
HOW TO WIN LAND DEVELOPMENT ISSUES

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DEDICATION

This book is dedicated to the countless citizen activists who have given so much to protect us from poorly managed growth. Without their sacrifice many of our most important quality of life preservation and enhancement programs would not exist, including Smart Growth.

This book is a compilation of the many hard lessons won by veteran activists. It is the author's hope that the advice provided herein will allow new activists to achieve the successes us old-timers merely dream of.

HOW THIS BOOK CAN HELP YOU WIN LAND DEVELOPMENT ISSUES

As president of Community & Environmental Defense Services (CEDS), I help several hundred groups each year with development related concerns. Most of the time we win, but not always. With this book I hope to bring the success rate closer to 100% by explaining what does and does not work.

The types of land development activity addressed in this book include highways, shopping centers, housing projects, golf courses, marinas, superstores, landfills, mining, and a host of other activities which may harm the environment or neighborhood quality of life. Suggestions are also provided for going beyond a specific development site and winning the adoption of *Smart Growth* principles throughout a town, city or county. Since we assist citizens throughout the nation with both levels of advocacy, the advice provided in this book is applicable to all 50 states.

This book starts off with *The Easy Solution* for winning land development issues. For most projects no further effort is necessary. Frequently the easy solution costs nothing more than a few hours of your time.

In those cases where the easy solution is not enough, I explain how to get the public support needed to win by expanding a campaign into the regulatory, legal and political arenas.

In addition to the suggestions offered in this book, our advice is available by calling 1-800-773-4571 or sending an e-mail to help@ceds.org. Other forms of CEDS assistance are described in Chapter 5.

CHAPTER 1 - THE EASY SOLUTION

Sounds good doesn't it...

the Easy Solution.

Well, it not only sounds good but it really is easy and it works more often than not.

The purpose of the easy solution is to:

- get an accurate understanding of the proposed development project,
- identify obvious project impacts, and
- resolve each impact through actions that require relatively little time and expense.

In those situations where the easy solution does not get you to victory, there are many other options available; they just take a bit more time and expense to pursue. Following are the steps involved in the easy solution.

STEP 1: VERIFY WHAT HAS BEEN PROPOSED

I get a number of calls from folks who have heard rumors about a development project and the harm it will do. Yet they have not seen project plans or any other documents. So they cannot say whether the impacts are myth or reality. My advice is obvious; make arrangements with the local planning and zoning office to review project plans.

The plans will show the reality of what the applicant has in mind. Rumor may have it that a hundred homes are going to be built along your dead-end neighborhood street, but the plans show only ten new houses or maybe a thousand. Either way, looking at the plans will allow you to base your actions on fact, not rumor.

Take the time to carefully study the plans and other documents in local files. It usually takes about 10- to 20-minutes of simply looking at plans to fully understand what is being proposed. So, again, do not rush this step.

Note each concern you have regarding the project along with anything which is not clear. Discuss both with staff in the next step of the easy solution.

Note also the applicant's name and contact information. You may need this information to pursue subsequent steps in the easy solution. Request a copy of all the documents submitted thus far, including agency comments and all other paper in the file. These materials will be extremely valuable as you pursue various options for resolving your concerns. Bring a checkbook along since you will likely be charged for copies.

STEP 2: DISCUSS YOUR CONCERNS WITH STAFF

In large towns or densely populated counties there will usually be a whole department overseeing development review along with other growth management issues. Normally, each

project is assigned to a staff planner or reviewer. In small towns the planning department may consist of one staff person.

If after reviewing the plans you still have concerns, then meet with the staff person overseeing the project. Go into this meeting with a positive, open attitude. In other words, assume the staff person will be cooperative, which most are. Also, given their training and years of experience, staff's understanding of the technical and legal aspects of development issues is probably superior to yours. So listen with an open mind if they disagree about the likelihood of an impact or which solution is the best. But you should also seek another opinion if you have doubts.

Begin the meeting by describing the impacts of concern to you, the basis for each concern, and ask if each impact is likely to be resolved through the development review process. Following are possible outcomes of this discussion and how you might proceed with each.

Resolution Will Happen: The staff person agrees that your concerns are valid but you also learn that specific requirements will be imposed to resolve each impact. In some situations it will be obvious how a solution works and that it will be very reliable. If this is not the case, then ask for details and consider researching the solution further. Advice on how to conduct this research is provided in Chapter 2 of this book. If your research shows that a solution is not as good as it first sounded, then share your findings with staff and ask what steps might be taken to increase the effectiveness and reliability of the solution.

Resolution Is Not Possible: In this scenario staff agrees that an impact is likely, but they feel a solution is either not available or they lack the authority to require the applicant to implement the most effective solution.

Rare is the situation where a solution isn't available. If nothing else, stopping the project would prevent the impact. But the impact would have to be severe, with no other recourse, before government could say no without fear of having their denial overturned by the courts. And, generally, the more *win-win* the solution, the easier it is to implement.

Try asking staff to speculate about possible technical solutions. If this fails to produce results then go to Chapter 2 of this book to begin your own research. If you find a solution you like then try talking with staff again.

If staff feel they lack the authority to resolve your concerns, then ask if someone else in their agency (or another unit of government) may have the necessary authority. Contact these other officials as you continue your pursuit of an easy solution.

Impact Unlikely: If staff believes an impact is unlikely and you are not convinced, then go to Chapter 2 of this book for advice on confirming or refuting the belief of staff. If you decide staff is right that impacts are unlikely then you've resolved your concerns. If you find evidence supporting your concerns then share this information with staff to see if they agree.

Project Status, Comments & Appeals

Ask staff for a description of the review process and where the project stands in the process. Ask when opportunities for public comment will be coming up and if there's anything special you need to do to make comments. For example, do you need to attend a hearing or get written comments in before a specific date? Also ask about your right to appeal if project approvals are granted before your concerns are fully resolved. Cover questions such as filing deadlines and format as well as other specifics for preserving your right to appeal. Ask that your name be added to an interested parties list, if one exists. Finally, ask what section of local law pertains to your concerns and if any guidance documents exist to help applicant's comply with relevant laws. Reading these laws and documents will increase your understanding of the process and how to resolve your concerns.

Additional advice on working with staff is provided in Chapter 4 of this book.

STEP 3: LOOK FOR WIN-WIN SOLUTIONS

For most development projects a *win-win* solution is available. This is a solution which designs away most negative effects while allowing the applicant to get much of what they want. Frequently it is obvious what changes would reduce or eliminate project impacts. But, occasionally, a project is so poorly conceived that there is just no way to reduce impacts to a tolerable level.

Following is an example of possible win-win solutions. Let's say a development company wants to build more homes along your dead-end neighborhood street. You are concerned that this will reduce pedestrian safety as well as increase air pollution and noise. Possible win-win solutions might include:

- limiting development so the total number of homes does not exceed 60 to 100, which as shown in Chapter 2 is the maximum desirable for most residential streets;¹
- allow a reasonable increase in the number of new homes but only if speed humps and other traffic calming measures are installed to slow down all vehicles, which may make conditions even better than they are now; or
- support the applicant in finding another, safer point of access to their site.

All three of these examples might allow both you and the applicant to get much of what you want.

For obvious reason, it is far easier to get a win-win solution adopted compared to one which forces dramatic changes to a project. You will find the applicant and government officials far more receptive if you have identified something close to a win-win solution for each of your concerns. However, even if you fail you will still find your local elected representative more

¹ See the section of this book on traffic impacts and neighborhood streets for further detail.

willing to help if you can demonstrate that you tried to find a win-win solution, you fairly considered obvious possibilities, but none would reduce project impacts to a reasonable level.

Additional suggestions for possible win-win solutions are provided throughout this book. The thing to keep in mind is that there are *always* options available for resolving your concerns. The closer these options are to a win-win solution, the easier success will come.

STEP 4: REQUEST THE SUPPORT OF YOUR ELECTED REPRESENTATIVES

For the most part land use decisions are made at the local level; the level of the borough, town, city, or county. In many of these local jurisdictions the town council, city commissioners, or county supervisors serve as the key land use decision-making body. These elected officials approve individual development projects as well as rezoning requests and land use plans along with all other major growth management issues. Where the council or commissioners are not key decision-makers, they still have substantial influence and can help you resolve your concerns. This makes your local elected representative a potentially powerful ally.

If you were unsuccessful in resolving your concerns through staff then request a meeting with a member of the local decision-making body. The member to meet with depends upon whether they are elected by district or at-large. If the former, then request a meeting with the official representing your district. If elected at-large, then seek a meeting with the decision-maker who has the best reputation for helping citizen. Local citizen advocacy groups can tell you who this decision-maker may be. To locate these groups go the [CEDS website](#), click on *Links To Others Who Can Help*, then scroll down to your state.

Generally, you will find decision-makers more open and helpful if you make it clear that your goal is to resolve specific concerns; not to stop a project. Ideally you will have a few win-win solutions in mind. However, if you believe a project is so severely flawed that it should not be built, then make your position clear.

If staff felt your concerns would be resolved, but you are not convinced, then explain the disagreement to the decision-maker. Assuming the decision-maker finds your arguments compelling, ask them to use their influence to press for adoption of your preferred solution.

If staff felt they lacked the authority to implement your preferred solution, then ask the decision-maker to get an opinion from the local jurisdiction's legal staff. If it turns out the legal authority is lacking then ask the decision-maker to either:

- approach the applicant with a request that they implement the solution voluntarily or
- introduce a bill which, if enacted, would provide local government with the necessary authority.

If the decision-maker feels none of these approaches is workable, then try posing an open-ended question along the lines of...

if you were in my position - you lived next to this site and shared my concerns - what would you do?

Frequently this question will elicit more creative and constructive discussion than would otherwise occur.

STEP 5: NEGOTIATE WITH THE APPLICANT

If you feel you have a win-win solution then contact the applicant directly. Ask for an opportunity to meet with them in hopes of getting the applicant to adopt your win-win solution. If the solution costs the applicant little then there is a good chance they will go for it. If not then you have lots of other options.

If the applicant does agree to resolve your concern, then explore options for turning this agreement in to a firm, enforceable guarantee. For further detail on this topic see Chapter 4 of this book.

WHEN THE EASY SOLUTION DOES NOT WORK

If your discussions with planning staff, the applicant and your elected officials did not produce the results you were looking for, then it's time to escalate the effort into a full campaign. If you have been told that your concerns are unfounded or your solution will not work, then the next chapter of this book will explain how to document the validity of your concerns and how to find workable solutions. Once you can prove your concerns are real and you have a viable solution in hand you will probably need to rely on the growth management process to win adoption of your preferred solution. Chapter 3 of this book explains how *The Growth Management Process* works. Next, Chapter 4 explains how to get the resources (volunteers, dollars, and political clout) you need to win. This chapter also goes into considerable detail on how to negotiate with the applicant in hopes of convincing them to adopt your solution. Suggestions are also provided for lobbying key decision-makers or initiating legal action if negotiations with the applicant fail to produce victory. If decision-makers feel they lack the legal authority to implement your solution, and your lawyer agrees, then go to the section of this book on how to *Change The Law*. The last strategy option focuses on ways to preserve the site. Finally, a description is provided on *How CEDS Can Help*.

CHAPTER 2 - IDENTIFYING PROJECT IMPACTS & TECHNICAL SOLUTIONS

In this chapter I will introduce procedures for determining whether a proposed development project will cause significant adverse effects and, if so, the technical approaches for resolving these concerns.

BASIC APPROACH

The development impacts which tend to generate the greatest concern are environmental degradation, traffic congestion, loss of open space and school overcrowding. Following are specific examples of the more common development-related concerns:

- through traffic on residential streets will be increased, which may jeopardize pedestrian safety as well as increasing air and noise pollution;
- wells may be contaminated or the quantity of water available to existing users will be diminished;
- poorly managed growth will cause schools to become over-crowded;
- existing homes will be subjected to visual impacts which may lower property value and quality of life;
- disturbing levels of noise or lighting will intrude upon residential areas;
- the rural character of an area will be lost due to sprawling residential development; or
- highly valued streams, lakes or tidal waters will be degraded by watershed development.

Following are the basic approaches recommended in this book for determining if these and many other impacts will occur and, if so, what solutions are available.

Researching Development Impacts

If you have specific concerns such as those listed above then go to the section of this chapter pertaining to the issue. There you will find a description of the conditions under which each impact becomes significant and the technical approaches which usually resolve the impact. You will also find advice for going beyond the pages of this book for a more detailed analysis of impacts and solutions.

If you are not certain what impacts a development proposal may cause then consider searching for existing similar projects. Ideally the existing project should be located next to a neighborhood resembling yours while having as many other similarities as possible. If you find similar projects then the following steps may allow you to identify impacts which other wise would not be obvious.

1. Talk to nearby, long-time residents to learn what the reality is of living next to the similar project. You may find your worse fears are unfounded or that the project makes life unpleasant in a way you never envisioned. If the existing project has not caused a specific concern, then determine if this is due to some corrective measure. If it is then obviously this same measure should be applied to the project of concern to you.

2. Talk with citizen activists who have participated in campaigns involving similar projects. These folks may have conducted extensive research into project impacts and solutions. The results of this research would be extremely valuable to your efforts. To locate these groups go to the [CEDS website](#) and click on the *Links To Others Who Can Help* button then scroll down to your state.
3. Contact government officials who may have received complaints about the existing project. For example, most complaints regarding visual impacts, noise and other disturbances would go to the local zoning office. Complaints about sewage, odors, or pests would have been handled by the local health department or environmental agency. Crime complaints would of course go to the local police. Elected officials may have also received complaints, particularly those representing the district where the existing use is located.
4. Search the internet for newspaper articles or other information about project impacts.
5. Talk to local newspaper reporters and their editors about any stories they ran on the project.
6. If you are concerned about aquatic resource impacts then consider using the volunteer monitoring techniques described later in this chapter to assess how the existing use has affected nearby waters.

In addition to these research steps you can also read through the remainder of this chapter to determine if the project meets any of the criteria for significant impact.

There are a class of projects known as *LULUs*. The preceding research approach is particularly useful in identifying the impacts caused by these Locally Unwanted Land Uses. Examples of LULUs include landfills, prisons, factories, superstores, and a host of other uses which society needs but may not make for the most pleasant neighbor.

The vast majority of development proposals move through the permitting-approval process with relatively little citizen opposition. Those which tend to generate intense conflict involve development of a nature never envisioned by nearby residents. The usual scenario begins with a vacant tract of land next to an existing neighborhood. Adjoining residents always figured the tract would be developed, but anticipated more homes like their own or some other compatible use. Instead a LULU is proposed for the site.

I urge you to resist the understandable temptation to immediately launch a campaign to kill the LULU. Instead, go through the research suggested in this chapter to document impacts and search for solutions. If you make a genuine, concerted effort to find ways of designing adverse effects out of the LULU but fail, then it will be easier to convince decision-makers that the site next to your neighborhood is the wrong place for the LULU.

Will a Solution Really Work

At first a solution may seem quite effective and reliable. But is this truly the case?

Generally, the more complicated, expensive and maintenance-intensive a solution, the less reliable it is. To illustrate, consider a situation where a development project threatens a highly-sensitive aquatic resource. Two obvious solutions would be:

- protect the resource by preserving all the land area (the watershed) crucial to its survival; or
- allow watershed development but require the use of highly-effective environmental protection measures.

Obviously preserving the watershed is the most reliable solution, but it may also be the most difficult to win. Getting the applicant or a permitting agency to agree to good protection measures is probably the easiest to achieve but requires a well-managed inspection and maintenance program. Unless inspection and maintenance will be very good for many years, the measures may fail and the resource will be lost.

One of the best ways to judge solution effectiveness is much the same as that proposed above for identifying impacts; examine similar projects where the solution was employed. For instance, if you are concerned about the effectiveness of a noise barrier, then visit a project resembling that of concern to you where an identical (or at least similar) barrier was installed. Listen for yourself during peak noise periods. Talk to nearby residents to see how effective they find the barrier to be and to learn of any undesirable effects which may not be obvious from your brief visit.

Additionally, talk with people who have studied and worked with a particular solution. For example, a mechanical or acoustical engineer will likely have studied a variety of noise barriers and can tell you which are the most effective. To find the engineer you might look in the yellow pages for consultants or search university directories to see if you can locate a faculty member with the required expertise. Local or state government agencies may also have an acoustics expert on staff.

When you contact an expert keep in mind that their bias may affect their opinion regarding a solution. For example, an acoustic engineer spending most of their time servicing the development industry may have an opinion different from that of a university researcher. In some respects the industry consultant's opinion may be based on far more practical experience, whereas the professor may be more objective given that they do not rely on the development industry for their income.

Once you have found an effective solution, implementation must be guaranteed. The guarantee must be something more than the promise of the applicant or a government official. The guarantee could take the form of an enforceable permit condition or a binding agreement between the applicant and you (assuming you have the resources to enforce the agreement). Like solutions, the effectiveness of guarantees can be researched. Following are some of the many possible research questions to consider.

- Does the applicant or government agency have a history of honoring or ignoring commitments?
- Does your attorney feel a guarantee is solid?
- Have similar guarantees worked with similar projects?
- Was the solution actually implemented and is it still working properly?
- What is your recourse if the guarantee fails and do you have the ability (funds) to pursue the recourse?

Verify Site Conditions

An accurate understanding of site conditions is crucial to determining what impacts may occur, then selecting the best solution. You should compare the applicant's description of conditions on and off the site with what actually exists. Obviously this requires access to the site.

Do not enter onto a proposed development site unless you have permission. Trespassing could bias key decision makers against you. If the owner refuses permission, then lobby local elected officials to arrange a public tour of the site. It would be unreasonable for either the official or owner to refuse such a tour. If you still cannot get onto the site then seek access to adjoining lands. If you can prove that a sensitive feature exists on adjacent properties then this may show the feature extends onto the site.

Following is a list of the items to check. Further detail on these items is provided in specific sections of this book.

- verify site acreage and boundary lengths by comparison with other maps;
- ask adjoining property owners if they agree with the applicant's depiction of common boundaries;
- are natural features accurately depicted, such as wetlands, streams, forests, rock outcrops, topography, and steep slopes;
- if soils are shown on project plans do they correspond to those shown in the local soil survey, which can be viewed in libraries or obtained through the local office of the [Natural Resources Conservation Service](#); and
- are existing homes, other buildings, wells, septic systems, roads, powerlines, etc. accurately shown for both on-site and off-site.

The remainder of this chapter addresses specific categories of development impact.

AIR QUALITY

According to the U.S. Environmental Protection Agency (EPA) nearly half of all Americans live in areas with air that is unhealthful.² Vehicle emissions are the greatest single source of development-induced air pollution. A recent study showed that air pollution accounted for 6%

² For further detail visit <http://www.epa.gov/air/aqtrnd01/>

of all European deaths and half of these were attributable to pollution from vehicles.³ But some development projects, such as power plants and asphalt plants, can release significant air pollution from sources that are not related to transportation.

Trip Generation Rates, published by the Institute for Transportation Engineers⁴, shows that each new home adds an average of ten vehicle trips a day to local roads. As traffic volume increases regional air quality may decline. For example, traffic-generated air pollution has raised the cancer risk in the Los Angeles area to 1:650.⁵ Generally a cancer risk greater than one in a million is cause for concern.

Several studies have shown that those living near high-volume highways are particularly at risk. Denver researchers studied households located near a highway carrying 20,000 vehicles per day (vpd) and high-current carrying capacity power lines. The researchers found that children living in homes near high-volume highways and high-current powerlines were eight times more likely to develop leukemia when compared with the general population.⁶ Researchers in the Netherlands found reduced lung function and increased respiratory symptoms among children living within 900 feet of high-volume highways.⁷ It appears that the emissions from trucks and other diesel-powered vehicles are particularly damaging to health, especially for respiratory conditions.⁸

Determine if your area meets federal air quality standards.⁹ Two federal laws impose restrictions upon highway improvements and growth in nonattainment areas - the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Clean Air Act Amendments (CAAA) of 1990. ISTEA restricts the use of federal funds for new single-occupancy vehicle highway lanes unless the improvements are needed to relieve traffic congestion. The CAAA also require local

³ Kunzli, N., R. Kaiser, S. Medina, M. Studnicka, O. Chanel, P. Filliger, M. Herry, F. Horak Jr., V. Puybonnieux-Textler, P. Qwuenel, J. Schneider, R. Seethaler, J-C Vergnaud and H. Sommer, 2000. Public-health impact of outdoor and traffic-related air pollution: a European assessment. *The Lancet* 356:795-801.

⁴ For further information visit <http://www.ite.org/>

⁵ See the Multiple Air Toxics Exposure Study (MATES-II) conducted for the South Coast Air Basin (Basin), which is available for download at: <http://www.aqmd.gov/matesiidf/matestoc.htm>

⁶ Pearson et al. (2000). "Distance-weighted traffic density in proximity to a home is a risk factor for leukemia and other childhood cancers." *Journal of Air and Waste Management Association* 50:175-180.

⁷ Brunekreef B; Janssen NA; de Hartog J; Harssema H; Knape M; van Vliet P. (1997). "Air pollution from truck traffic and lung function in children living near motorways." *Epidemiology*. 8(3):298-303.

⁸ Lin S., Munsie J.P., Hwang S.-A., Fitzgerald E., and Cayo M.R. (2002). Childhood Asthma Hospitalization and Residential Exposure to State Route Traffic. *Environmental Research*, Section A, Vol. 88, pp. 73-81.

⁹ Information on nonattainment areas may be viewed at: <http://www.epa.gov/oar/oaqps/greenbk/> To learn of pollution sources in your area visit the Environmental Defense Fund Scorecard site: <http://www.scorecard.org/>

governments in nonattainment areas to consider the impact of zoning and other land use decisions upon air quality.

Before a new highway is built or an existing road is expanded, a thorough analysis should be made of potential air quality impacts. If the project will significantly increase health risk then all reasonable alternatives should be considered. Examples of these alternatives include improving mass transit, encouraging car-pooling, and reducing highway speed limit from 65- to 55-mph (which cuts air pollution by 15%). Unfortunately, it is rare that I've read an environmental impact statement (EIS) for a highway project which fully addresses health effects and alternatives to building more roads. Fortunately, the environmental community has won some recent court cases which may reverse this pattern.

Poor air quality also reduces visibility. In the east visibility is a third (15-30 miles) of what it was 400 years ago. In the west one can see half as far today (60-90 miles) as in pre-colonial times.¹⁰ Scientists say its mostly sulfur which obscures visibility. The sulfur is emitted from coal-burning power plants, smelters, refineries and other sources. The particulates from our cars also contribute to haze.

Environmentalists have succeeded in constraining or defeating proposed power plants and other major emission sources based upon the effect on visibility, particularly when the view of or from national parks, monuments, and other vistas would be harmed. However, in 2002 efforts to reduce sulfur emissions and other forms of air pollution suffered a major setback when the Bush administration announced that it was allowing power plants and related sources to dump more pollution into the air by weakening a part of the Clean Air Act called *New Source Review*.¹¹

The result of this weakening will be increases in the air pollution that has been linked to asthma, heart disease and premature death, as well as reduced visibility. Nevertheless, New Source Review still provides environmental advocates with one of the best opportunities to ensure that proposed emission sources take all reasonable steps to preserve air quality.

Air pollution can become water pollution. In fact a substantial portion of the pollution washed by stormwater from impervious surfaces (*see Aquatic Resources section*) and settling upon the surface of lakes and tidal waters originates as material released into the atmosphere. One study found a correlation between traffic volume in the vicinity of lakes and the concentration in lake sediments of a group of suspected carcinogens known as polycyclic aromatic hydrocarbons (PAH).¹²

¹⁰ For further detail on the effect of haze visit <http://www.hazecam.net/default.htm>

¹¹ For further information on New Source Review visit <http://www.epa.gov/ttn/nsr/>

¹² Van Metre, P., B. Mahler and E. Furlong. 2000. Urban sprawl leaves its PAH signature. *Environmental Science Technology*. 34(19): 4064-4070.

Further detail on vehicle emissions and corrective measures will be found in the section of this chapter on traffic.

AQUATIC RESOURCES

Aquatic resources include wetlands, streams, lakes, rivers, springs, seeps, ponds, and groundwater. Existing and newly created development has damaged the quality of nearly 35,000 miles of streams and rivers in the United States, which makes it the fourth leading cause of impaired waterways.¹³ For lakes and wetlands development is the third leading cause of degradation and comes in as the second most significant cause of impaired coastal waters.¹⁴

How Development Impacts Aquatic Resources

Beginning with a study I published in 1979¹⁵, a number of researchers throughout the United States and Canada have found a consistent relationship between watershed development and the health of aquatic systems.¹⁶ Most researchers use *percent impervious area* to quantify the degree of watershed development. An impervious surface is any material which prevents precipitation from soaking into the soil and includes rooftops, parking lots, streets, sidewalks, and so forth. A *watershed* is defined as all the land area draining to a specific point. The perimeter of a watershed is formed by hilltops, ridgelines and other highpoints. When rain falls upon the ridgeline it flows (or is shed) to a specific water body or waterway.

Wetlands begin exhibiting signs of adverse effect when watershed imperviousness exceeds 2% to 4% or about one house for every eight- to ten-acres of watershed area.¹⁷ Streams supporting trout, salmon, and other coldwater species do best when watershed imperviousness is less than 4%.¹⁸ Warmwater streams and rivers begin exhibiting signs of adverse effect when watershed

¹³ See *2000 National Water Quality Inventory* available for download at: <http://www.epa.gov/305b/2000report/>

¹⁴ Ibid.

¹⁵ Klein, R.D., 1979. Urbanization and stream quality impairment. *Water Resources Bulletin* 15(4):948-963.

¹⁶ These studies are summarized in several of the reports which can be downloaded from the waterways page of the CEDS website: <http://www.ceds.org/publications.html>

¹⁷ Hicks, A.L. and J.S. Larson. 1997. Aquatic invertebrates as an index for estimating the impacts of urbanization on freshwater wetlands. The Environmental Institute, University of Amherst, MA. Report submitted to U.S. Environmental Protection Agency, Corvallis, OR. Reinelt, L.E. and R.R. Horner, 1991. Urban storm water impacts on the hydrology and water quality of palustrine wetlands in the Puget Sound region. In: *Puget Sound Research '91 Proceedings*, Puget Sound Water Quality Authority, Vol. 1, pp. 33-42.

¹⁸ Boward, D., P. Kayzak, S. Stanko, M. Hurd, and A. Prochaska, 1999. *From the mountains to the Sea: The state of Maryland's freshwater streams*. Maryland Department of Natural Resources, Tawes State Office Building, Annapolis, MD 21401. Steedman, R.J. 1988. Modification and assessment of an index of biotic integrity to quantify stream quality in southern Ontario. *Canadian Journal of Fisheries & Aquatic Sciences* 45:492-501. May, C. R. Horner, J. Karr, B. Mar, and E. Welch. 1997. Effects of Urbanization on Small Streams In the Puget Sound Lowland Ecoregion. *Watershed Protection Techniques*, 2(4): 483-494.

imperviousness exceeds 8% (about one house/two acres).¹⁹ Lakes begin showing signs of excessive nutrient input when watershed imperviousness is in the range of 10%.²⁰ A relationship also exists between the health of tidal waters and watershed development, though the threshold of impact is not clearly defined. A number of studies have also found a relationship between the density of septic systems in a watershed and aquatic resource quality (*see the section of this chapter on Septic Systems*).

The causes of development-induced aquatic resource degradation can be summarized as follows:

- physical destruction of aquatic habitat through actions such as filling of wetlands, altering stream channel, dredging waterways, etc.;
- release of eroded soil (sediment pollution) during the construction phase;
- increased runoff volume which accelerates channel erosion and exacerbates flooding;
- a decrease in the amount of precipitation soaking into the soil and recharging groundwater systems, which reduces the dry-weather inflow to wetlands, streams, lakes, wells and other aquatic resources;
- elevating water temperature through actions such as the removal of streamside shading vegetation, heated runoff from sun-baked impervious surfaces, and the heating of runoff while it drains out of stormwater ponds during the summer; and
- increasing the quantity of nutrients, toxics and other pollutants released into the aquatic environment.

In addition to these ecosystem impacts, watershed development can damage structures located along streams and other waterways. Converting a forest to homes on quarter-acre lots could increase the frequency and severity of flooding by a hundred fold.²¹ In other words, floodwater volumes seen only once every century might recur annually following watershed development. Any homes or other structures located along the affected waterways would be subject to more frequent inundation and damage.

The increased flooding associated with watershed development also accelerates the pace of stream channel erosion. In fact, converting a forest watershed to suburban-urban uses can cause

¹⁹ Shaver, E., J. Maxted, G. Curtis, and D. Carter. 1994. Watershed protection using an integrated approach. Delaware Department of Natural Resources and Environmental Control. Booth D.B. and C.R. Jackson. 1994. Urbanization of aquatic systems - degradation thresholds and the limits of mitigation. *Proceedings Annual Summer Symposium of the American Water Resources Association - Effects of Human-Induced Changes on Hydrologic Systems*, pp 425-434.

²⁰ See the Center for Watershed Protection *Watershed Vulnerability Analysis* which is available for download from http://www.cwp.org/Vulnerability_Analysis.pdf

²¹ The hundred-fold increase in flooding due to conversion of a forest to quart-acre lots is based upon the procedures set forth in SCS, 1986. Urban hydrology for small watersheds. Technical Release 55, U.S. Soil Conservation Service, Post Office Box 2890, Washington, D.C. 20013.

the channel draining the watershed to widen by two- to eight-fold through erosion.²² Accelerated channel erosion results in habitat destruction, the release of sediment into downstream waters, and may jeopardize streamside structures.

Preventing Aquatic Resource Impacts

There are a number of *Best Management Practices* (BMPs) for reducing the impact of impervious surfaces upon aquatic systems. Examples of BMPs include:

- limiting watershed imperviousness;
- buffers to prevent direct physical damage to streams and wetlands; and
- ponds or filters to remove pollutants from runoff.

Not all BMPs are equally effective in preventing aquatic resource degradation.²³ Limiting watershed imperviousness is the most effective BMP. Ponds, filters and other structural practices can fail.

Watershed imperviousness can be limited through a variety of measures.²⁴ Examples would include reducing street width or lowering the number and size of parking spaces required for new development. Local governments have also set caps on how much imperviousness may be created within sensitive watersheds.²⁵ If a proposed development project would cause imperviousness to exceed the cap then it cannot be approved. There is also research showing that it is not enough just to cap impervious area; a minimum percentage of a watershed must also be preserved as forest.²⁶

But a limit on impervious area is in conflict with the Smart Growth principle of concentrating development rather than allowing it to sprawl over the countryside. Impervious area caps are

²² Klein, R.D., 1979. Urbanization and stream quality impairment. *Water Resources Bulletin* 15(4):948-963.

²³ Further detail on BMPs can be found in the CEDS factsheets *Buffers for Stream, Lake & Wetland Protection* and *How Much Development is Too Much for Streams, Rivers, Lakes, Tidal Waters & Wetlands*. These factsheets are available for download from our website (<http://www.ceds.org/>) along with various reports illustrating how to assess the aquatic resource impact of a proposed development project.

²⁴ See *Better Site Design: A Handbook for Changing Development Rules in Your Community* for a long list of measures for reducing impervious area. The handbook can be ordered from the Center for Watershed Protection <http://www.cwp.org/index.html>

²⁵ For examples of impervious area caps see the Montgomery County, MD Special Protection Areas website: <http://www.montgomerycountymd.gov/siteHead.asp?page=/mc/services/dep/index.html> and the Chesapeake Bay Critical Areas website: <http://www.dnr.state.md.us/criticalarea/guidancepubs/impervioussurfaces.html>

²⁶ For an example of the research showing the importance of forest cover in maintaining urban stream quality see: Booth, D.B., 2000. Forest Cover, Impervious-Surface Area, and the Mitigation of Urbanization Impacts in King County, Washington. Center for Urban Water Resources Management, Department of Civil and Environmental Engineering, University of Washington, Seattle, WA 98195-2700. Available for download at: <http://depts.washington.edu/cuwr/research/forest.pdf>

usually applied only to resources which are highly valued and very sensitive. Examples would include waters:

- supporting rare, threatened or endangered species;
- supporting fish or shellfish considered important for commercial or recreational reasons;
- where fragile habitats such as bogs are present;
- serving as sources for drinking water supply;
- uniquely high quality waters,
- where existing homes or other structures are subject to flooding and could be placed in jeopardy by increased watershed development;
- where restoration programs are anticipated or underway; and
- where a further increase in stress could cause the resource to no longer support beneficial uses such as rivers, lakes or tidal waters considered moderately or highly enriched with nutrients (*mesotrophic or eutrophic*).

Information on the sensitivity of aquatic resources in your area can be obtained from the U.S. Environmental Protection Agency's [Surf Your Watershed website](#). Additional information can be obtained from local and state government agencies, such as those overseeing natural resources, fisheries, wildlife, natural heritage (rare, threatened and endangered species), environmental protection, floodplain management, planning and zoning, and water quality management.

If little information is available for the aquatic resources of concern to you, then consider gathering your own data. On the [EPA Volunteer Monitoring website](#) you will find publications explaining how to assess the health of streams, lakes, wetlands and estuaries. You will also find a directory of local and state programs which may provide training and equipment for volunteer monitoring.

To the extent possible, all development projects should utilize highly-effective BMPs, which would consist of:

- preventing direct physical damage to aquatic habitat by maintaining a buffer of at least 75 to 100 feet along the perimeter of all wetlands, seeps, springs, streams, rivers, lakes and ponds;
- buffers should be expanded to include any steep slopes or highly-erodible soils adjoining the aquatic resource;²⁷
- prior to clearing a site perimeter sediment control measures, such as silt-fence, must be installed along the downslope edge;
- for large sites, clearance should be phased to limit the amount of soil exposed to erosive forces;

²⁷ A steep slope can be anywhere from 15% to 25% (rising 15-25 vertically for each 100 feet of horizontal distance) and highly-erodible soils are usually defined by the Soil Conservation District-Natural Resources Conservation Service.

- all disturbed soils should be brought up to rough grade within two weeks then treated with a temporary stabilization measure such as straw mulching and seeding with grass;
- all disturbed soil should also drain to sediment trapping measures such as settling ponds and silt fence, but these measures only remove half of the eroded soil suspended in runoff while stabilization measures reduce erosion by 90% or more;
- an effective enforcement program must be in place to ensure that erosion and sediment control measures are installed and maintained properly;²⁸
- once construction is completed a minimum of 90% of all runoff from impervious surfaces should flow to a filtering device, such as bioretention, which preferably allows filtered runoff to recharge the water table through infiltration ;²⁹
- ponds can cause runoff to heat to 85°F and should not be permitted in watersheds supporting trout and other temperature-sensitive species;³⁰ and
- a program must be in place to ensure that each stormwater management measure will be inspected at least once a year with prompt attention paid to any maintenance needs.

Fully evaluating the aquatic resource impact of a development project requires more detail than provided above. On the [CEDS website](#) you will find examples of how to conduct the thorough analysis needed to determine if a project will adversely effect sensitive wetlands, streams, and other resources.

Specific Causes of Aquatic Resource Impact

Following are suggestions for resolving concerns about specific aquatic resource impacts or development types.

Fish Migration Barriers: Will the project involve the construction of a road across any stream, creek, river, or other waterway? If so then closely examine project plans for any indication that the crossing will create a barrier to the movement of fish or other aquatic organisms. For example, if the applicant has proposed the use of a pipe or box culvert, then a barrier may be formed. Both culvert types may replace the natural stream bed with one composed of steel or concrete. But this alone does not necessarily result in a migration barrier. If the steel or concrete will be exposed at the stream bed elevation, then future scour and erosion may result in a water drop which then bars upstream migration. Generally, bridges and bottomless arches do

²⁸ Some of the components of an effective enforcement program are: each full-time inspector is responsible for no more than 100-200 active construction sites and serves primarily as a technical advisor but is backed up by a program with history of swiftly and aggressively prosecuting flagrant violators.

²⁹ For an illustration of stormwater filters view the *Maryland Stormwater Design Manual* at: http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp

³⁰ Bahr, R.P., 1996. A temperature study of discharges from three extended detention/wetland stormwater management basins in Maryland. Chesapeake Biological Laboratory, University of Maryland, Solomons, MD 20688. Galli, J., 1990. Thermal impacts associated with urbanization and stormwater management best practices. Department of Environmental Programs, Metropolitan Washington Council of Governments, 777 North Capitol Street, N.E., Washington, D.C. 20002. (202) 962-3200

not result in migration barriers. Dams and similar structures obviously have a strong likelihood of blocking fish migrations. Talk with State fishery biologists whenever you believe a project may create a barrier to fish migrations.

Golf Courses: Construction of a golf course may disturb a hundred acres of land. Few uses cause as much land disturbance. Thus the potential exists for considerable soil erosion and sediment pollution during golf course construction. Once the course is completed aquatic resources may be impacted through leaching of fertilizers and pesticides. A golf course can require a quarter-million gallons a day of irrigation water during the 20-month grow-in period. If this water is drawn from wells or waterways then substantial resource impact may occur.

Over the past decade institutions such as the U.S. Golf Association have had considerable success in reducing the adverse effects of golf courses. Today there are even “organic” golf courses.

If you are concerned about a proposed golf course, then compare the project with the recommendations contained in the CEDS publications *Golf Courses & the Aquatic Environment* and *Protecting the Aquatic Environment from the Effects of Golf Courses*, both of which can be downloaded from our [website](#).

Highways: New roads and highways can cause many of the aquatic resource impacts described above for impervious areas. In addition a highway can introduce other threats, such as hazardous material spills resulting from accidents. Of particular concern are common substances such as the methyl tertiary butyl ether (MTBE) added to gasoline. MTBE is highly mobile and can contaminate groundwater when present at an extremely low concentration. One gallon of MTBE treated gasoline can contaminate four million gallons of drinking water.³¹ On the [CEDS website](#) you will find examples of how to assess and resolve the impact of a proposed highway, including hazardous material spills.

Landfills: A landfill is used to store waste materials such as household garbage which is not being recycled, flyash from coal-fired power plants, industrial waste, and so forth. A landfill can impact the environment through the loss of groundwater recharge caused by impermeable liners or caps, construction phase sediment pollution, the release of the highly-contaminated leachate which forms as water passes through decomposing waste, from the release of volatile contaminants to the atmosphere, and from the trucks traveling to and from the facility. For further information see the publications on the [CEDS website](#) pertaining to landfills and other solid waste facilities.

Marinas: Boating facilities such as marinas and launching ramps can impact an aquatic resource through boat wake induced shore erosion, resuspension of bottom sediments by boat propellers, the release of highly-toxic anti-fouling coatings from boat hulls and treated timbers, discharge of

³¹ Kiner, N.E. 2001. Fate, Transport and Remediation of MTBE. Civil/Environmental Engineering, University of New Hampshire, Durham, NH. Available online at: <http://www.asce.org/pdf/kinnertestimony.pdf>

sewage from vessels, toxic runoff from boat repair and maintenance areas, and all the other impacts associated with impervious surfaces. These impacts tend to be particularly severe when a small tidal creek is involved. Recommendations for assessing the impacts of a marina, boat launching ramp, pier, slip, or any other boating facility are provided in the [CEDS website](#) publication *The Effects of Marinas & Boating Activity Upon Tidal Waterways*.

Mining: Hard rock mining, coal mines, sand and gravel quarrying, and other forms of mineral extraction can cause a host of impacts. All can damage nearby waterways through erosion and sediment pollution, changes in ground and surface water flows, physical destruction of aquatic habitat, and increased truck traffic. Additional impacts may come from the release of toxic materials such as the acidity and metals from some forms of coal mining. Mineral processing with the use of water can impact aquatic resources due to turbidity or stream flow depletion. One of the best sources of information for mining impacts is the [Mineral Policy Center website](#).

Public Water Supply: If a project will rely upon water obtained from a public or community supply, then determine if the source can accommodate additional users. For example, if the water is drawn from a lake or river then determine how much more can be consumed without adversely affecting aquatic life or recreational uses, such as boating.³² Your state natural resources agency may have information on minimum flows for fishery and boating needs.

Contact the agency which administers the public water supply to find out how much capacity remains. The local fire marshal office may also have information on the adequacy of the supply for fire fighting needs. Contact the state environmental protection or public health agency to learn the results of recent inspections of the supply.³³ Ask if monitoring results show that the supply meets the minimum standards for protection of public health. If either the quantity or quality of the supply is questionable then perhaps additional users should not be added until the deficiencies are resolved.

Septic Systems: In rural areas, on-site sewage disposal systems are used to manage the relatively small volume of wastewater generated in homes and businesses. Typically, sewage flows first to a septic tank where grease and solids are removed. The partially treated wastewater is then released into the soil where additional pollution removal may occur.

In most areas, approval from the local health department is required before a septic system may be constructed. To receive approval the applicant must demonstrate that soils meet minimum criteria such as water percolation rate and depth to water table or bedrock. An indication of soil

³² The Instream Flow Incremental Methodology provides an approach for determining how much water must remain in a stream, river or other resource to support various uses. Detail on IFIM can be found at: <http://www.mesc.usgs.gov/products/software/ifim/ifim.asp>

³³ Compliance information for community water systems can also be viewed at: <http://www.epa.gov/enviro/html/water.html#SDWIS>

suitability for septic systems can be gained by referring to the appropriate soil survey.³⁴ Frequently, minimum separation distances must be met between wells, streams, property lines and so forth. Unfortunately, compliance with these criteria do not always resolve water quality concerns. Following is a description of situations where septic systems may create problems. Development projects utilizing septic systems should be closely scrutinized for compliance with local-state regulatory requirements as well as the conditions described below.

Septic systems can adversely affect water quality through the release of disease-causing organisms and nitrogen. In fact septic systems are the second leading cause of groundwater contamination in the United States.³⁵

A number of researchers have found a positive relationship between septic system density and groundwater contamination.³⁶ In general, well water will be protected from nitrate contamination if the density of homes served by septic systems averages no less than one per acre. In North Carolina researchers found a relationship between bacteria levels and the density of septic systems in areas draining to tidal waters from which oysters and other shellfish are harvested. When septic system density was more intense than one per six acres of watershed area, bacteria levels exceeded that deemed safe for shellfish harvesting.³⁷

If a well screened at shallow depth is located within 200 feet downgradient of a septic system then contamination becomes more likely.³⁸ By shallow depth I mean a well where the casing ends at a depth of 60 feet or less (from the ground surface) and is not separated from the surface by a layer of clay or some other impermeable barrier.³⁹ Deeper wells may also be at risk if placed in coarse soils or where bedrock lies close to the point where septic system effluent is released into the ground. In both situations contaminant removal may be minimal.

Septic systems are relatively ineffective at removing nitrogen. In fact, an average of 90% of the nitrogen released into a septic tank is discharged to the soils beneath the drain field. A home

³⁴ Check with the local Soil Conservation District or Natural Resources Conservation Service office for soil survey information. To locate your local SCD or NRCS office visit: <http://www.nrcs.usda.gov/contact/> A copy of the soil survey may also be found in a local public library.

³⁵ See *2000 National Water Quality Inventory* available for download at: <http://www.epa.gov/305b/2000report/>

³⁶ See *On-site sewage disposal - influence of system densities on water quality* for a review of these studies. This review is available for download at: <http://pasture.ecn.purdue.edu/~epad0s/septics/septic/density.htm>

³⁷ Duda, A.M. and K.D. Cromartie. 1982. *Coastal Pollution from Septic Tank Drainfields*. Journal of the Environmental Engineering Division ASCE. 108:1265-1279.

³⁸ Ibid and Ford, K.L., J.H. Schott, and T.J. Keefe, 1980. Mountain residential development minimum well protective distances well water quality. Journal of Environmental Health 43(3):130-133.

³⁹ Tuthill, A., D.B. Meikle and M.C.R. Alavanja, 1998. Coliform bacteria and nitrate contamination of wells in major soils of Frederick, Maryland.. Environmental Health, April 1998, p. 16-20.

served by a conventional septic system releases 27 pounds of nitrogen per year to the aquatic environment.⁴⁰ That's more nitrogen than released from an acre of cropfield and nine times the forest release rate.⁴¹ Increasing the number of homes served by septic systems can cause a significant impact to lakes, estuaries or other waters considered threatened or impaired by nitrogen. Septic systems can be upgraded with filters and other measures which will reduce nitrogen loads by 50%.⁴²

Wastewater Treatment Plants: If a project will connect to an existing sewerline, then take a look at the treatment plant which receives the wastewater carried by the sewer. If the plant is near or over capacity, then further connections to the sewer should not be allowed. Contact your state environmental protection agency to learn how frequently the plant violates pollution discharge limits.⁴³ If the plant has been cited for *significant noncompliance* then find out why. Further connections should be postponed until the cause(s) of noncompliance is corrected.

Using the volunteer monitoring techniques described above, examine the waterway which receives the effluent from the plant. Look for indications that the discharge is harming water quality.

If the applicant is proposing to construct a new wastewater treatment plant, then request an opportunity to review the application and other materials submitted to your state environmental protection agency. Determine if the proposed pollution discharge limits will adequately protect the receiving waters. Be certain to investigate any wetland permits the applicant must obtain to construct the plant or sewage collection system. If the applicant owns/operates existing treatment facilities, then find out how well these plants are run. Examine the effects of several existing plants that use the same treatment processes as the proposed plant.

Contact the agency responsible for maintaining the sewerline which will carry wastewater from the project site to the treatment plant. Find out how often sewage overflows occur, how close the line is to capacity, and the results of the latest inspection of the sewer. If the line is near or over capacity then further connections should be postponed until capacity is increased. If overflows have occurred during the last five years, determine why. If the causative factors have not been resolved, then, again, further connections should be postponed until repairs are made.

⁴⁰ Maizel, M.S., G. Muehlbach, P. Baynham, J. Zoerkler, D. Monds, T. Livari, P. Welle, J. Robbin, and J. Wiles, 1997. The Potential for Nutrient Loadings from Septic Systems to Ground and Surface Water Resources and the Chesapeake Bay, published by the USEPA Chesapeake Bay Program, 410 Severn Avenue, Annapolis, MD 21403, April 1997.

⁴¹ *Chesapeake Bay Program Watershed Model Application To Calculate Bay Nutrient Loadings*, U.S. Environmental Protection Agency, 410 Severn Avenue, Annapolis, MD 21403.

⁴² Ibid.

⁴³ The US EPA maintains a website through which you can view compliance information for existing pollution discharges: <http://www.epa.gov/enviro/html/water.html#PCS>

If you have difficulty getting information about sewer condition or you would like to verify what you have learned, then walk along a mile or so of the line downstream of the proposed development site. Look for any point where sewage, appearing as a gray to black liquid, is seeping from the sewer or adjoining stream banks. At each manhole look for toilet paper, tampons, condoms, and other material indicating a recent sewage overflow. Talk to those who live near sewage pumping stations to learn how often overflows occur.

Wells: If the project will rely upon wells, then assess the ability of groundwater aquifers to accommodate additional water use without impacting existing users, depleting the flow to nearby wetlands or streams, or causing saltwater intrusion. Request an opportunity to review the results of any aquifer tests conducted on the site along with well logs and pumping tests for individual wells. Contact the state and [U.S. Geological Survey](#) for the history of well yield in the area. If historically yields have been poor, then adding additional groundwater users may aggravate the problem.

BICYCLING

Imagine being able to walk out your front door, mount a bicycle and commute to work, run an errand, or just get some exercise. Impossible? Of course not. In fact, 40% of all trips made by car are two miles or less. Slightly more than half of us live within five miles of work. And just ten miles separates three-fourths of us from home and our place of employment. Obviously, all these destinations are bikable.

Unfortunately our nearly single-minded approach to roadway design makes bicycle commuting difficult - if not downright dangerous - for far too many Americans. But there are many examples of communities which have made a conscious choice to create a more bicycle friendly environment. For example, the residents of Davis, California have reshaped their community in ways which allow 20% to 25% of all vehicle trips to be made by bicycle. In Groningen, Holland the bicycle commute rate is 50%. But in the U.S., only 1.7% of us commute by bicycle. In this section I will review the benefits of bicycling, the conditions needed to foster this mode of transportation, how to create a plan for improving bicycling in your community, and how to examine proposed development projects for opportunities to preserve and enhance cycling facilities.

Benefits of Bicycling

When compared to cars and SUV's, getting around by bicycle dramatically reduces air and water pollution, noise, and pedestrian injury while improving the physical and mental health of the cyclist.

No other transportation mode converts energy to locomotion as efficiently as a bicycle. If one compares the calories burned while cycling to gasoline-powered vehicles, then the cyclist gets 1,000 miles per gallon.⁴⁴ This means that bicycling generates far less pollution. For example, if

⁴⁴ The Hard Way, Outside magazine, January 2000. Available for viewing at: <http://web.outsideonline.com/magazine/200001/200001hardway3.html>

you commute five miles daily by car then you emit more than a hundred pounds of pollution per year into the atmosphere.⁴⁵ With a bicycle, the emission rate is virtually zero.

According to California-based Culture Change, for each meter of width, a bikeway can carry twice as many people as a road designed for passenger cars.⁴⁶ This means half as much loss of forest, wetlands, farms and other resources for accommodating transportation needs. It also means half as much impervious area. In the section on aquatic resource impacts, I explained how increasing impervious area translates into a direct and proportional impact to the quality of streams, lakes and other waterways. For parking lots the reduction in impervious area is far greater. Twelve bicycles can fit into the space needed to park a single car.

As will be seen in the traffic section of this chapter, cars and other vehicles generate substantial noise which can lower property value and harm public health. A bicycle, of course, is silent. The traffic section of this chapter also shows how unsafe our roadways have become, particularly as traffic volume increases on residential streets. Bicycles poses far less of a threat to pedestrians and other vehicles.

The health benefits of bicycling are, of course, substantial. Commuting by bicycling burns nearly 500 calories per hour. Employers who encourage bicycle commuting report fewer sick days, lower health care claims, and productivity increases. Regular bicycling can cut the likelihood of heart disease in half.

The Needs of Bicyclists

Safety is the paramount issue when considering the needs of bicyclists. In 1999, 750 bicyclists were killed and another 51,000 were injured by cars and trucks in the United States. As traffic volume and speed increases bicycling becomes increasingly difficult along a roadway, especially those lacking a wide, dedicated bike lane. In *Bicycle Facility Selection: A Comparison of Approaches* a procedure is presented for assessing the need for bicycle facilities based upon volume and speed.⁴⁷ This procedure indicates that conditions for bicyclists are generally good when:

- road lane width is at least nine feet;
- most cars and other vehicles are traveling at a speed of less than 30 mph, and
- traffic volume does not exceed 1,000 vehicles per day (vpd), which is equivalent to the traffic generated by about a hundred homes..

⁴⁵ See University of California at Santa Barbara Transportation Alternatives Program website at: <http://www.tps.ucsb.edu/bicycle.html>

⁴⁶ *Fact Sheet #2: A Positive Alternative - Environmental Restoration and Economic Revival*. Culture Change, P.O. Box 4347, Arcata, CA 95518 USA. Available for download at: <http://www.culturechange.org/factsheet2.html>

⁴⁷ *Bicycle Facility Selection: A Comparison of Approaches* is available for download from the University of North Carolina Highway Safety Research Center website: <http://www.bicyclinginfo.org/pdf/bikeguide.pdf>

When speed and volume rises above 30 mph and 2,000-3,000 vpd than a bike lane is needed to keep cycling a safe, enjoyable experience along a road. Above 35 mph or 3,000 vpd than a bike lane separated from traffic is needed.

Planning for Bicycling

In Groningen, Holland, where 50% of the population commutes to work on bicycles, there are 10,000 miles of bike paths. In New York state, which is three times the size of Holland, there are just 250 miles of bike paths.⁴⁸ Davis, California has come to be known as the bicycle capital of the U.S. Davis has earned this reputation because of the excellent bicycle planning and implementation advocated by its citizens. Over time, any community can do the same. Each development project offers a vital opportunity to create another segment of bicycle infrastructure. But to function efficiently infrastructure development must be guided by an overall plan.

The primary source of bicycle infrastructure funding is the federal Transportation Equity Act for the 21st Century (TEA-21), which replaced the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. TEA-21 provided \$3- to \$4-billion for bicycling infrastructure planning and improvements for the period of 1998 to 2004. TEA-21 is now up for reauthorization as TEA-3. One of the best sources of information on bicycle facility planning is the [Bicycle Friendly Community](#)⁴⁹ program sponsored the League of American Bicyclists. Other valuable information sources include: [Community Assessment Tools](#) developed by the National Center for Bicycling & Walking⁵⁰ and the [Rails-to-Trails Conservancy](#)⁵¹

Specific Development Projects & Bicycling Opportunities

Does a proposed development site adjoin an abandoned railway? Does the site contain an old road favored by mountain cyclists? Will the project take place along a road frequented by cyclists? If the answer is yes to any of these questions then the project may offer an opportunity to preserve and enhance bicycling opportunities. And, of course, there are a number of other possible scenarios in which development might improve a network of bike paths.

⁴⁸ The Hard Way, Outside magazine, January 2000. Available for viewing at: <http://web.outsideonline.com/magazine/200001/200001hardway3.html>

⁴⁹ For more information on the Bicycle Friendly Community Program, contact the League of American Bicyclists at: 202-822-1333; info@bicyclefriendlycommunity.org; League of American Bicyclists, 1612 K St. NW, Suite 800, Washington, DC 20006; <http://www.bicyclefriendlycommunity.org/index.htm>

⁵⁰ The National Center for Bicycling & Walking can be contacted at: 1506 21st Street NW, Suite 200 Washington, DC 20036, 202.463.6622, info@bikewalk.org, <http://www.bikewalk.org>

⁵¹ Rails-to-Trails Conservancy, 1100 17th Street, 10th Floor, NW, Washington, D.C. 20036, (202) 331-9696, greenways@transact.org, <http://www.trailsandgreenways.org>

Each new development project can provide a valuable opportunity to improve bike trails and other low-impact transportation modes. An excellent guide on this topic is the Florida *Bicycle Facilities Planning and Design Handbook*.⁵² The Florida handbook can help you evaluate the soundness of proposed bike trails or to develop your own proposal for incorporating bicycling facilities into project plans.

The applicant should be encouraged to modify their plans to incorporate these opportunities. The encouragement could take the form of changes to local zoning and subdivision regulations requiring bike path improvements. A system could also be established through which the applicant receives benefits, such as increased or bonus density, in exchange for bike path improvements.

Local governments routinely scrutinize proposed development projects for traffic impacts. Rarely though are impacts to bicycling considered. The publication previously mentioned, *Bicycle Facility Selection: A Comparison of Approaches*, presents a procedure for assessing the suitability of a road for bicycling.⁵³ The procedures set forth in the publication can also be used to assess how the traffic generated by a proposed development project will impact bicycling along affected roads.

Traffic engineers routinely assess the impact of proposed development projects on congestion using a procedure known as Level Of Service or LOS. This procedure is explained in detail in the section of this book on traffic. LOS ranges from A to F, with A being free flowing traffic with virtually no delay while F is grid lock. Generally an LOS of C is considered acceptable for rural roads and D is okay for urban conditions.

In *Bicycle Facility Selection* a level of service procedure is also employed. To illustrate how this procedure might be applied to an existing road adjoining a proposed development site, let's say the road has two lanes, each 11-feet in width. These are the "travel" lanes or the lanes in which cars, trucks, and buses travel within. Let's say a bikelane five feet in width adjoins both sides of the road and is separated from the travel lanes by a painted stripe.

If most of the car and truck traffic travels at a speed of 30 mph and the volume is about 2,000 vpd (equivalent to the traffic generated by 200 homes), then the procedures presented in *Bicycle Facility Selection* says that the bicycling LOS is B. If a proposed development project adds another 700 houses and increases traffic volume from 2,000 vpd to 9,000 vpd then LOS drops to D. However, if the applicant agreed to add separated bike lanes to both sides of the road, along the entire length affected by the increased traffic volume, then LOS would remain at B.

⁵² The *Bicycle Facilities Planning and Design Handbook*, published by the Florida Department of Transportation and available for download at: http://www11.myflorida.com/Safety/ped_bike/handbooks_and_research/April%202000%20update.pdf

⁵³ *Bicycle Facility Selection: A Comparison of Approaches* is available for download from the University of North Carolina Highway Safety Research Center website: <http://www.bicyclinginfo.org/pdf/bikeguide.pdf>

Again, this sort of analysis is seldom practiced when a development project may impact roads with heavy bicycle use. This does not mean such an analysis should not become common place; just that you should expect resistance from conventionally-minded development-review officials.

CRIME

Occasionally I'll receive a call from citizens concerned about how a proposed development project will affect crime rates in their neighborhood. Usually the project involves affordable housing or apartments. In the early 1990s I engaged the services of criminologists and other scientists to determine if the projects were likely to increase crime rates. What these experts seemed to consistently find was no cause for concern, at least as far as affordable housing and apartments are concerned.

We also had clients concerned about a juvenile reformatory proposed for construction in their neighborhood. It was similar to an existing reformatory. We spoke with people living near the existing facility to find out how it had affected their quality of life. Both new and long time residents said there had not been much affect at all. Several residents said they were aware of occasional escapes but the juveniles were desperate to get out of the area so they never stayed around long enough to cause a problem. We also engaged an expert on juvenile correction facilities who said the same thing about the existing facility and found the design of the proposed reformatory to be quite good.

If you feel that a proposed development project may result in an increase in crime, then we urge you to pursue the actions presented below. Should you find cause to believe that a crime increase is likely, then continue with the actions to identify steps for minimizing the effect.

Try to identify several existing developments that closely resemble the proposed project. Ideally the projects should be identical in terms of population, income level, layout, proximity to neighborhoods resembling yours, and other factors.

Talk with the community affairs or crime prevention officer for each police district in which a similar existing project is located. Ask if the neighborhoods adjoining the similar project have a rate of crime higher than neighborhoods located elsewhere. You might also ask for a print-out of crimes committed within each existing project and neighboring community as well as crime statistics for the district in general.

If the rate of crime is substantially higher, then talk with the crime prevention officer about what steps can be taken to ensure that the proposed project does not cause a similar increase in your neighborhood.

If you need to continue the research then contact your state university, colleges, security agencies, and similar institutions to learn if a criminologist or urban planner is on the faculty who has expertise relevant to your concerns. If you find such a professional, then ask their opinion on the impact of the proposed development project upon crime rates in your community.

If the professional feels the project may cause an increase in crime, then ask what safeguards they would call for if the project were proposed for a site near their home.

When you feel you have identified effective methods for minimizing crime ask for a list of areas where each method has been successfully (and unsuccessfully) applied. Talk with community leaders in each area to gain their perspective on the effectiveness of the crime prevention method. If you find a solution you like then try to win the support of the local police or sheriff's department and planning agency for the measure. If necessary, go to the section of this book on *Strategy Options* for additional ways of winning implementation of the solution.

ENVIRONMENTAL JUSTICE

In a detailed study of hazardous waste risks in Michigan, a researcher found that neighborhoods with low-value houses and low-levels of collective action were exposed to significantly greater risk.⁵⁴ The researcher felt his findings suggested "*that polluters consider these characteristics when making their siting decisions.*" In other words, impoverished neighborhoods where people tend not to organize against threats are more likely to become the location of hazardous waste sites.

The environmental justice movement arose out of precisely this type of discrimination. To find out how your community stacks up with respect to exposure to hazardous waste and other threats visit the Environmental Defense Fund [Scorecard website](#).

Both the [Council on Environmental Quality](#) (CEQ) and the [U.S. Environmental Protection Agency](#) (EPA) have adopted guidance documents on preventing an environmental injustice through actions regulated under the National Environmental Policy Act (NEPA). Most other federal agencies have also developed environmental justice regulations and guidance documents, such as those on the [Federal Highway Administration's EJ website](#).

Before any action can be taken which:

- involves the use of federal funds,
- requires a federal permit, or
- some other direct federal involvement

it must be screened for any factor which may cause undue impact to minorities or low-income populations. Specifically, a determination must be made of whether a significant minority or low-income population exists within the impact zone and, if so, whether the action would affect these people differently from the general population. If the analysis shows such an impact then all reasonable alternatives must be considered for resolving adverse effects.

⁵⁴ Neighborhood Demographics and the Distribution of Hazardous Waste Risks: An Instrumental Variables Estimation, by Ted Gayer, *Journal of Regulatory Economics*; 17(2):131-155, 2000

An excellent resource on the environmental justice aspects of roads, transit and related facilities is [*Environmental Justice & Transportation: A Citizen's Handbook*](#) published by the University of California Institute of Transportation Studies. Another excellent resource is the [Environmental Justice Resource Center at Clark Atlanta University website](#). A number of state agencies have also developed environmental justice programs.

HISTORIC & ARCHAEOLOGICAL RESOURCES

The 1966 National Historic Preservation Act set in motion many of our current programs to protect buildings, sites and other resources of historic or archaeological importance. Section 106 of the Act requires consideration of these resources whenever federal action may be involved. “Action” may include projects funded solely or in part by Federal dollars, such as a road built with funds from the Federal Highway Administration. Or it may include projects requiring Federal permits, like those issued for wetland impacts by the U.S. Army Corps of Engineers.

For a resource to benefit from Section 106 protection it must either be on or eligible for the National Register of Historic Places, which is compiled by the National Park Service (NPS). The NPS publication *How to Apply the National Register Criteria for Evaluation*⁵⁵ presents the following considerations for including a resource on the National Register:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in history or prehistory.

Normally, a resource must have achieved significance more than 50 years ago to be considered for the Register. Other resources **NOT** normally considered for inclusion on the Register are:

⁵⁵ How to Apply the National Register Criteria for Evaluation is available online at: <http://www.cr.nps.gov/nr/publications/bulletins/nrb15/>

*cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature... However, such properties **will qualify** if they are integral parts of districts that do meet the criteria or if they fall within the following categories:*

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b. A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or

d. A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.

Once a project is placed on the Register, or deemed eligible, it may receive protection from a variety of possible *adverse effects*. An *adverse effect* is anything which would:

diminish the integrity of the property. Integrity is the ability of a property to convey its significance, based on its location, design, setting, materials, workmanship, feeling, and association.

Adverse effects can be direct or indirect. They include reasonably foreseeable impacts that may occur later in time, be farther removed in distance, or be cumulative. Typical examples of adverse effects are:

- *physical destruction or damage;*

- *alteration inconsistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties;*⁵⁶
- *relocation of the property;*
- *change in the character of the property's use or setting;*
- *introduction of incompatible visual, atmospheric, or audible elements*
- *neglect and deterioration; and*
- *transfer, lease, or sale out of Federal control without adequate preservation restrictions.*

Section 106 does not necessarily prohibit impacts to historic resources. Instead, it obligates federal agencies to consider all reasonable alternatives for reducing or eliminating adverse effects.

Many states and local governments have their own historic preservation program. To locate programs in your area go to the [NPS Heritage Preservation Services website](#). These programs may provide further protection for resources on the National Register along with those which are locally significant

If you feel a project may threaten a historic resource then see if it is on the National Register or local listings. Determine if any of these resources are on the development site, adjacent to the site, or sufficiently close that the project might affect the historic feature. These listings may be obtained from the agencies located through [NPS Heritage Preservation Services website](#), the local planning office or a local/state historical society.

Review local records for indications that historic structures or native American sites may occur in the area affected by the project. These records may be available through a state historic preservation office, a local historical society or in the main branch of the local library. Make a note of all archaeological and historic features found on the site and in the vicinity. Note the specific artifacts found at each site. Also make a note of the name, address, and phone number of the researcher(s) who inventoried each site. Call the researchers to get their thoughts on any significant features that may exist on the development site of concern to you. Ask for the name and number of other historic preservation experts the researcher knows who may be familiar with the site.

Most sites have never been examined by a qualified professional. If you can gain permission to enter the site then consider carrying out your own inventory for the features-artifacts found at other locations in the area. Of course if you come across artifacts you should leave them in-place, undisturbed, and take a few photos. Show the photos to the preservation experts identified above to get their opinion on significance. If they feel the objects could be significant then these experts will know the correct procedures for continuing the investigation.

⁵⁶ The standards can be viewed at: <http://www2.cr.nps.gov/tps/secstan1.htm>

Talk to those who live near the site, particularly folks who have been in the area for a long time. Ask if they know of any factor which might make the site significant. Have they or their children ever found arrow-heads, bones, or other artifacts on the site? Do they recall any gravestones, old buildings, or other features? Did anyone famous or important ever live on or visit the site?

Discuss the results of the preceding actions with the researchers identified above. You should also discuss anything significant with local and state historic organization staff or volunteers. If any of these people believe the findings are significant, then ask what authority exists for preserving features which are important from a historic or archaeological perspective. Ask how preservation measures are initiated.

Talk with the property owner about the features. See if the owner is willing to preserve the features voluntarily. If so, then ask them to enter into a binding agreement that extends to all future owners. Regardless of the outcome of this discussion proceed with the actions listed in the next paragraphs. These actions will put you in a better position if the owner has second thoughts. If a third party is involved, such as a development company, then have a similar discussion with the company CEO.

Try to locate activists who have led campaigns to preserve historic or archaeological features. The experience these folks have acquired could be crucial to winning your campaign. These activists can be found by contacting local or state historical societies, Native American organizations, or the National Trust for Historic Preservation⁵⁷ (202) 588-6000. CEDS may also be able to put you in touch with veteran activists.

Review local, state, and federal laws which may provide protection for historic or archaeological features. See if these laws can be interpreted in a way that provides the level of protection required for the features of concern to you.

Locate several attorneys who have experience with preservation law. Ask if the law provides the protection you are seeking. If the attorney says yes, then meet with the government officials responsible for applying the law to the site in question. See if they will agree to apply the law as you wish. If they say yes, then go to *Legal Action*, in Chapter 4, to ensure that the law is properly applied.

If it appears that current law does not provide adequate protection for the features, then go to Chapter 4 of this book and read through the section *Land Preservation and Change the Law*.

NOISE

Traffic is the most common cause of noise resulting from development. Noise is measured in units known as decibels (dB) and traffic noise is measured on an A-weighted decibel (dBA) scale.

⁵⁷ Visit the National Trust for Historic Preservation online at: <http://www.nationaltrust.org/>

The noise level in a library might be 30 dBA while an air conditioner would emit 60 dBA. Quiet human speech has a volume of 55 dBA while normal speech occurs at 65 dBA. At 70 dBA a noise is perceived by the human ear as being twice as loud as 60 dBA.

Following is a listing of some of the other noise sources which may be associated with development and the sound levels emitted by each:

SOURCE	DISTANCE (feet)	NOISE LEVEL (dBA)
Earth-moving equipment	50	80 - 90
Jet overflight	1000	105
Train horn	50	95 - 115
Crowds at sports facilities.	125	85
Public address (PA) system		90-100

The Federal Highway Administration has adopted noise standards for interstates and other roads. A number of states and local jurisdictions also have noise standards. These standards require the use of barriers and other measures to reduce impacts sufficiently to preserve quality of life in residential areas and other noise-sensitive locations.

Sound barriers, such as the walls constructed along highways, can reduce noise by 10-15 dBA.⁵⁸ A forest measuring 200 feet in depth reduces noise by 10 dBA. For a measure to reduce noise it must intercept the line of sight from the source, say a truck traveling along a highway, and the receptor, like a bedroom window. Also, there must not be any gaps or holes in the barrier which will allow noise to “leak” through.

Noise impact is one of the elements commonly addressed in an environmental impact statement (EIS) for highway projects. Also, some jurisdictions will require an applicant to prepare a noise impact analysis for certain types of development projects, such as a mining operation, a landfill or a sports facility. A noise analysis may also be required for residential projects constructed near existing noise sources.

Vehicle generated noise is addressed further in the section of this chapter on traffic.

ODOR

Development projects which may create odor problems include landfills, transfer stations, livestock confinement operations, and various processing and manufacturing plants. There are

⁵⁸ Highway Traffic Noise - FHWA, available online at: <http://www.fhwa.dot.gov/environment/htnoise.htm>

also facilities common to many development projects which may be the source of odor such as sewerlines and treatment plants.

Usually odor problems can be controlled. Many activities which formerly caused problems can now be conducted within a large building where negative air pressure and filters are used to prevent offsite odor impacts. For activities which cannot be conducted in doors, other measures are available for reducing odor problems.

For example, hydrogen sulfide can be released from landfills accepting construction and demolition (C&D) waste. This gas, which has the odor of rotten eggs, comes from the decomposition of gypsum (calcium sulfate) wallboard in the wet, organically rich environment of an unlined C&D landfill. Quality of life has been impaired by hydrogen sulfide in homes located up to three miles away from a C&D landfill.⁵⁹ This and other impacts have caused property value to decline by 10% within a mile of a C&D facility. But the likelihood of hydrogen sulfide formation can be reduced by excluding wallboard from the landfill. Less reliable solutions would include preventing water from entering the landfill by installing an impermeable cap-liner system or segregating wallboard from wood and other organic material.

If you identify a potential solution, then look for similar facilities where the solution has been applied. Visit the facility to see if you can detect offensive odors. Talk with long time residents to get their take on odor control effectiveness.

OPEN SPACE

If you look at a land use map of the United States then you see that most of the nation is open space - farms, forest, desert, mountains, prairie, wetlands, lakes, and so forth.⁶⁰ But this is not true for the urban-suburban areas where most of us live. And the pace at which growth is gobbling up our open space is accelerating. In the 1980s we were losing 1.2 million acres of rural land a year, which increased to an annual loss of 2.2 million acres in the 1990s.⁶¹

Preserving open space does not mean stopping growth, just growing smarter. In most cases a community can accommodate anticipated growth by concentrating new homes and businesses in a way that minimizes loss of open space and actually reaps more benefits, such as lower taxes. But before getting into *Smart Growth* techniques perhaps it would be helpful to review the benefits of open space, which include:

- much of our food comes from farms'
- farming is an important part of our economy;

⁵⁹ See the reports on landfills available for download from the [CEDS website](#).

⁶⁰ To view a map of United States land use visit: <http://www.epa.gov/ceisweb1/ceishome/atlas/nationalatlas/landusecover.htm>

⁶¹ The rate of rural land conversion was obtained from the U.S. Natural Resources Conservation Service website: <http://www.nrcs.usda.gov/programs/commplanning/>

- open space is frequently the source of our cleanest drinking water;
- trees and other open space vegetation improve the quality of our air;
- our highest quality waters are associated with undisturbed open space (e.g. forests); and
- open space recreation areas have been shown to reduce urban crime; and
- urban open space also provides residents with limited mobility an opportunity to enjoy and learn of the natural world.

In 1982, 44% of the United States was farmland.⁶² In 1997, the figure dropped to 41%. According to a study by the American Farmland Trust, we are losing our best, most productive agricultural lands at a rate 30% faster than other open space.⁶³ Most alarming is that 83% of our fruits and vegetables and 63 percent of our dairy products, come from farms in urban-influenced areas.⁶⁴ Conversion of these farmlands to suburbia is pushing agriculture onto marginal lands where, generally, more fertilizers, pesticides, and irrigation is needed and where soil erosion rates may be higher. So our food is coming at a higher cost in terms of dollars and environmental impact.

The Trust for Public Lands (TPL) documented the financial benefits of land preservation in their report *The Economic Benefits of Parks & Open Space*.⁶⁵ A number of studies have put a dollar value on the water quality benefits of preserving open space. For example, the TPL report described a proposal to develop a 16,000-acre area of open space known as Sterling Forest. The forest provided drinking water for two million New York and New Jersey residents. An analysis showed that a \$160 million treatment facility would be needed to remove the drinking water contaminants resulting from development of Sterling Forest. Instead, an effort lead by TPL and the Open Space Institute raised \$55 million to preserve 90% of the forest and eliminate the need for a new treatment plant - a savings of \$105 million!

Open Space Preservation Techniques

The best way to preserve open space is to concentrate growth within and adjacent to existing towns, cities and other population centers. This is the essence of *Smart Growth*. And this approach to growth management truly is smart. Consider the cost of providing public services to a new home at the edge of town compared to one built a mile or two out of town. It would be far more expensive to extend water and sewerlines to the rural home, it would take longer to reach

⁶² Based on data available on the American Farmland Trust website at: <http://www.farmlandinfo.org/fic/census/1997usa.html>

⁶³ See *Farming on the Edge* at: <http://www.farmland.org/farmingontheedge/index.htm>

⁶⁴ Ibid.

⁶⁵ To view the report *The Economic Benefits of Parks & Open Space* and the many other resources available from the Trust for Public Lands visit: <http://www.tpl.org/index.cfm>

the home by school bus and by emergency service vehicles. All this adds up to more tax dollars to provide services for the rural home when compared to one built at the edge of town.⁶⁶

Following are the *Smart Growth* techniques for guiding development to existing population centers. One of the best sources for further detail on many of these techniques is the American Farmland Trust (AFT) Farmland Information Library <http://www.farmlandinfo.org/fic/home.html> Another great resource is *Getting to Smart Growth: 100 Policies for Implementation* which is available for download from the Plannersweb at: <http://www.smartgrowth.org/pdf/gettosg.pdf>

Acquisition: Occasionally a tract of land is considered so important that some government or private entity will purchase it. But acquisition of proposed development sites is rare. Acquisition funds are usually quite limited and lands targeted for development are frequently more expensive to acquire. It may cost two- to ten-times as much to acquire a development site compared to other lands. Nevertheless, over the past decade citizen success in winning acquisition of development sites has become more common. For further detail see *Land Preservation* in Chapter 4 of this book.

Clustering: One way to reduce loss of open space is to require clustering of rural development projects. In other words, rather than allowing, say, 20 five-acre lots on a 100-acre tract of land, the homes must be clustered on 20 one-acre lots, thereby preserving 80% of the site as open space.

Clustering is not the most effective way to preserve working farms. For a farm to remain viable, a minimum acreage is needed so fields can still be worked economically. Clustering can fragment agricultural land in a way that renders the remainder unsuitable for family farming. Some local governments also give a bonus density for clustered projects. For example, if the unclustered density is one house per five acres then the clustered density might be one per four.

In the previous discussion of septic systems mention was made of the relationship between water quality and septic system density. Care must be taken to ensure that clustering does not result in a concentration of septic systems in areas where water quality may be threatened, such as near existing homes served by shallow wells or waters that are sensitive to nutrients and bacteria.

Conservation Easements: If a property owner wishes to preserve their land but they don't want to give up title, then granting a conservation easement is one option. The owner signs an agreement in which they give up the right to develop their property, usually in exchange for a reduction in taxes. The agreement may be for a specific period, such as 10 to 25 years, or in perpetuity. The agreement will usually name a third party to enforce the terms. Frequently, a land trust is involved in conservation easements. To learn of land trusts in your area visit the Land Trust Alliance website at: <http://www.lta.org/>

⁶⁶ For further detail see the Sierra Club report *Sprawl Costs Us All* available for download at: <http://www.sierraclub.org/sprawl/report00/sprawl.pdf>

Designated Growth Area: The idea behind this *Smart Growth* tool is to designate areas where growth will be concentrated and other areas to remain rural. On the west coast designated growth areas are established with Urban Growth Boundaries. In Maryland they are called Priority Funding Areas. Regardless of the terminology used, they grew out of water and sewer service areas.

Good designated growth areas call for densities of at least four housing units per acre, while no more than one unit per 20 acres is permitted in rural areas. The boundary is usually established through the master plan or comprehensive land use planning process and implemented through zoning. Normally, sufficient land is included within the designated growth area to accommodate anticipated development needs for the next 20 years.

Discourage New Roads: Growth tends to follow the construction of new roads. This is because people prefer to live where traffic congestion is minimal, so extending a road into undeveloped areas can dramatically accelerate the pace of growth. This phenomenon is called *induced growth*. Smart growth principles dictate that public funds previously used to extend roads into rural areas be used instead to improve transportation within existing developed areas.⁶⁷ If a road must pass through a rural area, and the intent is not to accelerate growth, then measures must be in place to ensure that sprawl will not follow. These measures may include downzoning, TDRs or PDRs, and so forth. But even with these measures, extending a new road into a rural area can lead to tremendous pressure on local decision-makers to allow development. For example, imagine a situation in which a major employer proposes to move to your area, but only if they can upzone a site along the new road. And, oh by the way, could they also get another large chunk of land upzoned for residential development to house their employees?

Forests Conservation: If you can gain access to the site, then look for any factors which may cause existing forest to be of unique importance. Look for *old-growth forest* (more than 150 years old), trees that are unusually large, or forests that support unique wildlife populations. Some local jurisdictions and states have mandated the protection of existing forests.⁶⁸ If such a mandate exists in your area, then determine if the project fully complies with a strict interpretation of forest conservation requirements. If forest conservation is not mandated in your area, then consider lobbying for the enactment of such a law (*See Change the Law in Chapter 4 of this book*).

Limited Development Venture: The purpose of this option is to do just enough development on a site to cover the cost of acquisition and other expenses. For example, let's say a hundred acre farm could be developed as 20 five-acre lots under current zoning. If we clustered the 20 houses on one-acre lots then 80% of the site could be saved. But maybe we only need to sell five

⁶⁷ For further detail on how road construction accelerates loss of open space see the TPL report *Taking the High Road*, which is available for download at http://www.tpl.org/tier3_cd.cfm?content_item_id=10863&folder_id=175

⁶⁸ For an example of a State mandated forest conservation program implemented at the local level view: <http://dnrweb.dnr.state.md.us/download/forests/fca.pdf>

houses to generate the income needed to cover site acquisition and development costs. If the five lots are an acre each then the remaining 95% of the site could be preserved in a natural state. To learn more about how a limited development venture might work in your area contact the [American Farmland Trust](#), the [Land Trust Alliance](#), or the [Trust for Public Lands](#).

Public Subsidies: One study showed that each new home costs taxpayers \$20,000 to \$30,000.⁶⁹ About half of this is for schools and the rest is for water, sewer, roads, and other public services. In the past, tax dollars would be used to cover much of the cost for the new schools, roads, sewers, and other services necessitated by rural development. Under *Smart Growth* public subsidies are only used to foster more compact development - a minimum of four or five housing units per acre. This provides a strong disincentive to rural sprawl and encourages development within or next to existing towns and other population centers. If a developer wishes to create a new bit of rural sprawl, then they must pick-up the cost - not the taxpayers.

Purchase or Transfer of Development Rights: PDRs and TDRs are two closely related approaches for preserving open space. Through PDRs a government agency purchases the development rights associated with a tract of land. The amount paid is usually the difference between the appraised value if sold to a development company minus the value of the land if it were sold to a farmer. The source of government funds used to purchase development rights may come from general revenue or specialized taxes, such as on the transfer of land. About 400,000 acres of land have been preserved in the United States through PDRs.⁷⁰

Through TDRs developers are either encouraged or required to purchase development rights from owners of rural land. The development right is then transferred to a parcel within a designated growth area. Some jurisdictions allow increased (bonus) density when TDRs are used. Fifty local jurisdictions (counties-towns) in 17 states have enacted TDR programs.⁷¹ Nearly 90,000 acres have been protected nationally, though half of the preserved acres are in Montgomery County, Maryland.⁷² TDRs work best when development activity is high and their use is mandatory. But care must be taken to protect existing residents within designated growth areas (receiving zones) from the impact of excessive growth - allowing development to outstrip public services.

Right-To-Farm Programs: A key to preserving rural lands is to help farmers keep suitable lands in production. If residential development sprawls into farming areas then conflicts build. Newcomers complain about odors and noise as well as getting stuck behind slow moving farm

⁶⁹ *Better Not Bigger* by Eben Fodor, New Society Publishers.

⁷⁰ The acreage of lands protected through PDRs is based upon a factsheet prepared by 1000 of Minnesota and available for viewing at: <http://www.1000fom.org/lctools4.htm>

⁷¹ See the American Farmlands Trust factsheet on TDRs at: <http://www.farmlandinfo.org/fic/tas/tafs-tdr.pdf>

⁷² Ibid.

equipment. A number of jurisdictions have enacted right-to-farm laws which protect farmers from complaints or lawsuits regarding normal agricultural practices.⁷³

Zoning: Through zoning local government regulates what uses may be made of a parcel of land. The intent is to protect adjoining property owners from incompatible uses and to increase the likelihood that a community grows in a way which enhances overall quality of life. The zoning tools most important to open space preservation are density or minimum lot size. To preserve farmland, AFT suggests no more than one house per 20 acres, though some agricultural preservation zones in the west allow as little as one house per 640 acres (a square mile).

Zoning must be coupled with other measures to preserve working farms. For many agricultural operations, farm fields must be of a certain minimum acreage for the operation to remain viable. Downzoning farmland to one house per 20 acres could result in a transformation of the countryside from pasture and cropfields to expensive houses on big lots (McMansions). The most effective preservation programs make it possible for farmers to keep their land in production without unduly sacrificing the equity in their land.

For obvious reasons, a proposal to downzone land from, say, one house per acre to one per 20 acres will meet with considerable opposition from property owners and the real estate-development community. The likelihood of a successful downzoning effort increases if some form of compensation can be provided to property owners, such as reduced property taxes or cash payments through programs such as transfer or purchase of development rights (TDR or PDR).

Application of Open Space Preservation Techniques

If you are concerned about a development project proposed for a rural site, then check to see if any of the preceding open space preservation techniques are already on the books and, if so, can they be applied to the site. If a key technique is not in place, then it will be very challenging to win adoption in a manner that causes it to apply to the project. The trouble will be that the law enacting the preservation technique will likely grandfather (exclude) any project which is already in the review process. However, you may succeed in structuring the law so it applies to all projects which have not yet reached the final stage of the process, usually building permit issuance.

PROPERTY VALUE

A development project may affect property value both positively and negatively. For example, one study showed that a stormwater pond which held a permanent pool of water increased the value of nearby homes by 4% to 23% whereas dry ponds, seen as unattractive, lowered property

⁷³ For further detail see the American Farmlands Trust Right-To-Farm factsheet available for download at: <http://www.farmlandinfo.org/fic/tas/tafs-rtfl0998.pdf>

value by 4% to 10%.⁷⁴ This same study showed preferences for living at the following locations, from most desired to least: next to a pond, adjacent to a natural area, on a cul-de-sac (dead-end) street, next to a golf course, then adjacent to a public park.

Homes located within 300 feet of water sell for up to 28% more than comparable homes located elsewhere.⁷⁵ A study of homes with a view of Lake Erie showed a doubling of value (\$527,184 vs. \$285,518) when compared to similar homes without a lake view.⁷⁶ A development project intruding upon an existing lake view could lower the value of the homes suffering the intrusion.

If watershed development causes water quality to decline, than the value of properties with a view of the affected waters may decline as well. A study of 34 Maine lakes determined that a significant decline in lake water clarity resulted in a substantial decline in the value of lake-front property.⁷⁷ A one-meter improvement in the depth of clear water can increase property value by \$11 to \$200 per foot of linear lake frontage.

Trees also enhance property value. In *Landscaping and House Values: An Empirical Investigation*, the authors concluded:

*By and large, a positive tree cover differential between the property and its immediate neighborhood, provided it is not excessive, translates into a higher house value.*⁷⁸

Projects perceived as undesirable, such as a landfill, can lower property value by 4% - 10% or more.⁷⁹ If a landfill were to contaminate the well serving a rural home and there were no other

⁷⁴ Human and Amphibian Preferences for Dry and Wet Stormwater Pond Habitat, Technical Note #89 from *Watershed Protection Techniques*. 2(3): 453-454

⁷⁵ Economic Benefits of Urban Runoff Controls, Watershed 96, available online at: <http://epa.gov/owow/watershed/Proceed/frederck.html>

⁷⁶ Residential Real Estate Prices: A Room with a View, *Journal of Real Estate Research*, 23(1 / 2):129-137

⁷⁷ Water Quality Affects Property Prices: A Case Study of Selected Maine Lakes, by Holly J. Michael, Kevin J. Boyle, and Roy Bouchard, Maine Agricultural and Forest Experiment Station, University of Maine, 18 pp., 1996, available online at: http://www.umaine.edu/mafes/elec_pubs/mr398.pdf

⁷⁸ *Landscaping and House Values: An Empirical Investigation*, *Journal of Real Estate Research*, 23(1 / 2):139-161, 2002.

⁷⁹ The Impact of Landfills on Residential Property Values, *Journal of Real Estate Research* 7(3): 297-314, 1992. Special Appraisal to Determine the Potential Impact of the Cross Roads Trail Rubble Landfill on Property Values of the Surrounding Community, prepared by BLR Real Estate Appraisal, 2316 Franklins Choice Court, Fallston, MD 21047, 1991.

reasonable source of water, then property value could decline by 90%.⁸⁰ A study conducted in the vicinity of Baltimore, Maryland showed that a waste disposal facility affected property value up to four miles distant.⁸¹ Another study conducted near Toledo, Ohio showed that a large toxic waste landfill lowered property value for a distance of 5.75 miles.⁸² For each mile from the facility property value increased by \$14,200 out to a distance of 2.6 miles. Homes located adjacent to or within sight of high voltage powerlines sell for about 10% less than comparable houses located elsewhere.⁸³

There are also situations where a LULU, such as a landfill, has no effect on property value. A study of a San Fernando Valley landfill found no effect on the nearest residential community.⁸⁴ But the community was separated from the landfill by a hill. Trucks traveling to the landfill did not pass through the community. In other words, community residents could not see, hear or smell the landfill. Hence, no adverse effect on property value.

Transportation facilities can also have a significant effect on property value. In Washington, D.C. apartment rent is highest next to metro stations and declines by 2.5% for every tenth mile removed from a station. The metro station effect extends at least a half-mile out.⁸⁵ Philadelphia researchers found that apartment value declines by about 3% per block as the distance increased from two major roads.⁸⁶ The increased value of apartments located near major roads was attributed to the convenience of easy access to a thoroughfare.

Increased traffic volume can lower residential property value. A home located adjacent to a major highway may sell for 8% to 10% less when compared to a home located along a quiet neighborhood street.⁸⁷ The noise from heavy truck traffic lowers property value at a rate 150

⁸⁰ Appraisal on the property known as 2910 Dublin Road, Street, MD 21154, prepared by BLR Real Estate Appraisal, 2316 Franklins Choice Court, Fallston, MD 21047.

⁸¹ The Benefits of Reducing Exposure to Waste Disposal Sites: A Hedonic Housing Value Approach, by Mark Thayer, Heidi Albers, and Morteza Rahmatian, *Journal of Real Estate Research* 7(3): 265-282, 1992.

⁸² Economic Effects of Hazardous Chemical and Proposed Radioactive Waste, *Journal of Real Estate Research* 7(3): 283-296, 1992.

⁸³ High Voltage Power Lines: Do They Affect Residential Property Value?, *Journal of Real Estate Research* 7(3): 315-330, 1992.

⁸⁴ Does A Landfill Bring Down Property Values?, *Waste Age*, August 1991.

⁸⁵ Mass Transportation, Apartment Rent and Property Values, by John D. Benjamin and G. Stacy Sirmans, *Journal of Real Estate Research* 12(1): 1-8, 1996.

⁸⁶ Thoroughfares and Apartment Values, by Paul K. Asabere and Forrest E. Huffman, *Journal of Real Estate Research* 12(1): 9-'6, 1996.

⁸⁷ Highway noise and property value by J.P. Nelson, *Journal of Transport Economics & Policy*, May 1982, p. 117-138.

times greater than cars. This is because at 50 feet heavy trucks emit noise at 90 dBA while car traffic produces noise at a level of 50 dBA.⁸⁸

Like many aspects of development, assessing potential effects on property value requires a fair level of expertise. The studies cited above can certainly give an indication of how a project may affect property value. But the findings from a study of a seemingly identical project is not always transferrable. This is why it is best to obtain the services of a qualified real estate appraisal professional. Nevertheless, if a development project threatens the value of your home then you can use the data presented above as a starting point for convincing decision-makers to take appropriate steps. The burden should be on the applicant to demonstrate why the property value effects may not be significant.

SCHOOLS

Well managed growth should preserve the quality of education in a developing area. In some cases *Smart Growth* can even enhance school quality. However, in far too many instances sprawl and other forms of poorly managed growth has become an obstacle to providing our children with a quality education. The obstacle takes the form of school overcrowding or forcing students to change schools. Additionally, *Smart Growth* should ensure that the cost to expand school capacity, to accommodate growth in student enrollment, is shared equitably by development interests and current taxpayers.

Several studies have shown a general relationship between class size, school size and student achievement. These studies indicate that there is an optimum class size - at least for kindergarten through third grade - and an optimum school size. However, there is also reason to believe that a quality education can result even if these optimums are not met. Following is a brief review of the scientific evidence concerning class size, school size, and student achievement.

Class Size & Student Achievement

As of the year 2000, class size averaged about 25 students in the United States.⁸⁹ A 1997 survey revealed that 83% of teachers and 60% of school principals believed that class size should not exceed 17 students.⁹⁰ Several recent studies have shown that student performance improves significantly in smaller classes.⁹¹ Class size reduction appears to be most effective when applied

⁸⁸ Residential noise damage costs caused by motor vehicles by D. Haling and H. Cohen, *Transportation Research Records*, Issue 1559, p. 84-95.

⁸⁹ *Class Size: Can school districts capitalize on the benefits of smaller classes?* ERIC Clearinghouse on Educational Management, available online at: http://eric.uoregon.edu/publications/policy_reports/class_size/intro.html

⁹⁰ *Class Size Reduction: Effects and Relative Costs*, by Lawrence Picus, ERIC Clearinghouse on Educational Management, 5207 University of Oregon, Eugene, OR 97403-5207, 800-438-8841. Available online at: http://eric.uoregon.edu/hot_topics/class_size.html

⁹¹ Ibid.

to “low-achieving students from impoverished socioeconomic backgrounds” in kindergarten through third grade.⁹² The benefits of smaller early grade class size lasts at least into 7th and 8th grade.⁹³ The students from small K-3 classes may be 6- to 13-months ahead of other students in math, reading and science.⁹⁴ It is unclear though how small is small enough. In *Small Classes, Big Possibilities*, Professor of Education Charles Achilles argues for a teacher to student ratio of 1:15.⁹⁵

School Size & Student Achievement

In urban and suburban areas high schools may have 2,000 to 3,000 students. There is research though which shows that the optimum size for a middle or high school is 600-900 students and 300-400 for elementary schools, particularly for students from low-income families.⁹⁶ In a 1996 paper, *School Size, School Climate and Student Performance*⁹⁷, Cotton cited the following attributes as accounting for the superiority of small schools:

- Everyone's participation is needed to populate the school's offices, teams, clubs, etc., so a far smaller percentage of students are overlooked or alienated.
- Adults and students in the school know and care about one another to a greater degree than is possible in large schools.
- Small schools have a higher rate of parent involvement.
- Students and staff generally have a stronger sense of personal efficacy in small schools.

⁹² *When does small class size help student achievement?*, ERIC Clearinghouse on Educational Management, 5207 University of Oregon, Eugene, OR 97403-5207, 800-438-8841. Available online at: http://eric.uoregon.edu/publications/policy_reports/class_size/student_achievement.html

⁹³ *Class Size Reduction: Effects and Relative Costs*, by Lawrence Picus, ERIC Clearinghouse on Educational Management, 5207 University of Oregon, Eugene, OR 97403-5207, 800-438-8841. Available online at: http://eric.uoregon.edu/hot_topics/class_size.html

⁹⁴ *Class Size Reduction*, National Education Association, 1201 16th Street, NW, Washington, D.C. 20036, June 2001. Available online at: <http://www.nea.org/lac/papers/size.html>

⁹⁵ *Small Classes, Big Possibilities*, The School Administrator Web Edition, October 1997. Available online at: http://www.aasa.org/publications/sa/1997_10/achilles.htm

⁹⁶ *School Size*, ERIC Digest 113 July 1997, available online at: <http://eric.uoregon.edu/publications/digests/digest113.html> *School Size, School Climate, and Student Performance*, School Improvement Research Series, Northwest Regional Educational Laboratory, available online at: <http://www.nwrel.org/scpd/sirs/10/c020.html>

⁹⁷ Ibid.

- Students in small schools take more of the responsibility for their own learning; their learning activities are more often individualized, experiential, and relevant to the world outside of school; classes are generally smaller; and scheduling is much more flexible.
- Grouping and instructional strategies associated with higher student performance are more often implemented in small schools—team teaching, integrated curriculum, multi-age grouping (especially for elementary children), cooperative learning, and performance assessments.

Of course small school size alone does not guarantee good student performance; it is but one of many factors. And there is also research to show that in some situations it may be possible to overcome the negative effects of large schools.⁹⁸

Frequent School Changes & Student Achievement

As the pace of residential development accelerates the local Board of Education may begin redrawing school service area boundaries so current students may be shifted to schools with excess capacity. I have heard reports of students living in the same house from kindergarten through fifth grade yet they assigned to three different elementary schools during a six-year period. In fact, a 1996 study showed that 40% of school changes were due solely to a family changing their residence while 42% were attributable solely to changes made by the school.⁹⁹

Several researchers have looked at the effect of frequent school changes. One study showed that 41% of third-graders who changed schools frequently were low-achievers compared to 26% of third-graders who never changed school.¹⁰⁰ Another study showed that 23% of children who changed schools frequently repeated a grade versus 12% of students who never changed schools, or did so infrequently.¹⁰¹ However, if students only change schools once during their elementary years, then the negative effects will likely be modest and of short duration, particularly for more affluent students.¹⁰² But growth should be managed to prevent children from being forced to change schools.

⁹⁸ *Reducing the negative effects of large schools*, National Clearinghouse for Educational Facilities, available online at: <http://www.edfacilities.org/pubs/size.pdf>

⁹⁹ *Patterns of Urban Student Mobility And Local School Reform*, Center for Research on the Education of Students Placed At Risk, available online at: <http://www.csos.jhu.edu/crespar/techReports/Report5.pdf>

¹⁰⁰ *Highly Mobile Students Often Are Low Achievers*, School Reform News, available online at: <http://www.heartland.org/archives/education/jan02/mobility.htm>

¹⁰¹ *Student Mobility: Helping Children Cope With a Moving Experience*, Education World, available online at: http://www.education-world.com/a_curr/curr134.shtml

¹⁰² *Student Stability Vs. Mobility*, School Administrator, available online at: http://www.aasa.org/publications/sa/2001_08/fowler-finn.htm

Portable Classrooms

In a 1996 survey, 42% of the teachers interviewed said their ability to teach in a portable classroom was worse when compared to the main school building.¹⁰³ These structures are used to provide additional space at overcrowded schools. They usually begin as temporary structures, but all too frequently become permanent. If a school is experiencing a short-term increase in enrollment then portable classrooms make sense, particularly when compared to the cost of building a new school. But they do not make sense if the increase is more long lasting, particularly if they will cause enrollment to exceed the ranges recommended above for optimum school size.

Adequate Public Facility Ordinances

Some local governments have enacted an Adequate Public Facility Ordinance (APFO) which prohibits the issuance of additional building permits when the affected schools are at capacity or soon will be. Actual trigger points range from 100% to 150% of capacity, which is usually based on 25-30 students per classroom. APFOs may also limit growth when other services are near capacity, such as roads, water, sewer, and emergency services. For an example of an APFO guidance document visit <http://www.mdp.state.md.us/planning/apf/apf.htm>

Impact Fees

It cost taxpayers an average of about \$10,000 to provide the school services necessitated by each new home. Impact fees are used to shift the burden for this added expense to the developer, who then, of course, passes the cost on to the home buyer.

TRAFFIC

Perhaps no other aspect of growth management affects so many people as traffic. Surely none causes as much frustration.

When traffic is managed poorly we lose: time, wages, productivity, property value, the quiet and safety of our neighborhood streets, open space, our health, and our overall quality of life. But if there is a villain here it is, as Pogo said, the vast majority of us (76%) who commute to work alone in a car. Fortunately, there are a number of steps that can reduce the impact of traffic generated by existing and proposed development.

Following is a brief review of the impacts caused by traffic.

Accidents

According to the National Safety Council, motor vehicles were the leading cause of accidental death in the United States in 2001 (and have been for many years). Of the 98,000 U.S. accidental deaths in 2001, 43% were due to motor vehicles. For every person killed by a vehicle another 90 are injured.

¹⁰³ *Teacher safety in portable classrooms*, BCTF Research Report, available online at: <http://www.bctf.bc.ca/ResearchReports/97wlc01/>

In 2001 motor vehicles also accounted for 6,000 pedestrian deaths and 90,000 pedestrian injuries. Speed is a major factor determining whether a pedestrian will be killed or injured by an automobile. A person is nine times more likely to die if struck by a car traveling at 30 mph compared to 20 mph.¹⁰⁴ Other factors contributing to the high pedestrian accident rate on our streets include the inadequacy of sidewalks, bike lanes, and crossings.

As traffic volume and speed increase so does the accident rate. Of course, when volume builds to the point where delays become common, slower traffic results mostly in fender-bender type accidents as opposed to those causing death or severe injury.

A study conducted in Longmont, Colorado found a relationship between street width, sinuosity and accident rates.¹⁰⁵ After reviewing 20,000 accident reports, the authors found that the safest residential street width was 24 feet (curb face to curb face), especially those with some curves. The highest accident rates occurred on streets 50 feet wide.

Air Quality

In the section of this book on air quality, the pollution from cars and trucks was shown to be a considerable threat to public health. Particularly at risk are those living within a quarter-mile of a high-volume road (one carrying more than 10,000-20,000 vpd) as well as those living near roads with a large amount of truck traffic. Of course vehicle noise also affects health and pedestrian safety is certainly a health issue.

Congestion

Each year the Texas Transportation Institute releases the *Urban Mobility Report*.¹⁰⁶ The latest report compared traffic conditions between 1982 and 1999 in the 75 largest metropolitan areas of the United States. The report shows that we are now spending four times longer in traffic congestion compared to how things were in 1982. The average commuter is delayed 62 hours a year by congestion. The cost of this delay comes to \$67.5 billion a year. The delay also wastes 5.7 billion gallons of gasoline annually and generates a lot of unnecessary air pollution.

The *Urban Mobility Report* states:

To keep congestion from growing between 1999 and 2000 would have required 1,780 new lane-miles of freeway and 2,590 new lane-miles of streets—OR—an average of 6.2 million additional new trips per day taken by either carpool or transit, or perhaps satisfied by some electronic means—OR operational improvements that allowed three

¹⁰⁴ *Mean Streets 1998: Children at Risk*, by the Surface Transportation Policy Project. <http://www.transact.org>

¹⁰⁵ The study, *Residential Street Typology and Injury Accident Frequency*, can be viewed online at: <http://www.fivepts.com/streetutah.htm>

¹⁰⁶ For the 2002 Urban Mobility Report visit: http://mobility.tamu.edu/ums/study/final_report.pdf

percent more travel to be handled on the existing systems—OR—some combination of these actions. These events did not happen, and congestion increased.

In other words, to minimize the need for more roads we each need to drive alone less and ride bus/rail more, while advocating for improved transit.

Noise

Traffic noise can interfere with sleep, conversation, and other neighborhood pursuits. About 2% of us are exposed to traffic noise at a level which affects our health.¹⁰⁷ Sound is measured in units known as decibels (dB) and highway noise is measured on an “A-weighted decibel” (dBA) scale. The noise level in a library might be 30 dBA while an air conditioner would emit 60 dBA. Quiet human speech has a volume of 55 dBA while normal speech occurs at 65 dBA.

Traffic volume, speed, and vehicle type all affect noise levels. At 2,000 vehicles per hour (vph) traffic noise will sound twice as loud as at 200 vph.¹⁰⁸ Traffic moving at 65 mph will sound twice as loud as at 30 mph. And one truck traveling at 55 mph will sound as loud as 28 cars moving at the same speed.¹⁰⁹

Traffic noise can have a significant effect on property value. A home located adjacent to a major highway may sell for 8% to 10% less when compared to one located along a quiet neighborhood street.¹¹⁰ Heavy truck traffic lowers property value at a rate 150 times greater than cars. This is because at 50 feet heavy trucks emit noise at 90 dBA while car traffic produces noise at a level of 50 dBA.¹¹¹ An increase in heavy truck traffic may also cause damage to nearby homes due to vibrations transmitted through the earth. While some truck traffic is essential on neighborhood streets (e.g. refuse collection, delivery trucks, and fire engines) an excessive increase in trucks passing through a neighborhood could lower property value and overall quality of life.

Loss of Open Space

In the section of this book on open space, I pointed out that building new roads into rural areas can accelerate the pace of sprawl. For example, an analysis of a proposal to widen I-93 in New

¹⁰⁷ U.S. Department of Transportation, Bureau of Transportation Statistics, *Transportation Statistics Annual Report*, available online at: <http://www.bts.gov/publications/tsar/2000/>

¹⁰⁸ Highway Traffic Noise - FHWA, available online at: <http://www.fhwa.dot.gov/environment/htnoise.htm>

¹⁰⁹ Ibid.

¹¹⁰ Highway noise and property value by J.P. Nelson, *Journal of Transport Economics & Policy*, May 1982, p. 117-138.

¹¹¹ Residential noise damage costs caused by motor vehicles by D. Haling and H. Cohen, *Transportation Research Records*, Issue 1559, p. 84-95.

Hampshire from four lanes to eight showed that this action would induce 20,000 to 100,000 acres of development which would not otherwise occur.¹¹²

Preventing Traffic Impacts

The best way to prevent traffic impacts is to upgrade transportation services so new residents and employees will rely upon bus, rail, car- or van-pools, and other modes that reduce driving alone. Following are traffic-impact minimization measures applicable to individual development projects:

- concentrate growth in areas served by buses, trains and other forms of mass transit;
- direct growth to sites within or adjacent to existing towns, cities or other population centers;
- discourage development necessitating the construction of new roads into rural areas;
- traffic should not be increased on neighborhood streets, especially truck traffic;
- new intersections should have adequate sight-distance and the gap between cars should allow for safe turns, otherwise traffic control devices should be employed;
- traffic should not be added to roads that are overly congested or where the accident rate is high; and
- new roads should only be built after all reasonable alternatives for minimizing single-occupancy vehicle use have been exhausted.

To implement these measures the following approaches should be considered for proposed development projects.

Measuring Congestion: Many local traffic review agencies rely upon the *Level Of Service* (LOS) approach for assessing the impact of proposed development projects on road congestion. The handbook on this topic is the *Highway Capacity Manual*¹¹³ which presents a methodology for determining the amount of traffic a road can handle. For example, each lane of freeway can handle about 2,000 vehicles per hour (vph). But road capacity declines with narrowing lane width, increasing curves, hills, changes in road surface, and other factors. LOS is used to rate the degree of congestion based on a scale of A to F, with A being free-flowing traffic and no delay while F is essentially gridlock. Many traffic review agencies require a LOS of D or better on suburban-urban roads and C or better on rural roads.

Traffic congestion is usually worse at intersections. Therefore, most traffic impact studies focus on how a project will impact LOS at the nearest intersection(s). Unfortunately, analyzing LOS is highly specialized and requires the services of a traffic engineer or other qualified professional. However, if a signalized intersection is notorious for rush-hour delays, then there is a good chance it is operating at a failed level of service.

¹¹² *Comments on Aquatic Resource Impacts: Draft Environmental Impact Statement Interstate 93 Improvements Salem to Manchester IM-IR-93-1(174)0, 10418-C*, prepared by Community & Environmental Defense Services, 8100 Greenspring Valley Road, Owings Mills, MD 21117., 410-654-3021.

¹¹³ The *Highway Capacity Manual* is published by the Transportation Research Board: <http://trb.org/>

The LOS at unsignalized intersections is also evaluated using the procedures in the *Highway Capacity Manual*. Another guidance document, *Manual on Uniform Traffic Control Devices*.¹¹⁴, is used to determine if conditions at unsignalized intersections *warrant* the installation of traffic control devices. There are 12 warrants and include factors such as five more accidents a year at an intersection as well as the amount of delay, pedestrian volumes, presence of a school, and so forth.

The following table provides several examples of the traffic generated by various types of development.

Land Use	Estimated Number of Trips per Day per Unit
Single Family House	10 trips/day/home
Apartment Building	6.6 trips/day/dwelling unit
Mobile Home Park	4.8 trips/day/dwelling unit
Single Tenant Office Building	11.57 trips/day 1000 sq. ft.
Day Care Center	4.5 trips/day/student
Home Beauty Salon	42 trips/day/stylist

The data presented in this table was obtained from the [Maine Access Management Program](#).

Neighborhood Streets: Most neighborhood streets can handle about 1,000 vpd or the traffic generated by about 100 houses.¹¹⁵ When traffic volume rises above this level than aggressive driving becomes more common and pedestrian safety declines. But for a small, secondary residential street even 700 vpd may be too high.¹¹⁶

Unfortunately, many traffic review agencies only look at Level Of Service (described elsewhere in this section) to determine whether a proposed development project will cause excessive impacts. The LOS approach allows higher traffic volumes than is desirable on most neighborhood streets.

Local governments throughout the nation have instituted Neighborhood Traffic Management Programs designed to keep traffic volume and speed at a reasonable level using a variety of

¹¹⁴ The *Manual on Uniform Traffic Control Devices* is available online at: <http://mutcd.fhwa.dot.gov/>

¹¹⁵ See *Techniques and measurements for neighborhood traffic management planning*, available online at: http://www.ite.org/traffic/soartm/Appendix_C.pdf

¹¹⁶ The Prince George's County, MD, Neighborhood Traffic Management Program uses 600 vpd as the desirable traffic volume for a minor secondary residential street (a 26-foot wide local access street).

calming measures. These measures include speed humps, narrowing street width, rumble strips, closing a street, and so forth. The intent is to slow down traffic or discourage through traffic to increase pedestrian safety and to reduce noise and air pollution. For further information on traffic calming visit the Institute for Transportation Engineers excellent website on this topic at: <http://www.ite.org/traffic/tcdevices.htm>

New Roads: Building new roads or adding lanes to existing streets is not necessarily a solution to traffic congestion. There is a phenomenon known as *induced traffic* where an increase in road capacity causes people to drive more.¹¹⁷ Folks who used to limit their driving because the roads were so crowded make more trips after congestion is relieved. In the section of this book on open space it was shown how extending new roads into rural areas can cause *induced growth*.

Before a new road is built it is crucial that a thorough analysis be made of how it will affect sprawl, public health and whether it really will solve existing traffic congestion. Furthermore, the analysis should also look at the benefits of using limited resources to expand transportation choices, such as bus, rail and other forms of mass transit.

To prevent excessive noise impacts, a new road (and other projects) should not be approved if it would increase truck traffic on residential streets. New roads should be located sufficiently far from homes to prevent noise from causing a significant quality of life impact. The Federal Highway Administration (FHWA) allows up to 72 dBA at the exterior of homes and 67 dBA at the exterior of picnic areas, recreational areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.¹¹⁸ With an interstate highway the 67 dBA threshold may extend 100- to 600-feet out from the edge of pavement.¹¹⁹

A number of states and local governments regulate activities which would cause residential noise levels to exceed 65 dBA during the day and 55 dBA at night. Those proposing activities which would exceed these thresholds should be required to take steps to resolve the impact. For example, noise barriers of earth, wood or concrete can reduce noise by 10-15 dBA.¹²⁰ A forest measuring 200 feet in depth can reduce noise by 10 dBA.¹²¹

Parking: A new development project can impact quality of life if either too little or too much parking is provided. Too little and project residents/visitors may take up limited parking space

¹¹⁷ For further information on induced traffic visit the Sierra Club's congestion webpage at: <http://www.sierraclub.org/sprawl/transportation/congestion.asp>

¹¹⁸ See 23 CFR Part 772, which can be viewed online at: <http://www.fhwa.dot.gov/hep/23cfr772.htm>

¹¹⁹ Based upon environmental impact statements for the Tuscaloosa Bypass and I-93 in New Hampshire.

¹²⁰ Highway Traffic Noise - FHWA, available online at: <http://www.fhwa.dot.gov/environment/htnoise.htm>

¹²¹ Ibid.

on nearby residential streets. Too much parking creates more impervious area which increases aquatic resource impact.

Parking requirements vary from land use to land use. For example, typically two parking spaces are needed for each single-family home while five spaces are usually provided for each 1,000 square feet of floor area in a shopping center.¹²²

Frequently, parking ratios are based upon peak use. For a shopping center the peak use period may last for only a few days a year - the Thanksgiving to Christmas shopping season. For the rest of the year the parking lot is only half full.

The *Better Site Design* handbook¹²³ calls for adjusting parking requirements to minimize unneeded impervious area. Adjustments should take into consideration factors such as the availability of transit. Parking facilities can also be shared. I know of several churches with congregations much larger than available parking on the church grounds. The church leadership encourages parishioners to use a nearby park and ride lot for Sunday services. The church operates shuttle buses to get folks to and from the lot. Many parishioners actually come to prefer the shuttle approach. They get home more quickly.

A typical parking space is about 10 feet by 19 feet. Parking spaces make up about half of a parking lot. The rest of the lots is drive lanes, islands, and entrances. For each vehicle accommodated in a parking lot about 380 square feet of impervious area is created. This amount of impervious area would generate nearly 7,000 gallons a year of polluted runoff. For each space provided the impervious area would be sufficient to degrade four feet of a high-quality stream. Obviously, even effort must be made to minimize unneeded parking while ensuring that existing residents are not forced to compete for parking.

Sight-Distance: Imagine for a moment that you are leaving for work and sitting at the end of your driveway. You need to turn right so you look left. At what point can you first see cars approaching from the left? The length in feet between you and that point is the *sight-distance*. If the sight-distance is too short then there is a good chance you will get rear-ended some morning making that right-hand turn.

Minimum sight-distance varies with the speed of approaching vehicles, presence of hills, road surface condition and other factors. One gross rule of thumb calls for 11 feet of sight-distance for each mile per hour (mph) of approaching vehicle speed. In other words, if vehicles approach an intersection at 40 mph then a minimum of 440-feet of sight-distance is required. Again, this is a very general rule of thumb and actual sight-distance is best determined by a qualified

¹²² These parking ratios were obtained from Table 6.1, in *Better Site Design*, by the [Center for Watershed Protection](#).

¹²³ Ibid.

professional. However, this rule of thumb might be used to get a feeling as to whether you should bring in a traffic engineer.

Some jurisdictions base sight-distance on posted speed limit; others the 85th percentile speed (the 85th fastest moving vehicle). The approach based on 85th percentile speed makes more sense. Procedures will be found on the [CEDS website](#) for doing an unofficial citizen speed study.

Sight-distance is measured by stooping down at the point where a driver would be waiting to turn. Get your eye about 3.5-feet above the road surface. In other words, you are trying to get the view of a passenger car driver at an existing or proposed intersection. You then look for the point where you can first see vehicles approaching in both directions. With a tape measure you then determine the distance to each point. If you feel sight-distance may be inadequate then ask a qualified professional to verify your findings, including the speed of vehicles traveling on the road. But also make local traffic review staff aware of what you have found.

Traditional Neighborhood Design: With this design approach higher density residential is located around a central commercial district fronting on an open space commons. The community is laid out on a grid pattern, which allows for more efficient mass transit, with neighborhood parks and retail spread throughout the project. In other words, it looks like the neighborhoods of old and is far more pedestrian friendly. You can walk or bicycle to many places, including to the bus or rail stop. Visit the Preservation Institute's Traditional Neighborhood Design website for further detail: <http://www.preservenet.com/index.html>

Transit Oriented Development: The idea behind transit oriented development (TOD) is to concentrate a mixture of high-density residential and commercial land uses around locations served by mass transit services. The goal is to situate homes, retail shopping and offices within walking or bicycling distance of transit stops. Usually a rail transit station is the focal point (either light-rail or metro-style heavy rail), but TOD can also work with bus rapid transit. For further detail on Transit Oriented Development see the Brookings Institution report available online at: <http://www.brook.edu/dybdocroot/es/urban/publications/belzertod.pdf>

VISUAL IMPACTS

As shown in the preceding section of this book, the view from a home can be a significant source of satisfaction for the owner and a crucial factor in resale value. The study of homes with a view of Lake Erie showed a doubling of value when compared to similar homes without a lake view.¹²⁴ A development project which intruded upon the lake view would degrade quality of life for those residing in the home and lower the value of their property. If the obscuring land use were an objectionable one, such as a landfill or some other LULU, then the impact would be greater.

¹²⁴ Residential Real Estate Prices: A Room with a View, Journal of Real Estate Research, 2 3(1 / 2):129-137.

Visual buffers are frequently used to mitigate the aesthetic impact of incompatible land uses. The buffers are usually created through plantings, such as dense rows of evergreens along a site perimeter, but can also take the form of earthen berms, fencing and walls.

Visual buffering can also be achieved through careful selection of structure location, size, color and shape. On a large tract of land, a new office building might be hidden behind existing forest or tucked down in a valley. The height of smokestacks, towers, or a landfill might be reduced to minimize the number of homes from which the structure can be seen. Buildings can be made with wood siding or painted in earth tones so they are less visible. The normally straight edges of a landfill might be curved to appear more like a natural hill. Or visual impacts might be negated by changing building orientation. For example, development plans might show the rear of proposed houses facing the front of existing homes - a not very pleasant view. Besides visual buffers the new houses might simply be reversed so front of home faces front of home. In addition, a local jurisdiction might require a *residential transition area* between homes and incompatible land uses. The RTA might range from 50- to 150-feet in depth and buffer residences from noise, light and other visual impacts from the incompatible use.

Some jurisdictions require an applicant to conduct a viewshed analysis when the potential exists for affecting a large number of existing homes. The analysis is carried out by determining sightlines from each existing home or other locations, such as historic sites, where the proposed structure might create a visual impact.

The sightline analysis begins by referring to a topographic map to determine the elevation of the home. A line is then drawn on paper from the home to the highest point on the proposed structure to determine if it will be obscured by intervening trees, hills, or other landscape features. If the sightlines show a structure would be visible then the applicant must consider reasonable alternatives for reducing or eliminating the impact.

WILDLIFE

Development can impact wildlife through the destruction of nests, burrows, habitat, and other features crucial to insects, reptiles, birds, mammals and other wildlife species. Generally though only species considered rare, threatened, endangered or highly valued are afforded protection. But some states and local governments have enacted laws to protect habitat.

Birds

Everyone knows of endangered birds such as the bald eagle, though thankfully its no so endangered anymore. But there is a larger group of birds, known as *neotropical migrants*, which are declining. These are species which winter in Mexico or further south then migrate north. About half the bird species nesting in North America are neotropical migrants. Researchers have found that many of these species are declining, particularly those of eastern deciduous forests.

Fragmentation of the eastern forests, and those of Central and South America, by agriculture and development are the leading causes of the decline. It is thought that forest fragmentation harms these species by increasing predation and nest parasitism. Predators like raccoons and cowbirds

are usually not very abundant in extensive forests. But when large blocks of forest are fragmented their numbers increase along with the rate at which they decimate neotropical migrants through predation and nest parasitism.

How much forest do you need to preserve neotropical migrants? Well, what you need to *begin* preserving these species is forest interior. And forest interior does not start until one travels 300 feet in from the edge of a woodland. Blocks of forest 100 acres or larger begin to provide good habitat, provided they are not long and narrow. Obviously a 100-acre strip that is only 400 feet wide provides no usable forest interior.

If you can gain access to the site then identify all of the birds present, particularly those that are nesting. Do the same on areas adjoining the site. Be particularly watchful for any nests larger than a foot that are made mostly of sticks - not leaves - which may be used by large raptors or wading birds. If there is an unusually high abundance of *Forest Interior Dwelling* birds, then special protection measures may be warranted. Share your findings with ornithologists and ask if they feel your data indicates that the site supports uniquely important bird populations.

Endangered Species

The U.S. Fish & Wildlife Service (USFWS) is the official guardian of the nation's rare, threatened and endangered (RTE) species. But many states have their own lists of species which are RTE within their borders. Additionally, these states have *natural heritage* programs which monitor and conserve the State's RTE species.

To learn if RTEs occur on or near a proposed development site contact the natural heritage program for your state. Usually natural heritage is part of agencies such as natural resources, wildlife, fish and game, conservation, or environmental protection.¹²⁵

Natural heritage program staff may ask you to submit a written request for information on RTE species. In the letter ask not only if RTE species are known to occur on the site, but also on adjoining lands, and downstream along any waterways associated with the site. It is usually helpful to include a map showing the site location. The map should be reproduced from the U.S. Geological Survey topographic sheet for the area.¹²⁶

The presence of an RTE species on or near a site does not preclude development. What it will do is cause regulatory agencies to take a closer look at development activities which may affect the species. Frequently an RTE species can be protected with buffers and other BMPs. It is relatively rare that a snail darter or a spotted owl halts development activity.

¹²⁵ Visit the following U.S. Fish & Wildlife Service Endangered Species website for contacts in your area: <http://endangered.fws.gov/contacts.html>

¹²⁶Topographic maps can be obtained from the U.S. Geological Survey headquarters at 1-800-USA-MAPS or downloaded from: http://edcwww.cr.usgs.gov/Webglis/glisbin/finder_main.pl?dataset_name=MAPS_LARGE

It is unusual for a natural heritage program to have surveyed a particular site for RTE species. So if you can gain access to the site, then look for species found in similar habitat in the area. Also examine areas adjacent to and downstream of the site. If you think you have found an RTE then **do not** disturb it in any way. Instead, notify natural heritage program staff.

Wildlife Groups/Institutions

In addition to the natural heritage program contact all other organizations and institutions that may have information on endangered species and other important plant, fish, bird, or wildlife species. These organizations/institutions may include: birding clubs; botanical societies; college or university biology, zoology or ecology departments; nature center staff; the National Biological Service of the U.S. Fish & Wildlife Service; state wildlife agency staff; personnel with parks or refuges located near the site; and environmental or conservation organizations.

If wildlife species of unique importance may be affected by site development then ask natural heritage or other wildlife agency staff to call for species protection. Ask the staff to describe what steps would be needed to fully protect the species, not just what may be politically acceptable. Make certain development review staff are aware that the species are present and what the wildlife experts feel is needed to safeguard the resource.

CHAPTER 3 - THE GROWTH MANAGEMENT PROCESS

Following is an introduction to how growth management generally works. An understanding of this process is crucial to determining which strategy options may provide the best path to victory. Further detail on the specific components of the process is provided after this introduction.

PROCESS OVERVIEW

The goal of the process is to manage growth in a way that preserves quality of life for existing and future residents while minimizing restrictions on the use of property. The process begins with a comprehensive plan drafted by a broad cross-section of residents, business owners, government officials and other interested parties working collaboratively. The plan sets forth a consensus view of how a town, city, county, or region should grow.

Zoning is used to implement the plan by defining where desired uses would best be located. Through zoning the intensity of use is managed along with specific standards for ensuring compatibility with other uses.

A number of specific permits and approvals must be obtained when a development project is proposed for a particular tract of land. To obtain each permit-approval the applicant must demonstrate that their project meets performance standards for issues such as roads, water and sewage, schools, environmental protection, and a number of other issues.

For the most part, growth management is administered at the local level - the level of a borough, town, city or county as opposed to the state or federal level. The key growth management decision-maker is usually the local legislative body - the council, commissioners, supervisors, assembly, etc. In some local jurisdictions a mayor or county executive may play a major role in growth management, though it is still the legislative body which is the ultimate decision-maker.

Most local jurisdictions have a planning board or planning commission which considers everything from the comprehensive plan to plan amendments to new laws to zoning changes to specific development projects. Usually the planning board or commission is composed of volunteers selected for their ability to represent community views and for their expertise.

In some cases the planning board is the key decision-maker on development projects but frequently they make a recommendation to the local legislative body. A number of jurisdictions also leave it to the planning director or a hearing officer to approve development projects.

Most local jurisdictions have at least one staff member with expertise in planning and zoning. In the smallest jurisdiction they may simply have a planner on contract who is consulted as needed. In other areas the local jurisdiction may rely upon planning staff assigned to a region who serve a number of towns or counties.

The local legislative body will enact a set of laws containing the specific requirements a development project must meet in order to receive various permits and approvals. The laws may be contained within a *Code of Ordinances* or *Code of Regulations*. Specific chapters of the code

may pertain to zoning, subdivision of land, development regulations, roads, environmental protection, schools, stormwater management, and a host of other development-related topics. In addition, there will usually be guidance or policy documents providing detail on how one goes about complying with the code requirements. But usually a local jurisdiction can only compel an applicant to comply with requirements set forth in law (the code). There will also be state and possibly federal laws an applicant must meet along with supporting guidance documents.

Regional, state and federal agencies can also influence how and where development goes. In more populated areas a Metropolitan Planning Organization (MPO) decides how and where transportation funds will be spent. By deciding where new roads go an MPO can play a major role in determining the pattern of future growth and whether existing developed areas will thrive or decline. State agencies are frequently responsible for issuing a variety of environmental permits/approvals and for distributing funds for the construction of schools, roads, water and sewer facilities, and other infrastructure. State agencies may also develop a number of the guidance documents used by local officials in determining whether specific permits/approvals should be granted. Federal agencies may be involved in project-specific decision-making, such as the permits issued by the U.S. Army Corps of Engineers for impacts to wetlands, streams or other *waters of the United States*..

For the most part, once local government decides that a project is acceptable on a specific tract of land regional, state and federal agencies are very reluctant to take actions which would stop the project. They may add conditions to a permit to reduce project impacts, but rarely will the conditions rise to the level of stopping a project.

LAND USE PLANNING

A variety of plans are needed to maximize the benefits of growth while keeping the negative effects at an absolute minimum. In more populated jurisdictions there will usually be an overall plan which ties together all the elements essential to sound growth management. This document may go by names such as the comprehensive plan, the master plan, the general development plan, and so forth. Some jurisdictions also draft sub-plans covering specific areas - an area master plan.

A good overall plan should address all the following elements:

- past and future trends in population, land use, and public finance (tax revenue and expenditures);
- transportation;
- schools;
- environment;
- police, fire and other emergency services;
- open space;
- water, sewer, and other infrastructure;
- neighborhood conservation and revitalization;
- disaster protection;

- economic development; and
- any other element crucial to preserving property rights and quality of life.

The plan should be developed through an inclusive public participation process. In other words, the process should allow many people to actively participate in drafting the plan. Ideally, the participants would reflect the diversity of opinions and values of the community as a whole. For each element of the plan participants would be provided with the information needed to assess how the issue has affected quality of life in the past, how the effect may change with anticipated growth, and the alternatives available for managing future growth to increase the benefits while minimizing adverse effects. The process should then foster a consensus among divergent viewpoints. Obviously, the goal must be to draft a realistic plan; one which can be implemented.

The outcome of the process will be a document setting forth the collective vision for future growth as well as specifics such as where new bus lines and other transportation improvements will be made, where schools must be expanded, and how sensitive environmental features will be preserved. The plan should also contain a map showing where growth will be directed, transportation improvements, the areas preserved from development, and the other features needed so one can grasp the collective vision by viewing the planning map.

Conditions change so the process must include opportunities for the public to participate in periodic updates of the plan. The process should also include provisions for amending the plan. But amendments need to be made in a way that is just as inclusive as that employed to draft the plan. For example, a hearing should be held after extensive notice to take public comment on a proposed plan amendment.

Local jurisdictions in more populated areas may adopt a number of other issue-specific plans such as:

- a transportation plan,
- a water and sewer plan to guide the extension of sewerlines and water lines,
- watershed management plans to protect sensitive aquatic resources, or
- a master plan for schools.

The jurisdiction will also adopt a capital improvement plan setting forth the tax-dollar funded projects for building the new schools, sewerlines, transit stations, and other infrastructure needed to accommodate anticipated growth and to preserve quality of life for current residents.

ZONING

Through the comprehensive planning process a community decides where it wants to permit high-density housing, shopping centers, office space, and other land uses. Zoning is the principle means of implementing this aspect of the plan.

A local jurisdiction will adopt an ordinance establishing a number of zoning districts. These may include a half-dozen residential districts where the dominant use in each will range from

single-family detached homes to townhouses or apartments. Other districts would include those geared towards agriculture along with commercial, industrial, and mixed-use development.

Each parcel of land within the jurisdiction is then assigned to a zoning district. The zoning ordinance will set forth the process by which the local decision-making body adopts the set of zoning maps which assign each parcel to a particular District. There will also be provisions for amending the maps. Both processes (adoption and amendment) usually require a public hearing before the local planning commission and the legislative decision-making body.

Some jurisdictions also employ overlay and floating zones. An overlay zone modifies the development permitted in underlying zones. For example, in my home state the Chesapeake Bay Critical Area has three overlay zones applied to all lands within 1,000-feet of tidal waters. Lands within the overlay zones must meet more stringent environmental protection requirements. A floating zone also modifies the uses allowed in the underlying district but are applied through a process beginning with a land owner request.

The zoning ordinance will set forth the following specific requirements for each district:

1. **By Right Uses:** These are land uses and other activities permitted within the District *by right*. For example, in most residential districts single-family detached homes are permitted *by right* as opposed to uses requiring a special exception or conditional use permit.
2. **Accessory Uses:** These are uses normally associated with those permitted by right, such as storage sheds or parking recreational vehicles on a lot zoned for single-family detached homes. But the zoning ordinance may contain restrictions intended to prevent an accessory use from causing an undue impact to adjoining property owners, such as limiting the number of RVs that can be kept on the lot.
3. **Special Exception or Conditional Use Permit:** An activity requiring a special exception or conditional use permit is one which is normally compatible with other uses allowed in a Zoning District, but in some cases conflicts may arise. Usually a formal evaluation is made to determine if there is anything about the proposed use which would cause excessive impacts on the particular tract of land. For instance, a golf course might be permitted by special exception or conditional use permit in a number of residential districts. In most cases a golf course would be a use compatible with homes. But if the homes are served by wells which are likely to become contaminated by golf course fertilizers and pesticides then a special exception/conditional use permit might be denied. Or the permit might contain conditions that resolve the potential impact, such as prohibiting the application of chemicals in areas where they will likely cause well contamination.
4. **Bulk Requirements:** The zoning ordinance will contain limits on how parcels within each district can be developed. Common limits include:

- a. Minimum and maximum lot size;
- b. Minimum lot width and length;
- c. Number of dwelling units allowed per acre;
- d. Height restrictions;
- e. Setbacks from lot lines, streets, wetlands and streams; and
- f. In commercial districts limits on Floor to Area Ratio (FAR) such as 0.4 which means the floor area cannot be more than 40% of the lot area.

The zoning ordinance may also contain requirements for signs, parking, roads, historic preservation, environmental protection, adequacy of public facilities, and a number of other development considerations. The ordinance may also specify the composition, powers, and duties of the legislative decision-making body, the Planning Commission, the Board of Appeals, hearing officers, the planning director, and other officials.

ANNEXATION

In *Cities Without Suburbs*¹²⁷ former Albuquerque mayor David Rusk showed how towns and cities with “flexible” borders were able to maintain their tax base through a legal process known as annexation. Vacant or under developed land adjoining the municipality would be annexed into the corporate limits. When the property was fully developed the jurisdiction would reap the benefits in the form of increased tax revenue. Of course the town would also have to pick up the cost of providing public services. If the added revenue exceeded the additional expenses then town residents benefitted from either lower taxes or improved services.

In contrast, Mayor Rusk described towns that could not annex. Over time existing homes, businesses and schools aged while middle- and upper-income residents fled to the suburbs taking their higher tax payments with them. Lower income residents were left behind. Thus the municipality was faced with declining tax revenues and the higher expenses associated with a lower income population and deteriorating infrastructure.

While annexation is one solution to this problem it is not the only and not necessarily the best) solution. The *Smart Growth* movement was inspired in part by Mayor Rusk’s landmark work. Planning agencies, development interests and citizen advocacy groups began working together to reverse the factors which encouraged middle-class flight and sprawl. Policies were adopted which make it attractive to develop within existing towns and other population centers. But since the adoption of Smart Growth principles is far from universal and complete, annexation is still a common practice.

Development interests sometimes use annexation as a way of avoiding regulation. If a county has good growth management laws, but a town incorporated within the county has less stringent regulations, then a property owner may seek annexation into the town.

¹²⁷ *Cities Without Suburbs*, by David Rusk, Woodrow Wilson Center Press, 0-943875-74-9, 168 pp., 2nd Edition 1995.

Annexation can also be motivated by a desire to access public services, such as water and sewer. A town with its own water and sewage treatment facilities may restrict access to properties located within the municipal boundaries. Properties adjoining the town can only develop at the much lower densities allowed on well and septic. Thus property owners wishing to maximize development profits have a strong incentive for requesting annexation into the municipality.

If the proposed annexation of a property will harm you or your neighbors, then take a look at the applicable laws. Could the annexation be done with conditions which resolve your concerns: a win-win solution?

If the annexation is motivated by a desire to avoid regulations, which would otherwise resolve your concerns, then can you convince the municipality to adopt similar laws? If not, then perhaps your best recourse is to find some portion of annexation requirements which the applicant fails to meet. Or can you convince key decision-makers to deny the application? Look to the decision-makers in both jurisdictions. Approval may be required from not only municipal officials but also those administering the jurisdiction in which the property is presently located. Also, approval may be required of a majority or all of those who own property within the area proposed for annexation.

VARIANCES & WAIVERS

Most zoning ordinances contain provisions allowing the local jurisdiction to grant a variance or waiver for certain requirements. For example, if someone wants to build a garage but they cannot meet say a 10-foot property line setback, but they can keep the garage eight-feet away, then they may get a variance, particularly if they proved that the variance was needed because of some unusual characteristics of their property. Many local jurisdictions also require the applicant to demonstrate that the variance is needed to relieve hardship.

A waiver usually means relieving an applicant from the need to meet specific requirements. For instance, an applicant might receive a waiver from stormwater management requirements if it was determined the project would not cause adverse impacts downstream.

DEVELOPMENT REVIEW PROCESS

A zoning ordinance or subdivision regulations will set forth the process for reviewing a proposed development project. Typically the process will consist of the following steps:

1. First, if necessary, the applicant requests a comprehensive plan amendment, annexation, a water and sewer plan amendment, or a change in zoning.
2. If the project requires a special exception, conditional use permit or a variance then a decision is made as to whether these approvals will be granted. In many cases a formal hearing is held.

3. A concept or sketch plan is submitted so staff and/or the Planning Commission can determine if there are any basic issues which would make eventual project approval unlikely.
4. Following concept or sketch plan approval, a more detailed preliminary plan is submitted along with various supporting documents such as a traffic impact study, stormwater management analyses and plans, architectural drawings, etc.
5. If preliminary plan approval is granted then the applicant proceeds with submission of the even more detailed plans required for final development/subdivision plan approval.
6. If the final development plan is approved then the applicant proceeds to the issuance of the grading and building permits required to actually break ground and start construction.

Many jurisdictions will combine similar steps in the process. For example, preliminary plan approval may be considered simultaneously with special exception-conditional use permit review. This is because both require a similar analysis and it is more efficient to carry out the analyses at the same time.

If you are grappling with a project which is so poorly conceived that the impacts cannot be resolved, then your best opportunity to defeat it will be at the first two steps in the development review process. In other words, you must start early and convince key decision-makers to deny the comprehensive plan amendment, annexation, a rezoning request, a special exception, the conditional use permit, or a variance. If a project is consistent with zoning and does not need a special exception, conditional use permit or a variance, then it is very likely that it will eventually be approved, as it should be. Your best opportunities to win changes that resolve project impacts will be at the first four steps in the process described above.

PUBLIC PARTICIPATION

The zoning ordinance may also contain requirements for notifying the public about proposed development projects and opportunities to comment. Public notification could be as little as a legal announcement in a newspaper to something more responsible, such as posting signs on the site along with mailings to adjoining property owners. The notice may be given a week to several months prior to a hearing or the deadline for public comment.

A legal notice a few weeks before a hearing is not a very effective way for allowing the public to participate in the development review process. My home county (Baltimore County, Maryland) has one of the best development review public participation processes in the nation.

First, a Community Input Meeting (CIM) is held in the evening at a location near the proposed development site. The CIM is announced with a sign posted on the site, a mailing to adjacent property owners and the community associations active in the area, and a listing on the County's website. A copy of the applicant's Concept Plan is mailed out to any interested party. Both the applicant and County officials attend the CIM to explain the project and to answer citizen

questions. Copies of the project Concept Plan are distributed. The County officials take detailed notes on citizen concerns. The applicant is encouraged to resolve each relevant issue.

Next, the applicant submits a Development Plan. A Development Plan conference is then held between the applicant and County officials. At the conference County officials discuss their outstanding concerns with the applicant. The public is allowed to attend the conference, but not to participate in the discussion.

Within 10 to 21 days following the conference a County hearing officer holds a public hearing on the Development Plan. Though this is a formal legal proceeding the public can present their concerns, the facts supporting each concern, and even question the applicant's witnesses if they are not represented by an attorney. The hearing officer can approve or deny the development plan. The hearing officer also has the option of approving the plan with any reasonable conditions needed to resolve outstanding issues.

If citizens are dissatisfied with the hearing officer's decision then they can take an appeal to the County Board of Appeals. If they are dissatisfied with the Board's decision then they can appeal to Circuit Court then the Maryland Court of Special Appeals.

When the CIM process was first proposed, many thought it would greatly increase citizen appeals of development approvals. In fact, this has not been the case. The process has probably had the opposite effect. By informing citizens of development proposals very early in the process it is easier for citizens to judge whether the project will cause undue impact and to work with the applicant and the County to resolve their concerns. So the CIM process has probably reduced the number of appeals and improved the compatibility of new development with existing land uses.

PERMITS & OTHER APPROVALS

In addition to those discussed above, following are the permits and other approvals a project may need to acquire along the path from conception to ribbon-cutting.

Adequate Public Facilities

Some local jurisdictions have adopted adequate public facility ordinances (APFOs). The intent of APFOs is to manage development approvals so that schools, roads, water, sewer and other infrastructure are not overtaxed. Frequently, APFO requirements kick in at the building permit stage. In other words, a building permit would not be issued unless adequate capacity is available to accommodate the students generated by construction of a new home along with other additional service needs.

Building Permit

Issuance of a building permit is usually the last step in the development review process. To get to the building permit stage an applicant must have complied with all zoning and subdivision requirements. The building permit focuses on compliance with codes for plumbing, electrical,

construction practices, and so forth. In jurisdictions without zoning and subdivision regulations, this may be one of the few permits/approvals required before a project can break ground.

If you just learned about a project and all other permits/approvals have been granted, except for the Building Permit, then the likelihood of resolving your concerns is not good. The applicant has invested a lot of money in getting the project to this final design stage. The reviewing agencies have gone on record as approving the project. Relatively little flexibility remains for making changes. To win your concerns would need to be obvious, substantial, and correctable without major changes to the project.

Environmental Impact Statement

Most development projects are not required to comply with the environmental impact statement (EIS) provisions of the National Environmental Policy Act (NEPA). NEPA only comes into effect when a project involves a major federal action and that action is likely to result in a significant impact.

Examples of a major federal action would include projects where federal funds are used or federal permits are required. NEPA requires that all major federal actions be subjected to three levels of analysis:

- categorical exclusion determination;
- preparation of an environmental assessment/finding of no significant impact (EA/FONSI); and
- preparation of an environmental impact statement (EIS).

Categorical Exclusions apply to specific types of projects where prior analysis has shown that the project type does not cause a significant impact. If a project does not qualify for a categorical exclusion, but further analysis (an environmental assessment) shows it will not cause harm then a Findings of No Significant Impact (FONSI) is issued. An EIS must be prepared for projects which fail to receive a categorical exclusion or FONSI. For further detail on NEPA go to: <http://www.epa.gov/compliance/nepa/index.html> and <http://ceq.eh.doe.gov/nepa/nepanet.htm>

Some states have their own version of NEPA, complete with requirements to prepare an EIS. For example, Washington has a [State Environmental Policy Act](#) which applies to state projects as well as approvals granted to private development projects. The following [CEDS website](#) publication contains an analysis of a proposed development project for compliance with the Washington state SEPA requirements, *Salmon, Lake Quality, Wetlands & Development Impacts - An Example of CEDS Analysis*.

Erosion & Sediment Control Plan Approval

The impact of construction phase erosion and sediment pollution was described in the section of this book on aquatic resources. The U.S. Environmental Protection Agency (EPA) requires the use of erosion and sediment control measures on all construction sites five acres or larger. A number of states and local jurisdictions have also adopted their own erosion and sediment

control requirements which may apply to all construction sites, not just those five acres or greater.

In areas where just the EPA requirements are in place the applicant must file a Notice Of Intent (NOI) form. A storm water pollution prevention plan (SWPPP) must be prepared which describes the Best Management Practices (BMPs) which will be used to minimize erosion and sediment pollution. The EPA BMPs requirements can be downloaded from: <http://cfpub.epa.gov/npdes/stormwater/cpermit.cfm>.

If erosion and sediment control is among your concerns then you should obtain the BMP requirements from the EPA site or from your state-local government. Arrange an opportunity to review the applicant's SWPPP. Compare the proposed BMPs with those presented in the EPA, state or local manual. Consider the advice provided in the aquatic resource impact section of this book on maximizing the effectiveness of construction phase controls. Verify that the applicant is taking all steps necessary to protect the aquatic environment.

Fire Department

In many localities the fire department will review a proposed development project for any factor with might impede fire suppression. These factors include:

- sufficient water pressure in areas served by public water;
- the need to install a pond, tank or other measures to ensure adequate water is available to fight fires in remote areas;
- proximity to areas subject to wildfires;
- at least two means of accessing a site (many local jurisdictions discourage projects where there would be only one road in and out that might be blocked thus preventing emergency vehicle access);
- the need to require sprinkler systems;
- whether building height or other factors exceeds the capability of fire equipment; and
- minimum response times from the nearest fire station (National Fire Protection Association standard 1710 requires a response time of four minute or less for career fire stations).

In rural areas where wildfire is a danger some jurisdictions have adopted codes to reduce the likelihood of property loss and injury. The University of Arizona has a *Wildfire Hazard Severity Rating Checklist for Arizona Homes and Communities* on their [website](#). The checklist gives an indication of the factors that should be considered for development projects proposed for areas subject to wildfires.

Grading Permit

A number of local jurisdictions require an applicant to submit a grading plan. If the plan complies with requirements such as erosion and sediment control then a grading permit is issued. The purpose of this permit is to ensure that grading, filling, and site clearance is done in a way which minimizes adverse effects. Through the grading permit review process other issues may be screened, such as checking to see if limits of disturbance will intrude upon aquatic resource

buffers or onto adjoining properties, minimizing forest loss or altering viewsheds, and guarding against impacts to historic or archaeological resources.

Highway Access Permit

To connect to an existing local or state road, one may need a highway access permit, even for a new driveway. To obtain the permit the applicant must demonstrate that safety will not be jeopardized. For example, the applicant must demonstrate that the sight-distance criteria presented earlier in this book are met. The applicant may be required to submit a full traffic impact study, especially for larger projects.

If traffic is among the concerns you have about a proposed development project, then contact the agency responsible for the affected roads. The responsible agency will usually be obvious from looking at a map or signs posted along the road. For example, if the road is a state route then it is maintained by the state highway agency. As always, request an opportunity to review any applications and other documents submitted for the proposed access. Compare the information presented in these documents to the agency's criteria for granting an access permit. Discuss any unresolved concerns with agency staff.

Historic Resource Review

This topic was covered in detail earlier in this book. Many local jurisdictions and state agencies will review proposed development projects for impacts to historic or archaeological resources. Frequently this is done by the planning and zoning staff. The local zoning ordinance may require staff to sign-off on historic resource preservation requirements before a preliminary or final development plan can be approved. An assessment of impacts to historic resources is one of the elements of an EIS. To locate the local historic preservation review office for your area go to the [NPS Heritage Preservation Services website](#).

NPDES Pollution Discharge Permit

If an applicant proposes to construct a sewage treatment plant or some other new *point* source of pollution then they must comply with the provisions of the National Pollution Discharge Elimination System (NPDES) of the federal Clean Water Act. NPDES permits are not required for most *nonpoint* pollution sources such as septic systems serving individual homes and cropfield runoff.

An NPDES discharge permit must be obtained before a project commences. For the most part, EPA has delegated the authority to states for issuing NPDES discharge permits. To receive a permit the applicant must demonstrate that the discharge will be treated to a level sufficient to prevent a violation of water quality standards. Further information on the NPDES system can be found at: <http://cfpub.epa.gov/npdes/>.

If a project will connect to an existing sewerline then review the compliance history for the plant which treats the wastewater carried by the sewer. Compliance information for existing permitted discharges can be viewed at: <http://www.epa.gov/enviro/html/water.html#PCS>

If the plant is running at or over the design capacity or experienced one or more major violations a year, then these problems should be corrected before further connections are allowed.

Occupancy Permit

Once construction of a home or other buildings has been completed the local government will issue a final approval known as an *occupancy permit*. If an applicant has failed to comply with some requirement crucial to the protection of you and your neighbors, then urge the local government to withhold the occupancy permit until the problem is resolved. Of course there must be some logical connection between the unresolved issue and the occupancy permit. For instance, if the applicant were required to install a required visual buffer between your home and a new commercial building, then it would be logical to withhold an occupancy permit. But if local officials had made a decision earlier in the process not to require a buffer then it is less likely you can delay occupancy permit issuance.

Septic System Permit

The aquatic resource effects of septic systems was covered in detail in a prior section of this book. Before construction may begin on a home or other building served by a septic system, the local health department must certify that the site meets minimum requirements. If the project of concern to you will be served by a septic system then request an opportunity to review the health department's files. Compare results of percolation tests and other site investigations with the criteria contained in local or state law. Also compare the project with the recommendations given earlier in this book for protecting aquatic resources from septic system impacts. If you feel the criteria have not been met or some unusual condition exists which could cause undue impact, then ask the health department to withhold the septic system permit.

Stormwater Management Plan Approval

Once the construction phase is completed, stormwater runoff from rooftops, streets and parking lots introduces a new set of aquatic resource impacts. Many local jurisdictions and some states have enacted laws mandating the use of BMPs to reduce the impact of post-construction stormwater runoff. In other localities, especially towns and cities with a population of 100,000 or more, the EPA Stormwater NPDES Program requires control of runoff impacts from separate storm sewers.¹²⁸ The portion of this book on aquatic resource impacts described measures to reduce or eliminate stormwater impacts. If stormwater management is required for the project of concern to you then request an opportunity to review the plans. Determine if highly-effective BMPs are proposed. If not then consider encouraging local officials to require these measures, particularly if the project threatens uniquely important or sensitive aquatic resources.

Water & Sewer Plan Amendment

If a site is located outside the area served by public water and sewer services and the applicant wishes to build at densities greater than those possible with well and septic, then they will need to request an extension of water and sewer lines. Many local jurisdictions have adopted a master

¹²⁸ For further detail on EPA's separate storm sewer NPDES program visit: <http://cfpub.epa.gov/npdes/stormwater/munic.cfm>

water and sewer plan which serves as a critical growth management tool. Extending water and sewer beyond the areas shown for service in the plan may require an amendment. Frequently, the local council or commissioners must hold a formal public hearing on an amendment request.

If vacant sites exist within the areas where water and sewer lines already exist, then growth should be directed to these locations first before extensions are made to other areas. It would be a waste of tax-dollars to construct new water and sewerlines while existing infrastructure goes underutilized. Similarly, new development should be directed to *redevelopment* sites, such as empty warehouses or abandoned shopping centers. If existing water and sewerlines are fully utilized then the applicant should be required to pay for service extensions.

If a project site is within an area designated for water and sewer service then the applicant may still need an approval to connect, which may go by the name of a water or sewer allocation. Local utilities use allocations to keep track of the commitments made to provide service. The allocation tracking system prevents a utility from committing to services which exceed their capacity.

Water Appropriation Permit

If a project will require water pumped from an aquifer or a surface source (lake, river, etc.) then they may need to apply for an appropriation permit from a state agency. Occasionally, local approval is required as well. Frequently, these permits are issued by the state natural resources or environmental agency. To obtain a permit the applicant must demonstrate that the quantity of water requested is truly needed and that the withdrawal will not adversely affect other users or the environment.

In eastern states water appropriation law is based upon the riparian use doctrine which allows those owning property adjoining a water body to make reasonable use of the water as long as it does not interfere with the rights of other riparian property owners.

In the west the prior appropriation doctrine is more common. This doctrine states that the first person to make beneficial use of water retains control of the water in perpetuity. In some states, like California, both doctrines apply.

Well Permit

In addition to (or in-lieu of) a water appropriation permit local or state government may require an applicant to obtain a well permit before drilling commences. The permit will carry with it specifications on how the well is to be constructed to prevent contamination. For example, the driller may be required to extend the well a foot above ground so surface runoff cannot flow in through the top. Also, the applicant maybe required to case the well in solid pipe from the surface to bedrock or the first layer of impermeable clay. Grouting with concrete may be required to further seal the well from contamination. Some states require the driller to submit a completion report for each well they construct. These reports can provide a wealth of valuable information about groundwater conditions, geology and the vulnerability of wells to

contamination from septic systems and other sources. The state or U.S. Geological Survey can also provide information on groundwater conditions.¹²⁹

Wetland Permit

The federal Clean Water Act prohibits dredging or the placement of fill within *waters of the United States*, which includes all our tidal waters, flowing waters (streams and rivers), lakes, ponds and wetlands. The upstream limit of *Waters of the US* extends to the head of intermittent stream flow.¹³⁰ The U.S. Army Corps of Engineers (USACE)¹³¹ is the lead agency on wetland permits, though a number of states and local governments also regulate dredging and filling in wetlands and other waters.

The USACE has two broad categories for wetland permits: general and individual. General permits cover relatively minor activities which individually have minimal impact but could have a considerable effect cumulatively. Individual permits are required for activities with more substantial impact. For example, a proposal to construct a bridge across a small stream might qualify for a general permit whereas a proposal to build a road crossing impacting an acre or two of wetlands would not.

General permits vary from state-to-state. So check with your district USACE office to obtain detail on general permits.¹³²

Before the USACE can issue a wetland permit your EPA regional office or the state environmental protection agency must grant a [Water Quality Certification](#) for the project. The WQC certifies that the proposed activities will not violate applicable water quality standards.

At first it might seem obvious what is a wetland. But in reality wetland identification gets a bit complex, particularly when attempting to decide where a wetland starts and ends. The bible on wetland identification is the USACE *1987 Wetland Delineation Manual*.¹³³ For larger development sites a USACE official will walk the area and prepare a *jurisdictional delineation* showing where dredging-filling would require a Corps permit.

¹²⁹ Visit the U.S. Geological Survey at: <http://www.usgs.gov/>

¹³⁰ An intermittent stream carries water for more than just the period immediately after a rainfall-snowmelt-runoff event but less than year-round. Intermittent streams are shown as a broken blue line on topographic maps.

¹³¹ For further information on U.S. Army Corps of Engineers wetland permitting visit: <http://www.usace.army.mil/public.html#Regulatory>

¹³² To locate the USACE district for your area visit: <http://www.usace.army.mil/where.html#Divisions>

¹³³ The U.S. Army Corps of Engineers Wetland Delineation Manual can be downloaded at: <http://www.wes.army.mil/el/wetlands/pdfs/wlman87.pdf>

If an applicant has proposed activities in areas which may be waters of the U.S., then contact the USACE district office for your area as well as any state or local agencies regulating activities in streams, wetlands and other waters. Request an opportunity to review project files. Discuss any unresolved concerns you have with agency staff. If you are dissatisfied with the results of these discussions then go on to the next section of this book on strategy options.

CHAPTER 4 - STRATEGY OPTIONS

Following are the basic strategy options available for resolving your concerns about a proposed development project:

- negotiate with the applicant in hopes of reaching agreement on a win-win solution;
- work with regulatory staff to implement a solution through the growth management process;
- lobby key decision-makers to adopt your preferred solution;
- initiate legal action to force adoption of your preferred solution;
- change the law;
- change decision-makers; and/or
- preserve the site.

In reality, many campaigns use a combination of strategy options. Citizens will initiate discussions with staff and the applicant in hopes of reaching an agreement. Negotiations will reach an impasse. The citizens will then begin lobbying elected officials to prevent development impacts. If the citizens are dissatisfied with what elected officials offer then they will pursue legal options for preventing or overturning project approvals. Once citizens begin the appeal process the applicant faces the possibility of spending large sums on lawyers and experts while ground-breaking is delayed. This puts increased pressure on the applicant and may prompt a return to the negotiating table.

The success of most campaigns depends upon the amount of public support they have, which is a shorthand way of saying how many volunteers, dollars, and political clout they have amassed. So the first step in pursuing the various strategy options will be to expand your base of support.

EXPANDING PUBLIC SUPPORT

In large measure, your success depends upon the amount of public support behind your effort. Your supporters provide the volunteer hours, dollars, and political clout crucial to motivating the applicant and other key decision-makers to act. From among your supporters you may also find volunteers who can provide the professional services (attorneys and expert witnesses) crucial to victory.

Usually funds are the form of support most urgently needed. A project is chugging along the development review process, a hearing is coming up in a few weeks and you need a lawyer and an expert witness or two so you have a shot at winning a favorable decision at the hearing. For the vast majority of citizen campaigns the funds come from those who are directly impacted by a project; not foundations or other organizations. The exception would be campaigns where land preservation is a realistic option. Still the funds used to wage the political and legal battle to win through land preservation will come mostly from those directly impacted.

Who Are Your Supporters

From whom can you draw support? From anyone potentially impacted by the project. The impact or effect can be negative or positive. For example, potential supporters to save a large tract of forest would include:

- those who live next to the forest;
- others who live along the roads which would receive the increased traffic if the forest were developed;
- the parents whose children attend the school which may become overcrowded if the forest were converted to housing;
- the people who presently hike, hunt, birdwatch, or ride horses in the forest;
- the residents of the town downstream who rely upon the forest to provide clean drinking water;
- the people who live more distant but value the forest because they see it from their homes;
- the folks who value the historic aspects of the forest;
- people concerned about the general decline of forest throughout a region;
- those who work farms adjoining the forest and fear complaints from new neighbors about livestock odors, machinery noise, or dust; and
- on and on the list might go.

Your Message

To win the support of others you need to craft a concise message. There are three parts to the message:

1. **The Impact:** How will the project affect your potential supporters? The more direct the impact the better. And the more the impact affects strongly-held values the better. If an applicant proposes an adult book store in a residential area, then the whole neighborhood will come out in force. If the project entails development similar to the existing neighborhood then the level of support will likely be low.
2. **The Solution:** What is your solution to prevent the impact? The more credible the solution, the more support you will generate. If it is obvious how your solution will work and why there's a good chance it will produce victory, then you need say no more. But if its not so obvious then offer an example or two of how a similar solution worked in a similar campaign waged by folks just like you and your supporters. There's lots of examples to choose from. Give CEDS a call and we can offer several examples.
3. **The Request:** What is it you want your supporters to do? Contribute dollars, poll their friends and neighbors for professional services, call or write decision-makers? The more specific, the better. And its generally best to ask for just one thing at a time and to make the request face-to-face or at least by phone. The more personal the mode of contact, the better the response rate.

Your message also needs to be distilled down to a clear, concise statement. The standard goal in organizing is to get the message down to ten words or less. For instance, the message of this book could be stated in eight words...

To win development campaigns aggressively pursue win-win solutions.

Okay the statement is nine words if you quibble and say win-win is two.

Continuing with the forest example, the message could read...

Mayor Smith save our forest to save our schools.

You could also substitute any other strongly-held value for schools.

Following the short statement would be something conveying more detail, perhaps along the lines of..

We must save our forest to save our neighborhoods, nearby working farms, to prevent overcrowding of our schools and roads, and to protect our water supply. Our goal is to convince Mayor Smith that there's overwhelming support among city residents to purchase the forest. We'll also initiate legal action to prevent the forest from being developed before Mayor Smith can act. Citizens used this same strategy to save the 200-acre Bucklodge Forest in Montgomery County, MD, the 2,000-acre Chapman Forest in Prince George's County, MD, and the 16,000-acre Sterling Forest in New York. We can do the same. But first we need to establish a Forest Defense Fund of \$10,000, which will go mostly for legal expenses. To do this we need 100 people who will contribute \$100 each. Will you join with me in making a \$100 contribution?

Your message should focus on the benefits of supporting the effort, not the negative aspects. For example, state the goal as to save the forest; not to stop a development project. Or the goal is to keep the neighborhood a good place to raise a family; not to stop an adult bookstore. By the same token the name of the effort should focus on the positive, not the negative: Citizens to Preserve the Forest or Save Our Children (from the adult bookstore).

After picking a name you will also need to set up a bank account to receive contributions. Many folks believe they need to set up a nonprofit organization to begin fund-raising. This is not the case. In fact, there are good reasons *not* to apply for nonprofit status. The federal limits on nonprofit electioneering and even lobbying may unduly restrict a campaign. Also, most of the folks who support your campaign will do so whether their contribution is tax-deductible or not. So just go to a local bank and set up the same type of account as a small business. But you should check with a good accountant to see if any permits are required to raise funds in your state. Also, the accountant can help you with tax filings and related matters.

Where To Begin

The best place to start enlisting supporters is among your own neighbors or the other folks most directly impacted by a project. Invite a dozen or so people over to your house for an evening meeting to discuss the project. Present your message then the supporting details. If the message is clear and compelling then most folks will become active supporters by the end of the evening. At this first organizing meeting its okay to ignore the *ask for one thing* rule given above. In

addition to dollars ask for folks to volunteer to take the lead on the numerous tasks presented in this book for winning a land development campaign.

After this first neighborhood meeting you could hold small, informal meetings in other affected neighborhoods or you could convene a large public meeting.

Citizen Public Meeting

As the name implies, this is a public meeting called by citizens - you and your allies. You control the agenda, not some government agency or the applicant. The purpose of the meeting is to alert a large number of people to the opportunity to save something they value and to offer them the chance to join with you in supporting the effort.

Frequently a community meeting will draw the attendance of 200 to 500 people and raise the \$3,000 to \$30,000 needed to win most campaigns. Thus a community meeting can help make your campaign a success by providing you with the volunteers and dollars essential to victory. Also, nothing shows the depth of citizen support like financial contributions. All elected decision-makers know how hard it is to raise money. They must do it every two to six years to get reelected. So if a large number of people donate at your meeting, decision-makers will take notice. In fact, it is not uncommon for citizens to win substantial concessions from decision-makers just by holding a successful community meeting.

Again, the purpose of the community meeting is to alert people to project impacts and to enlist their support for your strategy to prevent these impacts. The agenda must focus on the three elements of your message: the impact, the solution, and the request. You must get through these three topics in no more than 45 minutes otherwise people will begin leaving before you get to the request.

Select a meeting location which has capacity for 200 to 500 people. Prepare a flyer for use in inviting your potential supporters to the meeting. On the [CEDS website](#) you will find a sample flyer in the download labeled *Community Meeting Samples: Flyer, Factsheet, Pledge Form, Volunteer Survey Form, and Meeting Outline*.

Distribute the flyer door-to-door, at signalized intersections during morning rush-hour, through the mail, and (*with permission*) at shopping centers, churches, concerts, carnivals, and any other location where potential supporters might be present.

Draft a press release for distribution to newspapers, television and radio stations as well as other media outlets. See the next section of this book on *Publicity* for advice on drafting a press release.

Invite one or two citizens to speak who have won similar campaigns. These folks will be crucial to convincing those who attend your meeting that you can win also. If you have trouble locating these folks then give CEDS a call. We may know of folks who won similar campaigns in your area.

Draft a factsheet for distribution to meeting attendees. The factsheet should summarize the three agenda items: how the project will harm attendees, your proven strategy for winning the campaign, and what you need to win - \$5,000 to \$15,000 in contributions (50 to 150 donations of \$100 each). The CEDS download referenced above contains a sample factsheet. The factsheet should be the *only* piece of literature handed to people as they walk into the meeting room. You want to make certain they read the factsheet early, before the meeting starts, so they can begin thinking about how much of a contribution to make.

Draft a pledge form that can be used by those who did not bring a check. Again, a sample pledge form can be found in the CEDS website download.

Get several of your active supporters to agree to stand up and announce they will donate \$100 at the public meeting.

Plan the meeting so you get through the three parts of the agenda in about 45 minutes. When the third item is completed - you've told folks what support you need - then announce that you're going to take 15 minutes of questions and afterwards you are going to ask for donations. Then as the first question is taken begin circulating pledge forms throughout the audience.

After 15 minutes of questions remind folks what their donations will accomplish and how much you need, then ask people to stand who can pledge \$100. Of course a few of your folks will immediately stand and hold up their \$100 checks. This should get the momentum going and prompt others to stand and announce a substantial contribution.

Tell everyone that donation baskets will now circulate throughout the audience so pledges and checks can be collected. Take additional questions as the collection baskets circulate and until folks start leaving.

Immediately after the meeting send a thank you out to all the folks who contributed. For those who pledged remind them of the amount they offered to donate and enclose a self-addressed stamped envelope so they can promptly mail you their check. In each envelope include a survey form querying folks about their concerns and describing the expertise you need such as attorneys, traffic engineers, environmental scientists, community organizers, fund-raising experts, political strategists, etc. The survey form should allow folks to check off those expertise they are willing to provide on a no-cost/low-cost basis. A sample survey form can be found in the CEDS website download *Community Meeting Samples: Flyer, Factsheet, Pledge Form, Volunteer Survey Form, and Meeting Outline*.

Consider circulating a request for contributions among potential supporters who did not attend the meeting.

Three weeks after the meeting mail a friendly, but firm reminder out to those folks who have not fulfilled their pledge.

If you cannot generate sufficient support to win the campaign through the folks impacted by the project of concern to you, then consider linking it to all similar projects proposed for your area. Frequently a common solution can be found for multiple project impacts. If your campaign provides an opportunity to set a precedent for implementing a common solution, then those affected by the other projects may provide active support for your efforts.

Publicity

Coverage in local newspapers or on the evening news can allow you to reach people who would not otherwise learn of the campaign. This exposure can help you to greatly expand your base of support.

Draft a press release on your campaign. The release should be no more than two pages in length. At the top of each include a release date, contact person, and their phone number. The first paragraph should contain your message and what you want folks to do. Normally a release announces an event: a citizen public meeting, a rally, or a hearing. For further advice on press releases visit the [Press Release Writing website](#).

Contact each newspaper, television and radio station serving your area. Also find out which of the organizations supporting your campaign publishes a newsletter. Find out which reporter or other staff person handles issues resembling yours. Also find out the deadline for each media outlet. For example, weekly newspapers may go to press each Wednesday. If the press release is intended to help with turn-out at a community meeting, a hearing, or some other event, then make certain you get the release out well in advance of the deadline.

Follow-up on the press release with a phone call to each recipient. After introducing yourself say you are following up on the press release to answer any questions they may have. This should allow an opening sufficient for you to gauge their interest in covering your campaign.

Offer to take the contact on a tour of the site so you can show them first-hand why you are concerned. But do not actually enter on to the site unless you have permission.

If the contact seems to have little interest in your campaign, then give the editor, publisher, or station manager a call. Ask for an opportunity to meet with them to discuss an issue which may be perceived as insignificant but is actually of vital importance to the community.

Ask for several volunteers to write a *Letter To The Editor*. It is surprising how many people read this section of the newspaper.

Consider running newspaper, TV, and radio ads. Most campaigns will have a very limited budget for buying ad space. Generally ads are used to produce a large showing of support just before a decision-maker must act. For newspapers consider full-page ads as well as mini-ads signed by your prominent supporters along with a brief statement describing why they support your efforts.

NEGOTIATE WITH THE APPLICANT

No other strategy option offers the benefits or challenges of negotiation. For all the parties involved - you, the applicant and government officials - it is the least expensive in terms of hours, dollars and emotional strain. The key to successful negotiation is two part.

First, the more successful you are in finding a truly win-win solution, the more likely a satisfactory agreement.

Second, the applicant and/or government officials must view a negotiated settlement as more desirable than continued conflict.

The challenging part is that usually the applicant and other decision-makers have far more negotiating experience than you. However, with the suggestions contained in this section you can level the playing field.

Finding A Win-Win Solution

A win-win solution is one which genuinely resolves your concerns while allowing the applicant to achieve their goals. This will usually be a solution which requires project modifications but not to the point where the project is no longer viable. However, if you feel a project is so fatally flawed impacts cannot be designed away, then the win-win solution could be buying the applicant out by convincing government agencies and/or private parties to acquire the site for preservation in total or in part.

In previous sections of this book many possible win-win solutions were offered. For example, in the section on traffic mention was made of how one deals with a proposal to increase traffic volume on residential streets. Some win-win solutions could be:

- allow a reasonable increase if speed humps or other calming measures are used to slow traffic so safety, air pollution and noise are all improved;
- if current traffic volume is at 900 vehicles per day (vpd) then the applicant might be allowed to build 10 new homes which would bring volume up to the residential street threshold of 1,000 vpd; or
- the applicant could be required to purchase additional land so access may be gained to some other road where an increase in traffic volume will not be as harmful.

As these three examples illustrate, it is rare that a solution is totally win-win for all parties involved. The traffic calming approach is a win for the folks currently living along the street since it improves their quality of life, but traffic volume also increases. Whoever ends up paying for the traffic calming measures - the applicant or the tax-payers - may not view this as a complete win-win solution. Forcing the applicant to find another access point is a complete win for the citizens but is probably not a perfect solution from the applicant's perspective. The point is that you may not find an ideal solution which is truly a win-win for everyone. But, the closer you come, the better.

Before you can find a win-win solution you need to understand what the other parties want. The first place to begin is with your parties - your neighbors and the other folks who are actively supporting your effort.

Engage them in a process where collectively you determine what you want to achieve. In other words, what is it about the development project that is of greatest concern to you and your supporters?

Of these issues of greatest concern, which are the most important as opposed to those you could live with?

It is not uncommon for citizens to give me a call about a project and begin with a long list of concerns. Some of these concerns are very important *core issues* while others are on the list because they seem to increase the likelihood of victory. After running through the long list of issues, the caller will usually conclude with:

“...and these are the reasons why we want to stop the project.”

I then say

“Well, I can see why you want to stop the project. If I lived in your neighborhood and faced a project posing all those impacts I’d want to stop it too. But it’ll probably take hundreds of hours and thousands of dollars to kill the project. And you’ll probably face other development proposals for the same tract of land every few years. Of course if you were primarily concerned about the environmental impact there’s probably a way that can be fixed without stopping the project.”

It’s at this point where the caller and I begin focusing in on their core issues. You and the folks who share your concerns need to go through a similar process and determine what is it you are really concerned about.

While there are projects so flawed they should be stopped, this is not true for the vast majority of development proposals. In other words, you should assume that there probably is something approaching a win-win solution for most of your core issues.

Even if a project is fatally flawed and stopping it is imperative, a win-win solution is still possible. The site could be purchased for some more benign limited development venture with the applicant fairly compensated for their time and expense. However, a community should not feel compelled to find a win-win solution if an applicant proposes something quite inappropriate or takes greed to the extreme.

Begin looking for ways to modify the project once you and your allies identify the core issues. The chapter of this book on *Identifying Project Impacts & Technical Solutions* provides guidance on possible fixes for a variety of development impacts. Government officials will

likely have thoughts on possible solutions as well. Other sources of advice would include citizen groups, university faculty, and, of course, CEDS. It seems like we have researched virtually all the potential development impacts conceivable and there few for which we cannot offer possible win-win solutions.

Of utmost importance is to focus on the result; not the solution. Does it truly matter to you how an impact is resolved? Of course not. The only thing of importance is that a solution works. So avoid the trap of becoming wedded to a specific solution.

Once you succeed in finding at least one potential win-win solution for each of your core issues, then you are ready to begin the negotiation.

The Negotiation

You may be wondering why an applicant would want to negotiate with you? Principally because there's a chance you could cause them substantial delay, which equals money. Also, in many localities decision-makers take a dim view of developers who cavalierly ignore citizen concerns, especially when those concerns are presented in a reasonable, constructive manner. The decision-maker may have myriad ways to tie up an unreasonable applicant's project. But, this does not mean you can ask for the moon and expect to get it. In most situations it will all boil down to the following very simple question:

Does it cost the applicant more to fight you then to accept your win-win solution?

Following are the factors the applicant will be considering when forming their answer to this question:

- Do you come across as credible and reasonable? If not then it is unlikely key decision-makers will take you seriously. In other words, you are not much of a threat.
- Are the decision-makers key to approving the applicant's project likely to be responsive to your concerns?
- Do these decision-makers have a history of ignoring or championing citizen concerns?
- Do you have issues that are so strong key decisions-makers will feel compelled to act on them?
- How committed are you to achieving your goals? If the applicant gets the impression you will go away easily, then it is unlikely they will agree to your win-win solution. On the other hand, if you have already hired a lawyer and begun mobilizing support then your commitment is obviously more than passing.
- Is your solution truly a win for the applicant?
- What will the applicant lose by agreeing to your solution?
- Are you the only opposition to the project?
- Will settling with you encourage others to begin making demands?

Even if the answers to these questions all favor settling with you, do not expect to reach a satisfactory agreement quickly. In fact, your first meeting with the applicant will probably be

nothing more than a get acquainted session. It is not uncommon for an applicant to refuse to seriously negotiate until citizens have demonstrated their commitment by filing the first appeal of a project approval. But it is very important to accomplish several objectives early in the process.

- Find out as much as you can about the applicant's goals and constraints, which will allow you to modify your solutions so they come closer to a win-win. If the applicant is proposing 100 houses then don't expect to learn how many they can lose before having to walk away from the project. Instead, look for where there may be flexibility. For instance, try to learn which lots might be reduced in size to save more open space. Or why particular access points were selected and any obstacles to shifting access so they no longer need to connect to your dead-end street. As you go through each of your solutions the applicant will likely explain why each will or will not work. Carefully note each reason then suggest any obvious alternatives that might resolve the applicant's concerns.
- Make it clear to the applicant that your goal is not to stop the project, but to find a solution which works for them and you.

Prior to meeting with the applicant, get together with your allies to reach consensus on the following points. It is crucial that you agree on these points *prior* to meeting with the applicant. You do not want to get into a debate among yourselves during the meeting.

1. Who will attend the meeting from your side? Two or three people are best; but no more than six.
2. Who will act as spokesperson for your group?
3. Who will be responsible for taking detailed notes of what is said during the meeting? Generally, it is not okay to tape a meeting.
4. What issues will be raised with the applicant, who will present each issue, and what justification will be offered for why you believe the issue to be real?
5. Everyone must agree to listen while the applicant gives you their take on the validity of each issue.
6. What solutions will be offered and who will present the solution (usually the same person who presents the issue)?
7. If the applicant offers alternative solutions then get all your folks to agree to ask for time to fully consider the alternative. A solution which sounds good at first, may not seem so great a day later. Never be pressured into making a quick decision.

8. Make certain everyone understands that the first meeting probably will not result in a satisfactory agreement; it's just a first step.
9. Encourage folks not to take a maybe as a no. Instead, view it as an opening to continue discussions in hopes of turning it into a yes.
10. Make certain everyone understands that you have good viable alternatives if the applicant refuses to negotiate in good faith. The alternatives will usually be the other strategy options presented in this chapter - working with regulatory staff, lobbying key decision-makers, legal action, etc. In other words, when everyone walks into the meeting with the applicant, they should not feel compelled to settle at any cost; they know they have other options. This reduces the pressure on you and your folks to reach a settlement at the first meeting.
11. Everyone in your group must keep their temper and do not threaten. Definitely no one utters threats such as announcing they will delay the project, drive up costs, or use laws for purposes other than they were intended. All three of these threats may be grounds for a lawsuit against you.
12. Everyone also agrees to end the meeting if the applicant threatens or uses other intimidation tactics.

Your request to meet with the applicant can be made by phone or letter. A phone call is best since it moves the process along more quickly and allows you to get an initial sense of the applicant's willingness to negotiate. Regardless of whether you make the initial contact by phone or letter stress that you want to find a win-win solution, that you have several in mind, and you would like to meet.

Press for a meeting with the applicant since they have decision-making authority. But do not refuse to meet with the applicant's representative, even their attorney. Again, the goal of the first meeting is to demonstrate your interest in a win-win solution and to learn as much as you can about the applicant's goals and constraints.

If the applicant refuses to meet, rejects your solutions without offering specific reasons, or does not offer alternative win-win solutions, then you can let other decision-makers know you tried to work with the applicant but were unsuccessful. Your position will be strengthened if you can say you tried to initiate win-win negotiations but the applicant refused to participate or the negotiations failed to reach resolution. But make certain you give it your best try. Your goal must be a successful negotiation; not merely the appearance.

Where to hold the meeting? A neutral location is nice, but not crucial. If the applicant (and you) are committed to the process then it does not matter where meetings are held. The initial meeting could be in your home, the applicant's office, or any other convenient, quiet location.

Begin the meeting with introductions. Thank the applicant for taking the time to meet with you. Next, describe each of your core issues and why you believe the project will cause each impact. Listen very carefully to the applicant's response. If they feel the impact is not likely to occur then ask why and listen with an open mind. Ask for further detail if this is necessary for a complete understanding of the applicant's perspective. After the meeting you will want to review the details to determine if the applicant is correct or if they have missed something. After the applicant gives their perspective on an issue, offer any information you have which might prompt them to rethink their position.

If the applicant disagrees on the validity of an issue then look for ways around the impasse. Are you missing some information crucial to confirming the validity of an issue? If so, then suggest tabling the issue until the missing information can be acquired and you can meet again. If other issues remain then move on to the next.

If you and the applicant agree that an impact will or *may* occur then offer any solutions you have identified. If the applicant feels a solution is not the most desirable then ask for their thoughts on alternatives. Again, make certain someone in your group is taking detailed notes.

Most meetings will last one to two hours. Whenever possible, try to end the meeting on a positive note. If an impasse resulted from a lack of information, then seek agreement with the applicant on how to obtain the missing data, then set another time to meet so you can continue the discussions. If all else fails then simply agree to disagree. Thank the applicant for taking the time to meet with you and express your hope that you can find a win-win solution in the future.

If you reach agreement on implementing a solution then explore options for guaranteeing that it will work on a long term basis. Consult with a qualified attorney on the value of drafting an agreement between you and the applicant to further guarantee full implementation. Additionally, most solutions will require changes in project plans. For example, if the applicant agrees to drop a proposal to connect to a dead-end road or to use more effective BMPs then development plans must be revised to reflect these changes.

Ask the applicant when the plan revisions will be completed. Ask the applicant to send you a copy of the revised plans. After you have reviewed the revised plans and you are satisfied your concerns have been fully addressed then ask the applicant when the revisions will be submitted to permitting-approval agencies. Follow-up by checking with agency staff to verify that the revised plans were submitted and approved as the binding documents. The next section offers advice on how to work with regulatory staff to ensure that solutions become part of project permits and other approvals.

WORKING WITH REGULATORY STAFF

Frequently citizens resolve their concerns by working with the staff responsible for reviewing development projects. The purpose of the staff review is to determine if the project complies with various regulations and policies. These staff people may be the individuals responsible for reviewing preliminary subdivision plans, wetland permit applications, stormwater management

plans, traffic impact studies, or a host of other submittals an applicant must make to receive all necessary permits and other approvals. If the project reviewer is uncertain of their authority to resolve your concerns then you may also be dealing with their superiors.

The role of regulatory staff is to help applicants understand and comply with requirements designed to protect public health, safety and welfare. Applicants may range from the individual homeowner wishing to build a deck and to the development company seeking approval to construct a shopping mall. Given this role, you will find regulatory staff most cooperative if you seek their assistance in implementing a win-win solution. The quickest way to lose their help is to pressure them to stop a project, unless the project is blatantly bad, which is rarely the case.

While most regulatory staff are dedicated public servants with a genuine desire to help, they are also universally underpaid and overworked. They tend to get frustrated with citizens who have not familiarized themselves with the basics. This is one of the reasons why consultants tend to get easier access to regulatory staff and files. The consultant can ask for precisely what they want and pose questions that are usually easy to answer. The staff person does not need to spend a lot of time educating the consultant in the basics. So take the time to educate yourself on the technical and legal aspects of the issue(s) of concern to you prior to contacting regulatory staff.

Your initial staff contact will likely be to look at project plans and other documents as part of *The Easy Solution* recommended at the beginning of this book. At that initial meeting ask each staff person what regulations, policies and guidance documents are relevant to the issue(s) of concern to you. Frequently these documents are available in local public libraries or online. Make the effort to read these materials following your initial meeting. You will no doubt have many questions after reading the documents. But if it is obvious that you have made an effort to educate yourself then you will likely find staff more cooperative in answering your questions, particularly if they are specific and relevant to the project under review. Also, the better you understand the technical aspects and legal constraints the easier it will be for you and staff to find a solution that works and can be implemented through a permit or other approval.

At first glance rules, regulations and guidance documents may appear to lock reviewing agencies tightly in to what they can and cannot require. Generally though staff do have some flexibility, especially where a project will cause impacts greater than those normally associated with development. For example, if a project threatens the best trout stream in a county or the highest (or worse) performing school then staff may be in a position where they can call for control measures not normally employed. Obviously, the more public support for enhanced controls, the easier it is for staff to call for their use.

Now that we have this preliminary stuff out of the way, let's pick up where we left off. You have just had your first negotiating session with the applicant. Chances are the session did not result in satisfactory resolution of your concerns. At this point you request a meeting with the staff person responsible for reviewing the project for the issues of concern to you. Your hope is to convince the staff person to adopt your win-win solution or help you find an equally effective alternative.

Generally, meetings with staff are one-on-one. But feel free to bring along another person if you would like help with items such as taking notes on staff suggestions.

Begin the meeting by expressing your desire to find a win-win solution. In fact, you might point out that you have met with the applicant in hopes of reaching a mutually satisfactory agreement. Say you wanted to meet with regulatory staff because you think you have a solution and you would like their opinion.

Next, describe your concerns and why you believe the project will cause each impact. Ask the staff person if they agree that the impact is possible. If they disagree then carefully note their reasons why. If you believe you have some relevant facts which staff is unaware of, then, by all means, present them. If the disagreement is a result of inadequate information then explore options for obtaining the data. Suggest that the issue be tabled until the missing information can be obtained and you can meet again. Alternatively, you could also ask the staff person to assume for the moment that the information will show the concern is real, then present your solution and ask if they feel it is workable. If the staff person still disagrees then you should go onto to your next issue.

If the staff person agrees that an impact is possible or likely then present your solution(s). Ask if they feel the solution will work from a technical perspective. If the response is positive, then ask if the agency has the legal authority to require the applicant to implement solution. If they say no or they are uncertain then ask for detail so you can research this latter.

If staff believes a solution to be unworkable then ask if they have any alternatives to suggest. A good way to phrase this request is something along the lines of:

If you lived where I do and you shared my concern about the project, how would you go about getting it resolved?

Sometimes discussions with staff enter a sort of twilight zone where logic seems to break down. The facts supporting your concerns seem obvious and compelling yet staff insists you are wrong or you have not quite convinced them you are right. Or it appears they clearly have the authority to require implementation of a solution, but staff insist they do not. Of course you should continue the discussion, asking additional questions, in hopes of determining whether you are missing something. Besides the possibility of thick-headedness on your part, there are at least three other possible explanations for the apparent impasse:

- The agency has established a history of approving similar projects without requiring solutions such as those you suggest. If they were to deny approval for this project then the applicant may be in a good position to get the decision reversed in court.
- The staff person's superiors have directed them to approve the project or staff knows that those who advance in the agency do not take actions such as those you are advocating.

- The staff person has taken a dislike to you. Again, most staff people are dedicated, caring individuals. However, even a saint can lose their patience if you begin accusing them of being in cahoots with the applicant, lazy, of below average IQ, or you make other offensive remarks.

If a staff person feels they lack the authority to mandate a solution then ask if they could get their superior's opinion and/or recommend it to their superior. If they are reluctant then contact the superior directly.

If you come to agreement on a solution, then ask the staff person how implementation can be guaranteed. More likely than not their response will be to make it a condition in a permit or some other approval. It is also likely that they will need to send a letter to the applicant notifying them that they are required to modify their plans and other submittals to show how the solution will be implemented. Request a copy of the letter as well as the permit/approval document. When the revised plans/submittals are received then request an opportunity to review the documents to verify that the solution has been incorporated.

If you do not quite get to the point of full agreement then consider sending a follow-up letter confirming your understanding of whatever points of agreement you have reached, what the next steps will be, who will do them, and by when.

LOBBYING KEY DECISION-MAKERS

A key decision-maker is anyone who has the authority to resolve your concerns. The applicant is certainly a key decision-maker. In many instances regulatory staff have the authority to require adoption of your preferred solution, but they can be over-ruled by agency heads. So a department director or secretary may be the actual key decision-maker. The local legislative body are frequently key decision-makers. They can deny or condition rezonings, adopt new laws to resolve impacts inadequately addressed by existing law, or approve funds to buy a site. Sometimes state legislators or members of Congress also have the power to resolve your concerns. A mayor or county executive may be a key decision-maker since the department heads report to them. The governor of your state or even the President can be key decision-makers for regional or national issues. In other words, for any given issue there may be several decision-makers who have the power to implement your preferred solution.

Which Decision-Maker To Begin With

To win you must figure out which decision-maker(s) can be most easily influenced to act. How do you do this? Usually the best place to begin is by talking with the decision-maker who was elected to represent you.

In many localities council or commission members are elected by district. The elected official representing your district will usually be more receptive to your concerns than other members, especially if they did not rely heavily on developer-real estate money during their last election campaign. If council members are not elected by district then try the official with the best

reputation for helping citizens resolve development-related concerns. Veteran citizen activists will know who this official is.

The Meeting

Perhaps you are at the point where there has been an initial meeting with the applicant and regulatory staff. But the applicant has not agreed to act and staff feel they lack the authority to force the applicant to adopt your preferred solution. So the purpose of meeting with the council-commission representative is to request their help in finding a way to get your solution implemented or to come up with other equally effective solutions. Following are some examples of what you might request.

- If the applicant is reluctant to negotiate then ask if the decision-maker would be willing to encourage the applicant to reconsider;
- If staff feel they lack the authority to mandate a solution then ask the decision-maker if they agree or, if they're uncertain, if they would request an opinion from the legal staff;
- If a department head feels they have the authority to mandate a solution but lack the funds to ensure long term maintenance, then ask the decision-maker if they would support a budget amendment making the necessary funds available;
- If a department head has simply been unresponsive then ask the decision-maker if they could talk with the official;
- Ask the decision-maker if they believe it may be possible to acquire the funds to preserve the site in total or partially; or
- If it looks like current law prohibits full implementation of your solution, then ask the decision-maker to help you change the law.

In some local jurisdictions council members, commissioners or board of supervisor members are prohibited from discussing proposed development projects: an *ex-parte* communication. This restriction results from the role they play in the process as a board of appeals or as the final approving authority. If you run into this problem then consider discussing a solution in general. For instance, if you are concerned about increasing the number of houses along a dead-end street then ask your representative to consider a law limiting the number of houses built on all dead-end roads, not just the one affected by the proposed development project. Such a generic conversation should be permissible as long as it does not focus in on one particular project or your dead-end road.

Most elected officials are motivated by good intentions. They want to serve the public good. Of course public good has many aspects, including keeping housing costs down and minimizing property rights infringement as well as safeguarding the environment, schools, historic resources and other values. But all elected officials are also motivated by political considerations. The greater your public support, the more likely it is the decision-maker will act as you wish. This is why the section on *Expanding Public Support* appeared first in this chapter. The impact of your supporters will be even greater if they include people the decision-maker views as influential. Examples of these influential people would include:

- leaders of community associations and other citizen groups, especially those with a large membership in the decision-maker's district;
- religious leaders, especially someone from the decision-maker's place of worship;
- business owners or corporate executives especially from companies employing a large number of people who live in the decision-maker's district;
- contributors to the elected official's campaign fund (in many places campaign finance records are open to the public and may even be available online¹³⁴);
- leaders of organizations which endorsed the decision-maker during their last campaign (assuming they are an elected official);
- other elected officials, particularly those in leadership positions in the decision-maker's party;
- individuals with good, positive name recognition; or
- anyone who the decision-maker would prefer not to offend by rejecting your request for help.

Prior to meeting with the decision-maker, get your allies together in hopes of reaching consensus on the following points. You don't want to debate any of these points among yourselves while meeting with the decision-maker.

1. Who will attend the meeting from your side? Two to six is best and should include at least one person likely to be viewed as influential by the decision-maker. Make certain though this person solidly supports your position and avoid folks with a reputation for flip-flopping on issues.
2. Who will act as spokesperson?
3. Who will be responsible for taking detailed notes of what is said during the meeting? Generally, it is not okay to tape a meeting.
4. What issues will be raised, who will present each issue, and what justification will be offered for why you believe the issue to be real?
5. What solutions will offered and who will present the solution (usually the same person who presents the issue)?
6. If the decision-maker offers alternative solutions then make certain everyone agrees not to agree during the meeting. Instead listen with an open mind and ask for time to consult with others. This will allow you to think through the alternative and determine if it really is as good as it sounded at first.
7. Prepare your allies for not achieving victory at the first meeting; it will probably be just a first step.

¹³⁴ For contributions to candidates for federal office go to: <http://www.fecinfo.com/> For state and local candidates go to: <http://www.afscme.org/wrkplace/campfin.htm>

8. Don't take a maybe as a no. Instead, view it as an opening to continue discussions in hopes of turning it into a yes.
9. Make certain everyone understands that you have alternatives and while winning the decision-maker's support is certainly desirable it is not your only option. If the decision-maker refuses to support you at this first meeting then your alternatives include:
 - a. Mobilizing more of your supporters to lobby the decision-maker;
 - b. Turning your attention to other decision-makers; and/or
 - c. Initiating legal action.

By making your allies aware of your options it will reduce their tendency to agree to proposals that may be less than satisfactory.

10. Everyone in your group must agree to keep their temper and not threaten.
11. Everyone also agrees to end the meeting if the decision-maker is the first one to use threats or other intimidation tactics.

Begin the meeting with the decision-maker by thanking them for taking the time to see you. Compliment them on past actions you know of where they supported responsible growth management. Describe your concerns, the basis for your concerns, your proposed solution and why you believe the solution to be the best choice. If you have already met with the applicant, staff, department heads, or others then point this out and describe the outcome. After answering any questions the decision-maker may have, then ask what they would do if in your position.

Do they see another more workable solution?

Or what approach would they take to win implementation of your preferred solution?

Most importantly, what are they willing to do to help resolve your concerns?

End the meeting by reviewing your points of agreement and next steps (who is to do what by when). Lastly, thank the decision-maker again for taking the time to meet with you.

Post-Meeting Analysis

After the meeting, adjourn to another location to chat with your allies about next steps. Review what each of you heard during the meeting with respect to points of agreement and disagreement as well as action items - who will do what by when. When you reach consensus then consider following up on the meeting with a letter to the decision-maker which begins with another thank you then lists points of agreement and next steps. Close with a sentence asking if the letter accurately reflects the decision-maker's recollection of the meeting.

If the decision-maker agreed to support your efforts and committed to taking specific steps to fulfill the promise, then you are in good shape. Be certain to follow-up with the decision-maker to see if there is anything you can do to help and to verify that they are making good on their commitments. But also monitor permit-approval processes so you do not lose any opportunities to appeal a decision to approve the project before your concerns are resolved.

If the decision-maker seemed undecided about supporting your effort, then focus your post-meeting discussion on how you might win them over.

1. Was it your collective sense that the decision-maker felt they did not have sufficient information?

If yes, then the next step is obvious: get the information as quickly as possible and meet again with the decision-maker.

2. Did you get the sense that the decision-maker felt that the political repercussions of supporting your position were too great?

If yes, then search among your supporters for others who can influence the decision-maker and consider the three tactics described below.

3. Did the decision-maker agree that your solution made sense, but they felt other key decision-makers would oppose it?

If this was the case then you probably discussed ways of winning the support of these other decision-makers, such as meeting with them (making certain to include folks among your supporters whom the other decision-makers would view as influential).

4. Was the decision-maker just dead set against your solution and didn't seem interested in helping you find other fixes?

If this was your sense then move on to another key decision-maker. Its always best to focus your energy on your allies not your adversaries. There are usually several key decision-makers and one of them will likely be more open to your campaign. If they all refuse to act then you should focus continued political pressure on the decision-maker most likely to turn around while simultaneously initiating legal action.

Following are three possible tactics for providing a decision-maker with the public support needed to take a tough stand.

Letters, Phone Calls, Postcards & Emails

In my home state citizen activists have a saying about bills before the Maryland General Assembly; if a Senator or Delegate gets more than six letters or calls on a piece of legislation than this indicates widespread public interest in the measure.

Isn't this great?!

We just sit down at the start of the legislative session, pick out the bills we do and don't like and get seven or more people to write a letter about each one. Then we can go watch football or ski for the rest of the winter while all our pet bills sail through and the peeves crash and burn.

Of course this is not the way it works.

Yes, if a decision-maker gets a half-dozen or more well written, well reasoned letters then this does indicate that enough people are interested so that the 0.1% - 1% who act on their interests have started writing. But if all the letters sound alike then the decision-maker concludes that this is not a spontaneous public response reflecting widespread interest but a lobbying effort orchestrated by an advocacy group. This reduces the impact of the letters, but not completely. If the six letters were signed by the top six contributors to the decision-maker's last election campaign then it probably does not matter whether they sound alike or not. The decision-maker will listen very closely to what their six best supporters have to say.

The key then to making an impact through the letter writing tactic is to search for people to write letters who can influence the decision-maker, such as:

- campaign contributors;
- officials from the decision-maker's party;
- organizations that endorsed the decision-maker during their last campaign;
- leaders of groups with a large membership in the decision-maker's district;
- business owners or corporate executives with a large number of employees in the district;
- registered voters who:
 - live in the decision-maker's district (especially in the precincts the decision-maker won during the last election),
 - belong to the same party, and
 - are frequent primary voters (voted in two or more of the last primary elections¹³⁵).

Make certain the letter demonstrate that the signer clearly understands the issue, has considered the pros and cons, and presents well-reasoned arguments for supporting your position. You could provide your influential supporters with a sample letter and factsheet or even write the letter for them. Have them mail the letter to you, not directly to the decision-maker. This way you know the letter was actually written and you can present all the letters to the decision-maker en masse.

These same principles apply to e-mails and phone calls. Ask people to copy you with e-mails as well as the reply they receive. Ask folks to let you know how the decision-maker responded to phone calls.

¹³⁵ Frequent primary voters are key to winning tight election races. A decision-maker tends to be more influenced by how frequent primary voters think compared to voters in general; especially people who seldom vote.

Postcards are much like a petition. If someone only signs a postcard and does not take the time to write a thoughtful letter, then their interest in the issue is probably rather superficial. However, if 10% of the voters in the decision-maker's district sign a postcard, then the impact increases dramatically.

Avoid the temptation to flood a decision-maker's office with calls, letters and e-mails. Instead, start with a few contacts from your most influential supporters. If this low-key effort does not seem to have an effect, then increase the volume if you believe the decision-maker may turn around.

Public Opinion Survey

Citizens have used public opinion surveys to demonstrate widespread voter-taxpayer support for a given solution. Generally surveys work best for issues where the decision-maker is considering a discretionary action, such as:

- how much funds to allocate to a project such as land preservation, improved transit, reducing class size, or environmental restoration projects;
- whether to downzone rural lands while adopting a program to compensate family farm owners for the equity loss;
- construction of a new highway; or
- whether rezoning should be granted for a large, controversial project.

These actions are mostly all discretionary because government is not required by law to approve-disapprove if specific criteria are met. In other words, government has substantial discretion with respect to questions such as how tax revenues are budgeted, whether to amend a comprehensive plan to set the stage for rezoning large areas, or whether to grant a request to rezone a specific property. A public opinion survey would not help much with nondiscretionary decisions, such as whether to grant approval for a preliminary plan of subdivision or a wetland permit application.

The classic scenario for initiating a survey is where decision-makers believe a majority of taxpayers oppose a solution advocated by citizens. In fact, the decision-makers use this claim as a principle reason for not supporting the solution. The citizens advocating the solution are confident majority support is there and carry out a survey to document their belief. The results of the survey show that the citizen advocates are right and that decision-makers should support the solution if they believe in will of the people. The survey results can also generate a fair amount of newspaper, radio and TV coverage.

There are a number of good references on conducting citizen surveys, such as *Public Opinion Polling: A Handbook for Public Interest and Citizen Advocacy Groups*.¹³⁶ While volunteers can

¹³⁶ Public Opinion Polling, by Celinda C. Lake for the Montana Alliance for Progressive Policy, published by Island Press, 165 pp., 1987.

carry out the actual survey, it is vitally important that a qualified professional design the survey and the sampling methodology. I have seen more than one citizen group invest a lot of time and money in a survey only to have the results prove worthless due to poor design.

Petition

The petition does have a place in advocating for Smart Growth, but this tactic also has some severe limitations. Of course a petition is crucial for getting a referendum issue on the ballot. But a petition tends not to be terribly effective in swaying decision-makers. The reason is that most decision-makers know it is easy to get people to sign a petition. So you start off with a device which does not necessarily show a high level of public support for a solution. Additionally, within two weeks most petition signers will not recall what it was they signed. More importantly, it is unlikely someone will go to the trouble of tracking how a decision-maker acted on an issue simply because they signed a petition. In other words, come the next election it is unlikely petition signers will know how candidates acted on the issue and then use this as a basis for casting votes. But there are ways of making petitions more effective. For instance, you can make follow-up mailings to petition signers to increase their depth of knowledge and commitment to the issue. You can then do a final mailing so petition signers receive it a few days before an election. This final mailing will show which candidates did and did not support the solution advocated on the petition. If decision-makers know you plan to take these steps, then the petition will have greater impact. However it is hard to get this message across without sounding like you are making a threat, which is generally a mistake.

At first blush it may seem a simple matter to draft a petition. Sadly, this is not the case. If a petition is being used to get an issue on the ballot then it must meet a verify specific legal form both in terms of how the heading is worded and the space provided for signatures, printed name, address, etc. Also, you may need to verify that signers are currently registered to vote. More than one citizen group has collected thousands of signatures only to have them all thrown out because of some procedural snafu. Obviously you should consult with an attorney experienced in petition format before launching a drive.

LEGAL ACTION

Legal action usually takes the form of arguing before a hearing examiner, a planning board, or a county council in hopes of convincing them to condition a permit-approval in a way that implements your win-win solution or to deny project approval. If the permit-approval is issued then legal action may continue in the form of an appeal to the courts.

Legal action must begin shortly after you first become concerned about a development project. It is crucial that you identify each of your opportunities to appeal a decision to approve a project before your concerns have been fully resolved. Additionally, you must determine if you would qualify as a *party* and, if not, whom among your allies may be a party. Finally, there may be a narrow window (15-45 days in duration) to file an appeal and a precise format an appeal request must meet to be granted. In other words, you need to consult with a good attorney early in the game.

When To Hire A Lawyer?

In general the answer to this question is immediately. Most of the citizens who lose do so because they assumed (or hoped) they would not have to hire a lawyer until after key approvals were granted. They believed their limited resources would best be used appealing a decision to issue a permit or other approval. Or they hoped that the approval would be denied, thus eliminating the need to hire any professionals. The trouble is that once an approval is granted the odds of winning on appeal are poor, at best. Unless you and your attorney are there to present crucial evidence and legal arguments the decision-making body may be obligated to grant approvals. So as soon as you complete the *Easy Solution* begin searching for an attorney to represent you.

Finding A Good Attorney

Most states and many counties have attorneys who specialize in representing citizens in land development cases. All the other attorneys work the developer side of the fence and either refuse to represent citizens or do not understand how to maximize the likelihood of success when representing citizens.

The attorneys who specialize in representing folks like you recognize that your financial resources are limited, but you probably have a lot of volunteer hours to invest. So, to minimize expenses, they will urge you to do as much of the leg-work as possible. For example, they will suggest that you obtain plans and other submittals rather than paying someone in the attorney's office to do this. But most importantly, the citizen specialist attorney will be very honest with you about your chances of prevailing in your effort to condition or block a permit-approval or to win on appeal. Many of these specialist attorneys will also do an initial meeting with citizens free of charge. During this meeting they can assess the strengths and weaknesses of your case, suggest how you can increase your chances of victory, and offer other important advice such as which decision-makers are likely to be influenced by your arguments.

How do you find these citizen specialist attorneys? Talk with long time citizen activists in your area or visit the *Links To Others Who Can Help* section of the [CEDS website](#) for your state. If you are fortunate enough to have several citizen specialist attorneys to choose from then ask around to learn which has been most successful with cases like yours. The better the reputation of your attorney, the more seriously the applicant and others will take you.

Consider meeting with each attorney to see which impresses you the most. But avoid the temptation to engage the attorneys in a fee bidding contest. If your financial resources are very limited, but you have plans for expanding fund-raising efforts, then make this clear to the attorney. Ask them what their fee would be to do the minimum work necessary to preserve your rights to appeal an unfavorable decision. Ask also how much of a retainer they need to start this work.

Ask the attorney if you or any of your supporters can qualify as a *party*. In many localities a legal action can only proceed if it is filed on behalf of at least once person who qualifies as a party. Usually, this is someone whose rights and privileges are harmed in a way that is greater

than the general public. The actual test ranges from very lenient to strict. In some cases one must only live within sight or sound of a project to become a party. In other situations one must own property adjoining the site and show some direct, adverse impact if the project were approved. At the federal level organizations such as the Sierra Club can be parties but a number of states and local jurisdictions only allow individuals to be parties.

The attorney will ask you and your allies to describe where each lives in relation to the project and how the project will affect you. From this description the attorney can tell you whether you need to enlist other supporters who are more directly threatened and, therefore, more likely to qualify as parties.

Once you retain an attorney, do not make a secret of it. Again, hiring an attorney shows the applicant and others that you are committed to winning. This action alone will not produce victory, but it is important to increasing the likelihood of a successful outcome.

Expert Witnesses

In addition to an attorney, you may need at least one expert witness at a legal proceeding. Attorneys cannot testify at a hearing; they can only present legal arguments, but not facts (unless the facts are undisputed). To get facts into the record before the decision-maker the attorney must present witnesses. Lay witnesses can present facts such as how many homes are located along a dead-end street but they lack the specialized knowledge and experience to interpret the facts and draw conclusions. For example, they could not testify as to how building another hundred houses along the street would affect traffic safety. For this an expert witness would be needed, such as a traffic engineer or a transportation planner.

Like attorneys, most professionals who work as expert witnesses in development cases do so for the applicant and are reluctant to assist citizens. Fortunately, attorneys specializing in citizen cases usually have a number of willing expert witnesses they have used in the past. While these experts frequently charge a reduced fee for citizen clients, they cannot work for free. If your resources are limited, as they usually are, then look among your own supporters for professionals who may qualify as experts and testify for no-cost/low-cost. But keep in mind that just because someone has the right credentials they are not necessarily a good witness - someone who takes the time to thoroughly analyze an issue and present their conclusions in a concise, compelling way. Unfortunately, it is hard to tell in advance whether an expert will make a strong or weak witness. This is why attorneys prefer using experts they have seen testify previously.

Approval/Denial Procedures

In Chapter 3 on *The Growth Management Process* a description was provided of the various permits and other approvals a project might need as it moves from concept to ground-breaking. Generally, each one of these permits-approvals provide an opportunity to use legal action to resolve your concerns. For most permits-approvals there will be a set laws, ordinances, statutes, regulations, policies, and guidance documents describing:

- the type of uses which can only take place with the permit-approval;

- uses exempt from the permit-approval;
- the information that must submitted to apply for a permit-approval;
- the criteria for approving or denying the application; and
- the process for appealing an unfavorable decision.

These days many of these materials are available on line at websites maintained by local, regional state, or federal government. A good starting point is the [*State and Local Government on the Net website*](#) or the main branch of the local public library. In more populated areas try law libraries open to the public or college-university libraries which may have a law books along with guidance documents. Of course you can always purchase local laws (codes) and guidance documents. Make certain that however you obtain access to these publications you are using the current edition.

A good citizen specialist attorney will encourage you to read both the relevant laws and guidance documents. The more thoroughly you understand the rules and procedures the more you can assist the attorney in building a strong case. Of course you should never attempt to substitute your layman's opinion on legal issues for that of the attorney. By the same token, as the client you make the final decision on which legal option is pursued. It is the attorney's job to advise you on the merits of each option, then allow you to make a choice.

Options for Legal Action

It is best to focus on those options for legal action that most directly relate to your concerns. If a project is fatally flawed then chances are that just about every permit-approval relates to your concerns one way or the other. But if you are concerned about a specific issue, such as school overcrowding, it makes no sense to contest an environmental permit. In fact you could expose yourself to a lawsuit for knowingly using a law to delay a project or drive up costs rather than the purpose for which the law was intended.

In the following paragraphs legal options are grouped according to the likelihood of allowing you to resolve your concerns.

Citizens tend to be most successful in stopping fatally flawed projects or winning major changes when the applicant needs a comprehensive plan amendment, a rezoning, or annexation. Generally, decision-makers have broad discretion for all three actions. If you can demonstrate good technical reasons why these approvals should be denied or conditioned and a large number of citizens support your position, then there is a good chance you will win. In some jurisdictions, decision-makers can deny or condition a plan amendment, rezoning or annexation for just about any reason they wish and not worry about it being overturned on appeal. In other localities, a better foundation is needed. Of course, your attorney can tell you exactly what you need to lay the foundation in terms of facts, expert testimony, and how much their fee will be to prepare and present the legal arguments. In addition to a good factual and legal foundation, for most legal proceedings it also helps to have a large citizen turnout, at least on the first day. Citizen testimony is also important, provided it is not too repetitive - person after person standing up to say the same thing.

Citizens are sometimes successful resolving their concerns by contesting a special exception or conditional use permit. Land uses requiring these approvals are generally considered compatible with other activities in the zoning districts where they are allowed. In a number of states, a special exception/conditional use permit can only be denied if it will cause significantly greater harm on a specific site when compared to most other sites in the same zoning district. Because of this fairly tough test most special exception/conditional use permit applications are approved. So winning a denial is usually difficult. But winning conditions is more doable.

Citizens are also moderately successful in resolving their concerns through the variance process. If a project impacts a highly-sensitive wetland and the applicant wants a variance to reduce the buffer intended to protect the wetland, then you have a shot at blocking the variance. But if the wetland is not considered unique or important then your chances decline. Nevertheless, since most states have a fairly tough test for granting a variance, this approval is still worth considering as a possible option for legal action. Of course the subject of the variance should directly relate to your core issues.

If a project is consistent with the comprehensive plan as well as the zoning applied to the site, annexation is not required nor a special exception/conditional use permit or variance, then it is unlikely that it can be stopped. The most you can probably achieve through legal action is to win conditions reducing project impacts. For example, if you can show that the applicant erred with setbacks, density calculations or other design requirements you might reduce the number of lots or the square footage of commercial space. Or if you can show that the applicant's plan fails to depict sensitive features then you might increase buffers or preservation areas.

Occasionally citizens succeed in resolving their concerns through state or federal permit processes, such as a U.S. Army Corps of Engineers wetland permit. But once a local government makes the decision that a project is suitable for a site state and federal agencies are very reluctant to deny a permit. Such a decision would usurp the role of local government as the principle land use decision-making authority. Permitting agencies will add conditions to reduce impacts. In rare instances, the conditions will reach a point where a project is no longer viable. But this usually only happens when a project threatens a highly regarded resource and there is lots of public opposition.

Some jurisdictions allow citizens to challenge approvals through referendum. A minimum number of signatures must be obtained on a petition to get the referendum issue on the ballot for the next election. A majority of votes are needed to win the referendum. So to prevail you must convince a majority of voters in the jurisdiction to support your position. This is no easy task. It requires lots of volunteer hours going door-to-door and standing in public places getting signatures, handing out literature and making phone calls. It also requires dollars for mailings as well as newspaper, radio and TV ads.

Lawsuits Against Citizens & Government

Occasionally a citizen will call saying that their local government feels obligated to approve a project, other wise the applicant will sue. I ask if they have confirmed this by talking to the local government attorney or one specializing in representing citizens. If they do then the citizen usually learns that local government can say no if the facts show that the project fails to meet legal requirements. If this was not the case then there would be a lot more adult book stores and gambling casinos dotting the countryside. Also, citizens can counter the applicant by threatening their own lawsuit if government approves the project without acting responsibly by resolving impacts to the fullest extent permitted by law.

The takings issue often comes up when a local government expresses concern about being sued. The fifth amendment of the U.S. Constitution protects all of us from government taking our property without just compensation. At the same time government has an obligation to protect all of us from property uses that interfere with our rights. But when does the action of government in regulating land use go from a legitimate exercise of authority to a taking? An incomplete answer is any government action which prevents economically viable use of property without compensation. In 1980 the U.S. Supreme Court rendered an opinion in a case known as *Agins v. Tiburon*. A “takings” test arose out of this decision which asks if a government action advances some legitimate purpose and, if so, whether the property owner has any economic use left once the government action takes effect. If the answer is no then the action may be a taking and property owner compensation may be required.

At one time it was common to hear of applicants who threatened to sue citizens for opposing their projects. In fact this form of harassment even gained a name - a SLAPP suit, which stands for Strategic Lawsuit Against Public Participation. The first amendment of the U.S. Constitution provides us all with the right to petition government for redress of grievances. A SLAPP suit is intended to stifle this right. A number of citizens hit with SLAPP suits have BackSLAPPED with a counter suit and won when the courts found they were just exercising their first amendment rights. But its still no fun to be sued.

SLAPP suits tend to be an act of desperation and are usually filed when an applicant fears they are about to lose. Many people, including most decision-makers, find SLAPP suits quite offensive and will turn away from an applicant who resorts to such a tactic. The exception are situations where a citizen has been acting in an inappropriate manner and engaging in their own less than honorable tactics. So the best way to avoid a SLAPP suit is to focus on your core issues and state your public position in something along the lines of:

Our goal is not to stop the project, but to ensure that all significant impacts have been resolved before the project is approved.

For further information on SLAPP suits visit the American Civil Liberties Union website at: <http://www.aclu.org/>

CHANGING THE LAW

If previous strategy approaches are not working then a change of law may be worth consideration, especially if the applicant has absolutely refused to negotiate and staff/decision-makers are sympathetic but feel their hands are tied by existing law. Following are a few examples of what such an effort might accomplish.

In my home state of Maryland there was a rash of proposals to build construction and demolition waste (C&D) landfills. While there was definitely a need for a C&D landfill or two, more than a dozen were proposed. The flurry was due to Maryland's relatively weak C&D landfill laws.

In the early 1990s we assisted in organizing a statewide coalition of groups committed to upgrading Maryland laws. It took until 1996 for the effort to succeed. But even after the new laws took effect a number of the proposals were still alive.

One facility was slated for a site in eastern Queen Anne's County, on Maryland's eastern shore. In 1996 we convinced the Queen Anne's County Commissioners to amend their laws so C&D facilities would be guided to sites where impacts would be minimal. This nixed the landfill proposed for the eastern area of the County. But in 1998 our friends on the Board of County Commissioners were replaced by candidates who were not so supportive. Shortly after taking office they turned the clock back so the C&D dump could go forward. We and our clients are still fighting this dump.

In Prince George's County, Maryland our clients have fared better. Several C&D dumps were proposed for the district of Maryland Senate President Mike Miller. In response to a massive outcry from his constituents, Senator Miller pushed a new law through the State General Assembly requiring that to approve a new C&D landfill seven of the County's nine Council members had to vote for the facility - a nearly impossible task. Prior to the enactment of Senator Miller's law only a simple majority was needed - five out of nine. The new law put the brakes on two of the four C&D landfills proposed for construction in the County.

In both Prince George's and Queen Anne's Counties citizen found that existing laws were inadequate to resolve their concerns. So they launched campaigns to change the law. This same approach has been used in almost everyone of the 3,038 counties in the United States. In fact, many of our best laws are a result of citizen campaigns to enhance quality of life protection.

To change the law begin by looking around at other jurisdictions in your state. Is there another borough, town or county that has a law on their books which would resolve the impacts of concern to you? If there is then changing the law just became a bit easier.

Decision-makers prefer not to be the first to adopt a new, never-tried-before law. If you can point to another jurisdiction which has a law in place similar to the one you are advocating, then local decision-makers will embrace it more readily. Rather than speculating about the impact of the law - what it will and will not do, undesirable side effects, unforeseen costs - your decision-

makers can look at how well it actually works in the other jurisdiction where it is already in effect.

How do you determine if another jurisdiction has a law which would resolve your concerns? Contact citizen groups active throughout your state, such as the Sierra Club, League of Women Voters, historic preservation organizations, etc. To find these groups go to the [CEDS website](#), click on the *Links To Others Who Can Help Button*, then scroll down to your state.

State agencies may also be of help, particularly if there is a land use planning agency at the state level. If your issue is traffic-related than contact the state highway or transportation agency. For environmental issues contact the state natural resources, conservation or environment department. In most states there are also a few jurisdictions widely regarded as having the most progressive laws. The planning staff in these jurisdictions might know of a law on their books which would resolve your concerns if adopted by your local decision-makers.

If you find a law which seems workable then make certain it truly will resolve your concerns. Talk to the staff and citizen activists in the jurisdiction where the law is already in place. Describe your situation, the issues of concern to you, and where your project stands in the review process. Ask if the staff or citizen activists think adoption of the law by your local government would resolve your concerns. Have your attorney review the law also.

Determine if the law needs to be reworded so the project of concern to you is not *grandfathered*. Many new laws exempt projects that are already in the process. For example, all projects which have received preliminary plan approval may be exempted or exemption may only apply to projects at the end of the process, such as those which have received building permits. All the exempted projects are grandfathered from having to comply with the new law. So make certain your proposed law is worded in a way that would cause it to fully apply to the project of concern to you.

Consider calling for a moratorium if a project is so far into the process that it may be grandfathered by the time a new law takes effect. The moratorium would place a hold on further processing of permit applications for all projects similar to that targeted by the proposed law. For example, if you'd like to change the siting criteria for asphalt plants then the moratorium would need to put a hold on processing permits-approvals for *all* proposed asphalt plants; not just one plant. The duration of the moratorium depends upon the amount of time local officials will need to study the justification for changing a law and the best way to word the law so the intended purposes are achieved without unduly infringing upon property-owner rights. Most moratoria last for six months to two years. Normally, a moratorium is initiated through a resolution adopted by the local decision-making body.

In some jurisdictions a change in land use or zoning law must first be studied by the planning commission. The commission then makes a recommendation to the decision-making body - the Board of County Commissioners, the Town Council, or the Board of Supervisors. To get the law adopted you need to win the support of a majority of the members of the planning commission

and the decision-making body. To do this you will employ the same approaches described above for lobbying key decision-makers and legal action. But begin by talking to your best ally on the decision-making body. Ask them to do an informal poll of other members of the body to see if there is already majority support. If not then they will learn who is on the fence or weakly opposed. Generally it is easiest to turn undecided or weakly opposed decision-makers into supporters.

The mayor or county executive may have the authority to veto an action by the decision-making body. It may then require a supermajority of votes to overturn the veto. Determine if this is the case in your jurisdiction. If it is then your goal must be to get more than half the legislators to vote in favor of the law, unless the chief executive officer is a solid ally. Use the approaches recommended above for lobbying key decision-makers to win support for changing the law.

What do you do when you can't convince a majority of local decision-makers to support changing the law? Well one option is to elect more responsible decision-makers. If final action on a project can be held off until after the next election then you may succeed in replacing opposing decision-makers with supporters.

American voters strongly support Smart Growth and other responsible growth management policies. According to the Land Trust Alliance and the Trust for Public Lands, in the 2002 elections voters supported 80% of the open space preservation measures on ballots throughout the United States. Collectively, tax-payers voted to increase their taxes by \$2.6 billion to preserve farms and other rural lands. This is up from a 75% ballot measure approval rate in 2001. So it is entirely possible that you might use the momentum of your campaign to win the election of pro-growth-management candidates.

LAND PRESERVATION

In the section of this book on *Open Space* a number of options for preserving a tract of land were presented. Generally, this is far easier to accomplish before an applicant proposes a development project. As a project progresses further along the permitting-approval process the value of the land escalates. So if there is an undeveloped tract of land next to your home, favorite trout stream, or adjoining a historic site you cherish, start your preservation efforts now.

Find out who owns the property. In some states you can do this online. In others you need to visit the local land records office, where you will likely find a set of maps showing deed references - liber (book) and folio (page) numbers - for all the units of land in your local jurisdiction. The land records office staff can then help you pull the deed, but they will need the liber and folio number so be certain to write it down.

The deed will tell you who currently owns the property, whom they purchased it from, the liber and folio number for the prior deed, how much was paid for the land, when the transaction occurred, the number of acres purchased, the boundaries of the tract as defined by metes and bounds, any restrictions (covenants) on the use of the property, rights-of-way, and other information. Occasionally a deed will contain a covenant which restrict uses of the property,

even precluding development. See if the deed contains anything like this. Look at prior deeds as well. However, finding such a restriction is not necessarily victory. I understand that the courts will overturn covenants that are too restrictive or have other legal shortcomings. So if you find something in the deed that might be helpful get an opinion on the legality of the restriction from a good land use or title attorney.

Ask the land records staff how you can determine if any easements or other agreements have been filed on the property. Perhaps the owner sold development rights through a PDR/TDR program or granted a conservation easement.

Next, visit the local planning and zoning office.

Check the applicable comprehensive plan to see what uses are called for on the site. Perhaps it is already slated for preservation or a major new road may be shown passing through the site. Take a look at other plans, such as those for transportation, historic resources, green space, and so forth. See what the water and sewer plan shows for the site. Does it already have public water and sewer service or is the site slated to receive service?

Find out what zoning applies to the site. If you are lucky zoning will limit development to a few houses on the property and a minimum of 80% of the site must be preserved as open space. If you are not so lucky the site is zoned for heavy industrial uses, which means it will be very expensive to purchase, difficult to rezone, and a number of not so pleasant uses could be made of the land.

Ask to speak with the planner familiar with development activity in the vicinity of the site. Inquire about any proposals made to develop the site. If there are active applications then learn where they stand in the process and go through the other steps suggested at the start of this book under *The Easy Solution*. If there are not any current applications but prior, inactive proposals then ask why they have not progressed further. There may be some aspect of the site which restricts development, such as a lack of adequate road access or soils which do not meet septic system requirements (won't perk). Ask if there are any requests to rezone the property. Also, ask if the property might already be preserved through easements or other mechanisms and how one would go about checking on this. Finally, ask the planner's advice on how they would proceed if they wanted to preserve the site or at least the most valued features on the property.

If you think the property might be valuable because of the plant or wildlife it supports then contact your state fish, wildlife, conservation, or natural resources agency to see if they have any data supporting the value. Similarly, if you feel the site is of historic significance contact your local or state historic preservation office for documentation. Agency staff may also have great advice on preservation options.

Next, contact land preservation groups active in your area. You can begin with national organizations such as the American Farmlands Trust, the Land Trust Alliance, the Nature

Conservancy and the Trust for Public Lands. Contact information for all of these organizations can be found on the [CEDS website](#).

Numerous local land trusts exist throughout the nation. These organizations were formed to preserve lands ranging from a single parcel to those throughout a region. To find a local land trust in your area visit the [Land Trust Alliance website](#).

As you make contact with land preservation organizations keep in mind that the most valuable thing each can provide is advice. If you were to call an organization and simply ask if they were interested in buying a tract of land, then most will give you a flat no. Instead, say you are looking for advice; not someone to champion the preservation effort for you.

Begin the request for advice with a brief description of the land you hope to save. Ask if there is someone who could give you advice on preservation options and strategy. If you are linked with an advisor then summarize what you want to accomplish, why you think the site is worthy of preservation, and ask what suggestions they have. If you peak their interest then they will ask for details. They make become sufficiently intrigued to serve as a mentor while you work through preservation strategy options.

After you have completed all of the research described above you should have a fairly clear idea of preservation options. Most options will go far more smoothly if you can win the cooperation of the land owner. So you need to need to come up with preservation options which are win-win for you and the property owner. For example, most owners of working farms view their land as their retirement fund. When they can no longer work their farm they will sell the land and use the proceeds for retirement income. A win-win solution would provide the farm owner with comparable income while preserving a portion or all of the land. Several options were presented in the section of this book on *Open Space* which might constitute a win-win solution, such as the Purchase or Transfer of Development Rights, sale of an Agricultural Land Preservation Easement, a Limited Development Venture, or acquisition. Downzoning the property without compensation would be a win-lose, which would be difficult to achieve and ethically undesirable.

Once you have a win-win solution or two then look around for someone who has a good relationship with the property owner or someone whom the owner is likely to view with a bit less suspicion than a total stranger, such as you. Ask this person if they would be willing to request a meeting with the property owner. From this point on you would go through the same strategy options presented above, beginning with *Negotiation*. If the property owner feels your solution is not win-win enough, then use the suggestions under *Lobbying Key Decision-Makers* to see if you can get government to kick in additional funds to make the offer more attractive to the property owner. And, as always, please don't hesitate to give us a call for advice. We've supported a number of successful land preservation efforts.

A CLOSING WORD ON STRATEGY & PERSISTENCE

At times it may seem like your efforts are having little effect. But then you cross a vague threshold known only to the applicant or some other key decision-maker. All of a sudden things start turning your way. The applicant asks to reopen negotiations. A mayor or council chair announces support for your effort. Persistence is the key to getting to this point. So to win keep pushing and pushing until you run out of volunteer hours and dollars then figure out a way to get more of both. And, as always, please do not hesitate to give us a call. The last section of this book explains how we can help.

CHAPTER 5 - HOW CEDS CAN HELP

Advice by phone is always available free of charge to citizens and citizen groups. Just give us a call at 800-773-4571. About two-thirds of the folks we help find that our free advice and free publications, such as this book, are all they need. The other third hire CEDS to manage a portion or all of their campaign. These folks feel they simply lack the large amount of time or expertise frequently required to win a campaign.

STRATEGY SESSIONS BY PHONE

Our phone conversation can be one-on-one or can include other folks active in your effort. For example, you might pick a time when you and your allies can meet around a speaker phone set up on a kitchen table. We would spend an hour or so discussing what you know about the project, the steps you have pursued thus far, where the project stands in the review process, and your goals. CEDS can then suggest strategy options which have worked in campaigns resembling yours.

ENHANCING YOUR CREDIBILITY

One of the least expensive and most helpful services we can provide is to verify the potential impacts you have already identified. Frequently we also identify impacts no one else has pinpointed. Since citizens are our primary clients we are far more skilled in assessing potential impacts upon neighborhoods and the environment when compared to more traditional firms that spend most of their time working for development companies. You may find that a letter verifying your concerns, from a national firm, such as CEDS, adds that extra bid of credibility needed to get decision-makers to take your concerns seriously. In most cases we can also recommend ways of modifying a project to resolve your concerns. Usually an initial project review with a letter can be done for a very small fee.

INITIAL STRATEGY ANALYSIS

A number of our clients hire CEDS to conduct an initial analysis of project impacts, potential solutions and strategy options. The analysis is usually conducted by CEDS president Richard Klein, the author of this book.

The analysis usually consists of a two- or three-day visit to your area. Initially I meet with you and your allies to hear all that you have learned and done about the project. I then review agency files and talk with staff to gain a thorough understanding of the project. If access is available I will also walk the site.

During this review I look for all the impacts addressed in this book, along with others that may be unique to the project of concern to you. I can usually develop one or more solutions to each significant project impact. From my discussion with regulatory staff and others I can gain an insight into which solutions are most effective and acceptable to key decision-makers.

We meet again to review the results of the analysis. I present the facts which led me to conclude that some impacts are significant while others are not. We discuss any further research needed to verify these conclusions. I then present possible solutions along with the pros and cons of

each. I provide any additional information you may need to decide which solutions are preferable. Finally, we review possible strategy options. When we reach consensus on a strategy I then provide the detail needed to implement it to the maximum extent possible with volunteers, which minimizes expenses.

Many of our clients also schedule a meeting with a key decision-maker at the end of the analysis. For example, they will set up a time when I can participate in a meeting with their local elected representative to encourage the decision-maker to use their authority to resolve citizen concerns.

Other clients schedule a citizen public meeting to take place at the end of the initial analysis. At the public meeting I can describe campaign strategy in general and explain how similar approaches have allowed other citizen groups to win. Frequently the public meeting will raise funds far in excess of the cost of the initial strategy analysis, which is usually far less than that of a more conventional approach relying primarily on litigation.

CAMPAIGN MANAGEMENT

For large, complex projects many citizen groups retain CEDS to manage their campaign. We essentially do all the work described in this book for winning the campaign. This work includes:

- any further research needed to verify that specific impacts will occur;
- managing fund-raising and volunteer recruitment efforts;
- publicity;
- identifying attorneys qualified to handle the case;
- assisting you with attorney interviews so you can decide which to hire;
- recruiting effective, low-cost professionals to serve as expert witnesses;
- researching land preservation options;
- working with regulatory staff and decision-makers;
- assisting you with applicant negotiations; and
- managing the numerous other tasks involved in winning a campaign to preserve a neighborhood and the environment.

Usually a decision to retain us for campaign management occurs after the initial strategy analysis. Frequently, the analysis shows a strategy which can be implemented with volunteers and free ongoing phone advice from CEDS. If not then the results of the analysis will make it easier for us to estimate campaign management costs.

ABOUT THE AUTHOR & CEDS

Richard Klein has been a community and environmental activist since 1969. He founded a number of grassroots organizations and served as a volunteer in support of many others. For 18 years he worked for the Maryland Department of Natural Resources and spent ten of those years as director of the Maryland Save Our Streams program. In 1987 he founded Community & Environmental Defense Services (CEDS) so he could help citizens full-time with concerns about a variety of threats to a neighborhood or the environment. He has served on a number of regional and national committees on growth management and various environmental issues. He

wrote *Everyone Wins: A Citizens Guide To Development*, which was published by the American Planning Association. He has also published a number of other papers and articles. The author has testified before many administrative and judicial decision-makers both as a lay and expert witness.

Over his 33-year career the author has helped citizens with just about every form of growth and growth impact imaginable; not just those presented in this book but many more. This experience allows the author to quickly identify the impacts likely to result from a proposed development project and to formulate solutions as well. His background as both an agency insider and citizen advocate also allows the author to effectively negotiate with regulatory staff and other decision-makers. This experience accounts for the unusually high success rate of CEDS in resolving citizen concerns.

CEDS is a combination of a citizen advocacy group, a law clinic, and a consulting firm. Our mission is to help people defend their neighborhood and environment from the impact of poorly planned development activities. CEDS is a nationwide network of attorneys, environmental scientists, traffic engineers, planners, political strategists, fund-raisers, and many other professionals. While our clients occasionally include government agencies and development companies, 99% of the people we help are citizens and citizen organizations. Our advice is always available free by phone to citizens. Just call 800-773-4571 or e-mail us at: help@ceds.org.

ABBREVIATIONS

Ac:	Acre.
ACLU:	American Civil Liberties Union.
ADT:	Average daily traffic.
AFT:	American Farmland Trust.
AICP:	American Institute of Certified Planners.
APA:	American Planning Association.
APFO:	Adequate public facilities ordinance.
BMP:	Best management practice.
C&D:	Construction and demolition debris.
CAA:	Clean air act.
CEDS:	Community & Environmental Defense Services
CEO:	Chief executive officer.
CEQ:	Council on environmental quality.
CSO:	Combined sewer overflow.
CWA:	Clean water act.
DA:	Drainage area also Department of the Army.
dB:	Decibel
dBA:	A-weighted decibel.
DOT:	Department of Transportation.
EA:	Environmental assessment.
EDF:	Environmental Defense Fund.
EDU:	Equivalent dwelling unit.
EIS:	Environmental impact statement.
EJ:	Environmental justice.
EMR:	Electromagnetic radiation.
EPA:	United States Environmental Protection Agency.
ESC:	Erosion and sediment control.
FHWA:	Federal Highway Administration.

FID: Forest interior dwelling bird.

FONSI: Finding of non significant impact.

FPS: Feet per second.

GIS: Geographic information system.

GPS: Geographic positioning system.

IA: Impervious area.

ISTEA: Interstate transportation efficiency act.

JD: Jurisdictional (wetland) delineation.

LOD: Limits of disturbance.

LOS: Level of service.

LULU: Locally unwanted land use.

MGD: Million gallons per day.

Mi.: Mile

MPH: Miles per hour.

MPO: Metropolitan planning organization.

MSA: Metropolitan statistical area.

MTBE: Methyl tertiary-butyl ether

NAD: North America datum.

NEPA: National environmental policy act.

NFPA: National Fire Protection Association.

NIMBY: Not in my back yard.

NOI: Notice of intent.

NPDES: National Pollutant Discharge Elimination System.

NPS: National Park Service.

NRCS: Natural Resources Conservation Service, formerly the Soil Conservation Service.

NRDC: Natural Resources Defense Council.

NTHP: National Trust for Historic Preservation.

OSD: Onside sewage disposal system.

PAH: Polycyclic aromatic hydrocarbons.

PDR: Purchase of development rights.

RTA: Residential transition area.

RTE: Rare, threatened or endangered species.

SCS: Soil Conservation Service; now the Natural Resources Conservation Service.

SLAPP: Strategic lawsuit against public participation.

SSO: Separate sewer overflow.

SUV: Sport utility vehicle.

SWM: Stormwater management.

SWPPP: Stormwater pollution prevention plan.

TDR: Transfer of development rights.

TMDL: Total maximum daily load.

TND: Traditional neighborhood design.

TOD: Transit oriented development.

Topo: Topographic map.

TPL: Trust for Public Lands.

VMT: Vehicle miles traveled.

USACE: United States Army Corps of Engineers.

USDA: United States Department of Agriculture.

USFWS: United States Fish & Wildlife Service.

USGS: United States Geological Survey.

VOC: Volatile organic compounds.

VPD: Vehicles per day.

VPH: Vehicles per hour.

WQC: Water quality certification.