intent of this design practice is to prevent the discharge of untreated stormwater to significant water resources (Figure 4). Both communities have provisions in their land use rules for all the benchmarks and therefore received 6 points allowed for this development principle.

Figure 4. A Stormwater Outfall Discharging Untreated Runoff to a Stream (*Photo: FB Environmental*)

RECOMMENDATION 22: Both communities meet the intent of this development principle. Therefore, no further action is recommended.

5. CONCLUSIONS

Development rules for Acton and Wakefield already have substantial protections in place for the AWWA region's valuable water resources. However, as indicated by the preceding assessment, both communities could benefit from further protections – particularly given the high likelihood that the area will continue to grow well into the future. The quality of the AWWA region's water resources is currently exceptional. Unfortunately, there are far too many examples of previously "clean" lakes in Maine and New Hampshire that have experienced the slow and barely perceptible impacts from surrounding development followed by significant declines in water quality. In conducting a review of municipal ordinances (and developing a Watershed Management Plan), AWWA has taken proactive and meaningful steps to ensure that its lakes do not suffer a similar fate. The information contained in this report should help inform local decision makers on how to effectively manage growth and development so the clarity and beauty of the AWWA region's lakes can be preserved in perpetuity for future generations. Ensuring that municipal staff have the resources needed to provide adequate oversight of development practices under improved land use rules will also be of critical importance.

As of this writing (March 2009), the Town of Acton is reviewing their municipal ordinances and Comprehensive Plan for improvements. These improvements will be incorporated into the local land use regulations and presented to the public for a vote in June 2009. It is hoped that this ordinance review is consistent with and provides support for the efforts currently underway in the Town of Acton.

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Appendix 1: Center for Watershed Protection Code and Ordinance Worksheet

CODE AND ORDINANCE WORKSHEET

About the Adobe Acrobat Form

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- The blue fields indicate that an answer is required.
- The gray fields are for notes and are not required, but highly recommended.
- The green fields will automatically summarize the points – no input is needed here.

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1. Select the hand tool  .
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The Code and Ordinance Worksheet allows an in-depth review of the standards, ordinances, and codes (i.e., the development rules) that shape how development occurs in your community. You are guided through a systematic comparison of your local development rules against the model development principles. Institutional frameworks, regulatory structures and incentive programs are included in this review. The worksheet consists of a series of questions that correspond to each of the model development principles. Points are assigned based on how well the current development rules agree with the site planning benchmarks derived from the model development principles.

The worksheet is intended to guide you through the first two steps of a local site planning roundtable.

Step 1: Find out what the Development Rules are in your community.

Step 2: See how your rules stack up to the Model Development Principles.

The homework done in these first two steps helps to identify which development rules are potential candidates for change.

PREPARING TO COMPLETE THE CODE AND ORDINANCE WORKSHEET

Two tasks need to be performed before you begin in the worksheet. First, you must identify all the development rules that apply in your community. Second, you must identify the local, state, and federal authorities that actually administer or enforce the development rules within your community. Both tasks require a large investment of time. The development process is usually shaped by a complex labyrinth of regulations, criteria, and authorities. A team approach may be helpful. You may wish to enlist the help of a local plan reviewer, land planner, land use attorney, or civil engineer. Their real-world experience with the development process is often very useful in completing the worksheet.

Identify the Development Rules

Gather the key documents that contain the development rules in your community. A list of potential documents to look for is provided in Table 1. Keep in mind that the information you may want on a particular development rule is not always found in code or regulation, and maybe hidden in supporting design manuals, review checklists, guidance document or construction specifications. In most cases, this will require an extensive search. Few communities include all of their rules in a single document. Be prepared to contact state and federal, as well as local agencies to obtain copies of the needed documents.

Table 1: Key Local Documents that will be Needed to Complete the COW
Zoning Ordinance
Subdivision Codes
Street Standards or Road Design Manual
Parking Requirements
Building and Fire Regulations/Standards
Stormwater Management or Drainage Criteria
Buffer or Floodplain Regulations
Environmental Regulations
Tree Protection or Landscaping Ordinance
Erosion and Sediment Control Ordinances
Public Fire Defense Masterplans
Grading Ordinance

Identify Development Authorities

Once the development rules are located, it is relatively easy to determine which local agencies or authorities are actually responsible for administering and enforcing the rules. Completing this step will provide you with a better understanding of the intricacies of the development review process and helps identify key members of a future local roundtable. Table 2 provides a simple framework for identifying the agencies that influence development in your community. As you will see, space is provided not only for local agencies, but for state and federal agencies as well. In some cases, state and federal agencies may also exercise some authority over the local development process (e.g., wetlands, some road design, and stormwater).

USING THE WORKSHEET: HOW DO YOUR RULES STACK UP TO THE MODEL DEVELOPMENT PRINCIPLES?

Completing the Worksheet

Once you have located the documents that outline your development rules and identified the authorities responsible for development in your community, you are ready for the next step. You can now use the worksheet to compare your development rules to the model development principles. The worksheet is presented at the end of this chapter. The worksheet presents seventy-seven site planning benchmarks. The benchmarks are posed as questions. Each benchmark focuses on a specific site design practice, such as the minimum diameter of cul-de-sacs, the minimum width of streets, or the minimum parking ratio for a certain land use. You should refer to the codes, ordinances, and plans identified in the first step to determine the appropriate development rule. The questions require either a yes or no response or specific numeric criteria. If your development rule agrees with the site planning benchmark, you are awarded points.

Calculating Your Score

A place is provided on each page of the worksheet to keep track of your running score. In addition, the worksheet is subdivided into three categories:

- Residential Streets and Parking Lots (Principles No. 1 - 10)
- Lot Development (Principles No. 11 - 16)
- Conservation of Natural Areas (Principles No. 17 - 22).

For each category, you are asked to subtotal your score. This "**Time to Assess**" allows you to consider which development rules are most in line with the site planning benchmarks and what rules are potential candidates for change.

The total number of points possible for all of the site planning benchmarks is 100. Your overall score provides a general indication of your community's ability to support environmentally sensitive development. As a general rule, if your overall score is lower than 80, then it may be advisable to systematically reform your local development rules. A score sheet is provided at end of the Code and Ordinance Worksheet to assist you in determining where your community's score places in respect to the Model Development Principles. Once you have completed the worksheet, go back and review your responses. Determine if there are specific areas that need improvement (e.g., development rules that govern road design) or if your development rules are generally pretty good. This review is key to implementation of better development: assessment of your current development rules and identification of impediments to innovative site design. This review also directly leads into the next step: a site planning roundtable process conducted at the local government level. The primary tasks of a local roundtable are to systematically review existing development rules and then determine if changes can or should be made. By providing a much-needed framework for overcoming barriers to better development, the site planning roundtable can serve as an important tool for local change.

Table 2: Local, State, and Federal Authorities Responsible for Development in Your Community				
Development Responsibility		**State/Federal**	**County**	**Town**
Sets road standards	Agency:			
	Contact Name:			
	Phone No.:			
Review/approves subdivision plans	Agency:			
	Contact Name:			
	Phone No.:			
Establishes zoning ordinances	Agency:			
	Contact Name:			
	Phone No.:			
Establishes subdivision ordinances	Agency:			
	Contact Name:			
	Phone No.:			
Reviews/establishes stormwater management or drainage criteria	Agency:			
	Contact Name:			
	Phone No.:			
Provides fire protection and fire protection code enforcement	Agency:			
	Contact Name:			
	Phone No.:			
Oversees buffer ordinance	Agency:			
	Contact Name:			
	Phone No.:			
Oversees wetland protection	Agency:			
	Contact Name:			
	Phone No.:			
Establishes grading requirements or oversees erosion and sediment control program	Agency:			
	Contact Name:			
	Phone No.:			
Reviews/approves septic systems	Agency:			
	Contact Name:			
	Phone No.:			
Review/approves utility plans (e.g., water and sewer)	Agency:			
	Contact Name:			
	Phone No.:			
Reviews/approves forest conservation/ tree protection plans	Agency:			
	Contact Name:			
	Phone No.:			

Development Feature	*Your Local Criteria*

1. Street Width

What is the minimum pavement width allowed for streets in low density residential developments that have less than 500 daily trips (ADT)? _____ feet

*If your answer is between **18-22 feet**, give yourself **4** points* [ ]

At higher densities are parking lanes allowed to also serve as traffic lanes (i.e., queuing streets)? YES/ NO

*If your answer is **YES**, give yourself **3** points* [ ]

Notes on Street Width (include source documentation such as name of document, section and page #):

2. Street Length

Do street standards promote the most efficient street layouts that reduce overall street length? YES/ NO

*If your answer is **YES**, give yourself **1** point* [ ]

Notes on Street Length (include source documentation such as name of document, section and page #):

3. Right-of-Way Width

What is the minimum right of way (ROW) width for a residential street? _____ feet

*If your answer is **less than 45 feet**, give yourself **3** points* [ ]

Does the code allow utilities to be placed under the paved section of the ROW? YES/ NO

*If your answer is **YES**, give yourself **1** point* [ ]

Notes on ROW Width (include source documentation such as name of document, section and page #):

4. Cul-de-Sacs

What is the minimum radius allowed for cul-de-sacs? _____ feet

*If your answer is **less than 35 feet**, give yourself **3** points*

*If your answer is **36 feet to 45 feet**, give yourself **1** point* [ ]

Can a landscaped island be created within the cul-de-sac? YES/ NO

*If your answer is **YES**, give yourself **1** point* [ ]

Are alternative turnarounds such as “hammerheads” allowed on short streets in low density residential developments? YES/ NO

*If your answer is **YES**, give yourself **1** point* [ ]

Notes on Cul-de-Sacs (include source documentation such as name of document, section and page #):

Development Feature	*Your Local Criteria*

5. Vegetated Open Channels

Are curb and gutters required for most residential street sections? YES/ NO

*If your answer is **NO**, give yourself **2** points*

Are there established design criteria for swales that can provide stormwater quality treatment (i.e., dry swales, biofilters, or grass swales)? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Vegetated Open Channel (include source documentation such as name of document, section and page #):

6. Parking Ratios

What is the minimum parking ratio for a professional office building (per 1000 ft^2 of gross floor area)? _____ spaces

*If your answer is **less than 3.0 spaces**, give yourself **1** point*

What is the minimum required parking ratio for shopping centers (per 1,000 ft^2 gross floor area)? _____ spaces

*If your answer is **4.5 spaces or less**, give yourself **1** point*

What is the minimum required parking ratio for single family homes (per home)? _____ spaces

*If your answer is **less than or equal to 2.0 spaces**, give yourself **1** point*

Are your parking requirements set as maximum or median (rather than minimum) requirements? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Parking Ratios (include source documentation such as name of document, section and page #):

7. Parking Codes

Is the use of shared parking arrangements promoted? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are model shared parking agreements provided? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are parking ratios reduced if shared parking arrangements are in place? YES/ NO

*If your answer is **YES**, give yourself **1** point*

If mass transit is provided nearby, is the parking ratio reduced? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Parking Codes (include source documentation such as name of document, section and page #):

Development Feature	*Your Local Criteria*

8. Parking Lots

What is the minimum stall width for a standard parking space? _____ feet

*If your answer is **9 feet or less**, give yourself **1** point*

What is the minimum stall length for a standard parking space? _____ feet

*If your answer is **18 feet or less**, give yourself **1** point*

Are at least 30% of the spaces at larger commercial parking lots required to have smaller dimensions for compact cars? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Can pervious materials be used for spillover parking areas? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Parking Lots (include source documentation such as name of document, section and page #):

9. Structured Parking

Are there any incentives to developers to provide parking within garages rather than surface parking lots? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Structured Parking (include source documentation such as name of document, section and page #):

10. Parking Lot Runoff

Is a minimum percentage of a parking lot required to be landscaped? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Is the use of bioretention islands and other stormwater practices within landscaped areas or setbacks allowed? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Parking Lot Runoff (include source documentation such as name of document, section and page #):

Development Feature	*Your Local Criteria*

Time to Assess: Principles 1 - 10 focused on the codes, ordinances, and standards that determine the size, shape, and construction of parking lots, roadways, and driveways in the suburban landscape. There were a total of **40** points available for Principles 1 - 10. What was your total score?

Subtotal Page 5 ____ + Subtotal Page 6 ____ + Subtotal Page 7 ____ = **0**

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

11. Open Space Design

Are open space or cluster development designs allowed in the community? YES/ NO

*If your answer is **YES**, give yourself **3** points*

*If your answer is **NO**, skip to question No. 12*

Is land conservation or impervious cover reduction a major goal or objective of the open space design ordinance? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are the submittal or review requirements for open space design greater than those for conventional development? YES/ NO

*If your answer is **NO**, give yourself **1** point*

Is open space or cluster design a by-right form of development? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks, road widths, lot sizes) YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Open Space Design (include source documentation such as name of document, section and page #):

Development Feature	*Your Local Criteria*

12. Setbacks and Frontages

Are irregular lot shapes (e.g., pie-shaped, flag lots) allowed in the community? YES/ NO

*If your answer is **YES**, give yourself **1** point*

What is the minimum requirement for front setbacks for a one half (½) acre residential lot? _____ feet

*If your answer is **20 feet or less**, give yourself **1** point*

What is the minimum requirement for rear setbacks for a one half (½) acre residential lot? _____ feet

*If your answer is **25 feet or less**, give yourself **1** point*

What is the minimum requirement for side setbacks for a one half (½) acre residential lot? _____ feet

*If your answer is **8 feet or less**, give yourself **1** points*

What is the minimum frontage distance for a one half (½) acre residential lot? _____ feet

*If your answer is **less than 80 feet**, give yourself **2** points*

Notes on Setback and Frontages (include source documentation such as name of document, section and page #):

13. Sidewalks

What is the minimum sidewalk width allowed in the community? _____ feet

*If your answer is **4 feet or less**, give yourself **2** points*

Are sidewalks always required on both sides of residential streets? YES/ NO

*If your answer is **NO**, give yourself **2** points*

Are sidewalks generally sloped so they drain to the front yard rather than the street? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Can alternate pedestrian networks be substituted for sidewalks (e.g., trails through common areas)? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Sidewalks (include source documentation such as name of document, section and page #):

14. Driveways

What is the minimum driveway width specified in the community? _____ feet

*If your answer is **9 feet or less (one lane) or 18 feet (two lanes)**, give yourself **2** points*

Can pervious materials be used for single family home driveways (e.g., grass, gravel, porous pavers, etc)? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Can a "two track" design be used at single family driveways? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are shared driveways permitted in residential developments? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Driveways (include source documentation such as name of document, section and page #):

15. Open Space Management

Skip to question 16 if open space, cluster, or conservation developments are not allowed in your community.

Does the community have enforceable requirements to establish associations that can effectively manage open space? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Are open space areas required to be consolidated into larger units? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Does a minimum percentage of open space have to be managed in a natural condition? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Are allowable and unallowable uses for open space in residential developments defined? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Can open space be managed by a third party using land trusts or conservation easements? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Open Space Management (include source documentation such as name of document, section and page #):

16. Rooftop Runoff

Can rooftop runoff be discharged to yard areas? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Do current grading or drainage requirements allow for temporary ponding of stormwater on front yards or rooftops? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Rooftop Runoff (include source documentation such as name of document, section and page #):

Time to Assess: Principles 11 through 16 focused on the regulations which determine lot size, lot shape, housing density, and the overall design and appearance of our neighborhoods. There were a total of **36** points available for Principles 11 - 16. What was your total score?

Subtotal Page 8 ____ + Subtotal Page 9 ____ + Subtotal Page 10 ____ = **0**

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

17. Buffer Systems

Is there a stream buffer ordinance in the community? YES/ NO

*If your answer is **YES**, give yourself **2** points*

If so, what is the minimum buffer width? ____ feet

*If your answer is **75 feet or more**, give yourself **1** point*

Is expansion of the buffer to include freshwater wetlands, steep slopes or the 100-year floodplain required? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Buffer Systems (include source documentation such as name of document, section and page #):

18. Buffer Maintenance

If you do not have stream buffer requirements in your community, skip to question No. 19

Does the stream buffer ordinance specify that at least part of the stream buffer be maintained with native vegetation? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Does the stream buffer ordinance outline allowable uses? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Development Feature	*Your Local Criteria*

Does the ordinance specify enforcement and education mechanisms? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Buffer Systems (include source documentation such as name of document, section and page #):

19. Clearing and Grading

Is there any ordinance that requires or encourages the preservation of natural vegetation at residential development sites? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Do reserve septic field areas need to be cleared of trees at the time of development? YES/ NO

*If your answer is **NO**, give yourself **1** point*

Notes on Buffer Maintenance (include source documentation such as name of document, section and page #):

20. Tree Conservation

If forests or specimen trees are present at residential development sites, does some of the stand have to be preserved? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Are the limits of disturbance shown on construction plans adequate for preventing clearing of natural vegetative cover during construction? YES/ NO

*If your answer is **YES**, give yourself **1** point*

Notes on Tree Conservation (include source documentation such as name of document, section and page #):

21. Land Conservation Incentives

Are there any incentives to developers or landowners to conserve non-regulated land (open space design, density bonuses, stormwater credits or lower property tax rates)? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Is flexibility to meet regulatory or conservation restrictions (density compensation, buffer averaging, transferable development rights, off-site mitigation) offered to developers? YES/ NO

*If your answer is **YES**, give yourself **2** points*

Notes on Land Cons. Incentives (include source documentation such as name of document, section and page #):

Development Feature	*Your Local Criteria*

22. Stormwater Outfalls

Is stormwater required to be treated for quality before it is discharged?	YES/ NO
*If your answer is **YES**, give yourself **2** points*	
Are there effective design criteria for stormwater best management practices (BMPs)?	YES/ NO
*If your answer is **YES**, give yourself **1** point*	
Can stormwater be directly discharges into a jurisdictional wetland without pretreatment?	YES/ NO
*If your answer is **NO**, give yourself **1** point*	
Does a floodplain management ordinance that restricts or prohibits development within the 100-year floodplain exist?	YES/ NO
*If your answer is **YES**, give yourself **2** points*	

Notes on Stormwater Outfalls (include source documentation such as name of document, section and page #):

Code and Ordinance Worksheet *Subtotal Page 13* **0**

Time to Assess: Principles 17 through 22 addressed the codes and ordinances that promote (or impede) protection of existing natural areas and incorporation of open spaces into new development. There were a total of 24 points available for Principles 17 - 22. What was your total score?

Subtotal Page 11 ____ + Subtotal Page 12 ____ + Subtotal Page 13 ____ = **0**

Where were your codes and ordinances most in line with the principles? What codes and ordinances are potential impediments to better development?

To determine final score, add up subtotal from each **Time to Assess**

Principles 1 - 10 (Page 8)	
Principles 11 - 16 (Page 11)	
Principles 17 - 22 (Page 13)	**0**
TOTAL	**0**

SCORING (A total of **100** points are available):	
Your Community's Score	
90- 100	Congratulations! Your community is a real leader in protecting streams, lakes, and estuaries. Keep up the good work.
80 - 89	Your local development rules are pretty good, but could use some tweaking in some areas.
79 - 70	Significant opportunities exist to improve your development rules. Consider creating a site planning roundtable.
60 - 69	Development rules are inadequate to protect your local aquatic resources. A site planning roundtable would be very useful.
less than 60	Your development rules definitely are not environmentally friendly. Serious reform of the development rules is needed.

Appendix 2: Municipal Ordinance Review Results (following pages)

AWWA Region Municipal Ordinance Review - March 2009		**Acton, Maine**			
		Requirement	Points	Source	Section
Transportation Infrastructure					
1. Street width	Min. pavement width 18-22"	20 ft	4	Road Ordinance	G.1.a
	Queuing streets allowed (N/A?)	No	0	Subdivision Ordinance	10.15.1.A.9.c
2. Street length	Standards promoting length reduction	No	0	Road Ordinance	G.1.a
3. Right-of-way	Min. allowed width less than 45'	50 ft	0	Road Ordinance	G.1.a
	Pavement over utilities allowed	Yes	1	Road Ordinance	G.1.b.2
4. Cul-de-Sacs	Min. radius allowed <35' or 36'-45'	38 ft	1	Subdivision Ordinance	10.15.1.B.2.l
	Landscaped center island allowed	Yes	1		
	Alternative turnarounds allowed	Yes	1	Road Ordinance	G.1.a.2
5. Vegetated open channels	Curb & gutters required for most streets	No	2	Subdivision Ordinance	10.15.1.B.2.h.i
	Established swale design criteria	Yes	2	Zoning Ordinance	5.2.f.6 & 7
6. Parking ratios	Min. for office building (<3 per 1000 sq ft)	>3	0	Zoning Ordinance	5.11.2.h
	Min. for comm. centers (<4.5 per 1000 sq ft)	6	0	Zoning Ordinance	5.11.2.f
	Min. for 1 family homes (2 or less per home)	2	1	Zoning Ordinance	5.11.2.a
	Max. or median space requirement	No	0	Zoning Ordinance	5.11.2
7. Parking codes	Shared parking promoted	Yes	1		
	Model shared parking agreements	No	0		
	Ratios reduced w/shared parking	No	0		
	Ratios reduced w/mass transit (N/A?)	No	0		
8. Parking lots	Min. stall width 9' or less	9 ft	1	Zoning Ordinance	6.6.4.7.6.3
	Min. stall length 18' or less	24 ft	0	Zoning Ordinance	6.6.4.7.6.3
	30% spaces for compact cars	No	0		
	Pervious materials allowed	Yes	2		
9. Structured parking	Incentives for parking garages (N/A?)	No	0	Zoning Ordinance	5.11.4
10. Parking lot runoff	Min. % required to be landscaped	Yes	2	Zoning Ordinance	5.6.2.D
	Allowance for other stormwater BMPs	Yes	2	Zoning Ordinance	5.6.2.D
Residential and Commercial Development					
11. Open space design	Open space/cluster design allowed	Yes	3	Subdivision Ordinance	10.13
	Goal for land conservation / IC reduction	Yes	1		
	Review requirements > conventional dev.	No	1		
	By-right form of development	Yes	1		
	Flexible site design criteria	Yes	2	Subdivision Ordinance	10.13.B.3
12. Setbacks and frontages	Irregualr lot shapes allowed	Yes	1	Zoning Ordinance	2.5.3
	Min. front setback 20' or less	75 ft	0	Zoning Ordinance	4.2.5.2.c
	Min. rear setback 25' or less	25 ft	1	Zoning Ordinance	4.2.5.2.c
	Min. side setback 8' or less	25 ft	0	Zoning Ordinance	4.2.5.2.c
	Min. frontage distance 80' or less	250 ft	0	Zoning Ordinance	4.2.5.1
13. Sidewalks	Min. width 4' or less	5 ft	0	Road Ordinance	G.1.a
	Required both sides	No	2	Road Ordinance	G.1.a.4
	Slope runoff to yard	No	0		
	Alternate pedestrian networks allowed	Yes	1		
14. Driveways	Min. width allowed (1 lane=<9'; 2 lanes= <18')	12 to 16 ft	0		
	Use pervious materials allowed	Yes	2	Zoning Ordinance	6.6.4.7.6.2
	Use of "two track" design allowed	No	0		
	Shared driveways allowed	Yes	1		
15. Open space management	Associations for open space management	Yes	2	Subdivision Ordinance	10.6.E.4 & 5
	Requirment for open space consolidation	Yes	1		
	Req. for min. % open space to be natural	Yes	1	Subdivision Ordinance	10.6.B.4
	Allowable uses for open spaces defined	Yes	1	Subdivision Ordinance	10.6.B
	Management by third party allowed	Yes	1	Subdivision Ordinance	10.6.E.2
16. Rooftop runoff	Discharge to yard allowed	Yes	2		
	Temporary yard ponding allowed	Yes	2	Zoning Ordinance	6.6.4.7.8.1
Open Spaces and Natural Areas					
17. Buffer Systems	Stream buffer ordinance	Yes	2	Zoning Ordinance	4.1.2.6
	Min. width 75' or greater	75 ft	1	Zoning Ordinance	4.1.2.7
	Includes wetland, slopes, floodplain	Yes	1		
18. Buffer maintenance	Requirment for retaining native vegetation	Yes	2	Zoning Ordinance	6.6.4.7.9
	Allowable uses defined	Yes	1	Zoning Ordinance	5.16.2
	Enforcement and education specified	Yes	1	Zoning Ordinance	6.6.4.2
19. Clearing and grading	Requirement to preserve natural vegetation	Yes	2	Zoning Ordinance	5.6.2.R & S
	Requirement to clear future septic fields	Yes	1		
20. Tree conservation	Requirement to preserve tree stand	Yes	2	Subdivision Ordinance	10.6.A.3
	Plans required to show conservation	Yes	1	Zoning Ordinance	5.16
21. Land conservation incentives	Non-regulated land conservation incentives	Yes	2		
	Flexible conservation requirements	Yes	2	Subdivision Ordinance	10.6.B.8
22. Stormwater outfalls	Requirement to treat before discharge	Yes	2	Zoning Ordinance	5.17.1
	Effective design criteria for BMPs	Yes	1	Zoning Ordinance	5.2.f.6
	Direct untreated discharge to wetland	No	1	Zoning Ordinance	5.17.1
	100-year floodplain restrictions	No	2	Subdivision Ordinance	1.2.M
		TOTAL:	**71**		

AWWA Region Municipal Ordinance Review - March 2009		**Wakefield, New Hampshire**			
		Requirement	Points	Source	Section
Transportation Infrastructure					
1. Street width	Min. pavement width 18-22"	20 ft	4		
	Queuing streets allowed (N/A?)	No	0		
2. Street length	Standards promoting length reduction	No	0		
3. Right-of-way	Min. allowed width less than 45'	50 ft	0	Subdivision Ordinance	3.11.B.2
	Pavement over utilities allowed	Yes	1		
4. Cul-de-Sacs	Min. radius allowed <35' or 36'-45'	65 ft	0	Subdivision Ordinance	3.11.B.13
	Landscaped center island allowed	Yes	1	Subdivision Ordinance	3.11.B.14
	Alternative turnarounds allowed	No	0		
5. Vegetated open channels	Curb & gutters required for most streets	Yes	0	CEO	
	Established swale design criteria	No	0	Site Plan Regulations	3.15.c
6. Parking ratios	Min. for office building (<3 per 1000 sq ft)	4 spaces	0	Site Plan Regulations	3.17.B
	Min. for comm. centers (<4.5 per 1000 sq ft)	5 spaces	0		
	Min. for 1 family homes (2 or less per home)	2 spaces	1	Zoning Ordinance	12.C.7
	Max. or median space requirement	No	0		
7. Parking codes	Shared parking promoted	Yes	1	Zoning Ordinance	12.C.4b
	Model shared parking agreements	No	0		
	Ratios reduced w/shared parking	No	0	Site Plan Regulations	3.14.F
	Ratios reduced w/mass transit (N/A?)	No	0		
8. Parking lots	Min. stall width 9' or less	9 ft	1	Site Plan Regulations	3.17.G
	Min. stall length 18' or less	20 ft	0		
	30% spaces for compact cars	No	0		
	Pervious materials allowed	Yes	2	Site Plan Regulations	3.17.N
9. Structured parking	Incentives for parking garages (N/A?)	No	0		
10. Parking lot runoff	Min. % required to be landscaped	Yes	2	Site Plan Regulations	3.19.A.1
	Allowance for other stormwater BMPs	Yes	2	Site Plan Regulations	3.19.A.2
Residential and Commercial Development					
11. Open space design	Open space/cluster design allowed	Yes	3	Zoning Ordinance	12.A
	Goal for land conservation / IC reduction	Yes	1	Zoning Ordinance	12.A.11 & 12
	Review requirements > conventional dev.	No	1	Zoning Ordinance	12.A
	By-right form of development	Yes	1	Zoning Ordinance	12.C.1
	Flexible site design criteria	Yes	2		
12. Setbacks and frontages	Irregualr lot shapes allowed	Yes	1	Site Plan Regulations	3.2.3
	Min. front setback 20' or less	20 ft	1	Site Plan Regulations	3.11.B.24
	Min. rear setback 25' or less	10 ft	1	Zoning Ordinance	Table 2
	Min. side setback 8' or less	20 ft	0	Zoning Ordinance	Table 2
	Min. frontage distance 80' or less	75 ft	2	Zoning Ordinance	Table 3
13. Sidewalks	Min. width 4' or less	4 ft	2	Subdivision Ordinance	3.11.A.10.a
	Required both sides	No	2	Subdivision Ordinance	3.11.A.10.a
	Slope runoff to yard	No	0	Subdivision Ordinance	3.11.A.10.a
	Alternate pedestrian networks allowed	Yes	1		
14. Driveways	Min. width allowed (1 lane=<9'; 2 lanes= <18')	12 to 16 ft	0	CEO	
	Use pervious materials allowed	Yes	2	Zoning Ordinance	12.C.4c
	Use of "two track" design allowed	No	0		
	Shared driveways allowed	Yes	1	Zoning Ordinance	12.C.4b
15. Open space management	Associations for open space management	Yes	2	Zoning Ordinance	12.F & 12.G
	Requirment for open space consolidation	No	0	Zoning Ordinance	12.2
	Req. for min. % open space to be natural	Yes	1	Zoning Ordinance	12.C.13
	Allowable uses for open spaces defined	Yes	1	Zoning Ordinance	12.C.13
	Management by third party allowed	Yes	1	Zoning Ordinance	12.C.14
16. Rooftop runoff	Discharge to yard allowed	Yes	2	Subdivision Ordinance	3.13.B & B.4
	Temporary yard ponding allowed	Yes	2	Subdivision Ordinance	3.13.B & B.5
Open Spaces and Natural Areas					
17. Buffer Systems	Stream buffer ordinance	Yes	2	Zoning Ordinance	12.13.c
	Min. width 75' or greater	20 ft	0	Zoning Ordinance	15.A
	Includes wetland, slopes, floodplain	Yes	1	Zoning Ordinance	12.c.13
18. Buffer maintenance	Requirment for retaining native vegetation	No	0		
	Allowable uses defined	Yes	1	Zoning Ordinance	15.A
	Enforcement and education specified	Yes	1	Subdivision Ordinance	2.27.A & B
19. Clearing and grading	Requirement to preserve natural vegetation	Yes	2	Subdivision Ordinance	1.04
	Requirement to clear future septic fields	No	1		
20. Tree conservation	Requirement to preserve tree stand	Yes	2	Subdivision Ordinance	3.20
	Plans required to show conservation	Yes	1		
21. Land conservation incentives	Non-regulated land conservation incentives	Yes	2	Design Standards	3.00
	Flexible conservation requirements	No	0		
22. Stormwater outfalls	Requirement to treat before discharge	Yes	2	Subdivision Ordinance	3.13.B
	Effective design criteria for BMPs	Yes	1	Subdivision Ordinance	3.16.B
	Direct untreated discharge to wetland	No	1		
	100-year floodplain restrictions	Yes	2	Zoning Ordinance	11.H.2.a &H.2.b
		TOTAL:	**64**		