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**UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT**

LAND USE REGULATORY SYSTEM (ZONING)

**Environmental
Protection
and Land Use Regulations**

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Executive Summary

The purpose of this Manual is to consider how ecological problems can be incorporated into market mechanisms of land use regulation and can be resolved by means of zoning. The Manual is intended for local administration officials and specialists of Russian cities where zoning has been implemented or is going to be implemented. The main goal of this Manual is to provide procedural recommendations on how land use regulation of areas with special ecological status can be included in zoning regulations as well as on how general and special ecological parameters can work together.

Due to the multifaceted nature of ecological problems and the large number of urban areas which have special ecological regimes, the authors of the Manual primarily considered ecological problems for areas adjacent to watercourses (water protection and riparian zones and floodplains) with the idea that the suggested methods will be applicable in other areas of environmental protection and ecological security. In addition, the suggested approaches were tested in Novgorod, a city which has already adopted Land Use Regulations and was interested in their further implementation and needed to replace the city's "Temporary Provisions for Water Protection Zones".

The Manual consists of four parts and five appendices.

Part One defines the problem and provides general zoning concepts and, from this point of view, it covers environmental protection as an element of city planning and land use regulation.

Part Two is devoted to a detailed analysis, based on US experience in controlling water protection zones, of new approaches to environmental protection through land use regulations in developed countries with market economies.

Part Three contains an overview of the existing legal mechanisms of environmental protection and ecological activity in different Russian cities, including legal basis for protection of waterways and regulation of urban riparian zones. Specifically, the authority and jurisdiction of the federal government, governments of the subjects of the federation and local administrations in this area are described, the "shortcomings" of the respective laws are set forth, as is the possible role of local laws on land use in rectifying the situation.

The final part of the Manual contains procedural recommendations for local administrations for including land use regulatory tools on water protection and riparian zones in the zoning mechanism. This part also contains the experience gained from testing this approach in Novgorod. A separate, concluding subsection contains recommendations which can be used to develop local programs and laws for land use control over ecologically "sensitive" areas in general.

An appendix contains a draft (which was proposed for the consideration of the Novgorod administration) of amendments to the existing Land Use Regulation. The draft includes additional parameters for areas adjacent to waterways (water protection and riparian zones and floodplains).

The authors hope that this Manual will help local administrations to develop, taking into account the specific features of their cities, documents, which are accepted in world practice and which regulate land use and development in water protection and riparian zones and other areas of special ecological regime.

This Manual may also be helpful to specialists and professors in the area of city planning, land use, environmental protection, city economics, as well as to all individuals interested in these issues

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I INTRODUCTION

It is impossible to consider and provide recommendations concerning the full range of ecological problems of cities in their connection with land use regulation. The aforementioned problems are considered using the example of areas adjacent to water courses (water protection zones, riparian zones, floodplains). This case study is not only a good example of how legal zoning can help to resolve ecological issues, but also appears to be a rather typical problem for the majority of Russian cities taking into account historical tradition to locate cities close to rivers, lakes and other watercourses. Such areas sometimes cover a substantial territory of a city.

The authors of this Manual hope that the analysis and recommendations can be applied in many cities, and, consequently, this Manual will help local administrations to develop documents on land use regulation within riparian and water protection zones, floodplains and zones of special ecological regimes for their cities.

1 ESTABLISHING ZONING IN RUSSIA AND ITS INTERCONNECTION WITH ENVIRONMENTAL PROTECTION

Normally, by land use regulations we mean a legal document which regulates relations pertaining to use and improvement (via construction) of land parcels and other real estate under market conditions. Land use regulations serve as a mechanism of implementation of urban planning projects, policies of local community and intentions of individual citizens aimed at creation of resident-friendly habitat. With the help of zoning the General Plan (Genplan) of the city is linked with market mechanisms - investment and mortgage - in order to attract long-term investments in construction and land development.

To be more precise, it's a process of dividing the city area into a certain number of zones with well-defined boundaries. Land use rules and rules for making alterations to real estate via construction are set forth for all zones and for every land parcel located in these zones. Such legal rules normally consist of text and maps.

As a rule, the text of zoning regulations contains

- 1) definitions,
- 2) permitted types of land use for each zone,
- 3) requirements pertaining to development of every zone,
- 4) procedures for consideration and approval of development projects,
- 5) rules related to the already existing land parcels, buildings, types of use, which are not in compliance with the zoning plan,
- 6) procedures for making exceptions from the rules,
- 7) procedures for amending the legal zoning plan,
- 8) procedures for monitoring the compliance to the zoning plan.

The second part of the document is a zoning map, which shows the boundaries of regulated zones.

The main feature of regulation of permitted uses and construction parameters is that they are automatically applied to projects and land parcels without any additional specifications (targeted use) in the Architectural-Planning Assignment or other city planning documents. Equal rules are established for all land parcels within a zone before any development projects are proposed, and, therefore, they are to be known in advance. Such rules represent a "legal guarantee" of the type and scale of use and construction parameters which will be permitted for every land parcel within a zone. In addition, if the situation changes tomorrow and the permitted type of use or a building is out-of-date or not profitable any more, another type of use may be picked up or reconstruction may be carried out and the possessor will not lose his land or rights for its use and development.

Usually, for small and standard development projects a rather simple consideration procedures are applied, larger projects which may have an impact on the

environment or which call for large scale construction require “special approvals” Decisions on such projects are made based on complex analysis conducted by specialists and the public Moreover, criteria for such projects zoning regulations establish a standard consideration procedure with fixed terms and evaluation The decision-making process becomes open, which increases responsibility for such decisions, and, therefore, there are less long-lasting negotiations, unpredictable results and corruption

In Russia, land use regulations are frequently referred to as “legal zoning” This term is used, primarily, for the purposes of avoiding legal misunderstandings it is used as opposed to “functional zoning” - a term which was commonly used under the system of centralized management and meant that types of use were divided into different categories in accordance with the Genplan The notion of “legal zoning” was established in the Draft Urban Planning Code which passed the third reading of the State Duma in June 1997 This Draft contains sections establishing zoning as a permitted tool of city planning activity, this document also defines zoning in terms close to those used in the world practice

Zoning in Russian cities is implemented through the procedure of approving local legal acts which are normally called “Land Use and Development Regulations” of a certain city or settlement Once approved by the city Duma these acts become effective and should be implemented by all subjects involved in the process of making alterations to real estate, or somehow related to this process - by administrative controlling and supervising agencies, owners of real estate, investors, developers, contractors These rules serve as the basis for resolving disputes in courts

Development of the zoning system is a multi-faceted process, and its full implementation is virtually impossible at one pass The following are the main steps required for efficient implementation of the system in Russian cities

- Development and approval of a local legal act on zoning which, along with basic legal standards, will include a zoning map of the whole city with a list of permitted uses in each defined zone Within certain zones, parameters of real estate construction alterations may be established The development of this document is related to establishment of the general land and development parameters regarding different territorial zones,
- After or parallel with implementation of a local legal act, supplementary parameters of permitted construction alterations to real estate in certain zones can be developed Permitted uses are specified based on ecological, historical, cultural and other restrictions Finally, ecological (and other) standards are merged with actual city planning rules, and legal zoning documents are amended according to the established procedures

Zoning provides an appropriate legal mechanisms to address environmental problems First of all, as already mentioned, all projects which may have any impact on the environment must pass through special approval procedures In addition, by defining types and parameters of permitted use of real estate, zoning sets minimum requirements for the quality of the habitat in different territorial zones If something

is not specifically permitted by a corresponding normative legal act, it cannot happen, and accordingly, there will be no further deterioration in the quality of the habitat. At the same time, everything that is permitted induces one to act in directions which will improve the existing situation.

Zoning documentation also contains what are called “non-conforming uses”. According to this norm, if real estate already existed prior to issuance of zoning documentation and its properties and parameters of use differ from the zoning regulations, it is declared “non-conforming” and continues to exist under special regime. Such real estate can be used and maintained under one condition: the degree of nonconformance between its type of use and the zoning documentation should not increase. Every subsequent change, if any, to such real estate should be directed at greater compliance with zoning documentation, in other words the zoning regulation should provide

- a time period during which an enterprise responsible for pollution should convert its production processes, replace old production technologies by new, environment-friendly technologies, or build highly efficient purification facilities and filters. This is, probably, the most common approach.

- another option: the existing type of use might be permitted for a certain period of time, e.g., for 10 years.

- finally, a legal zoning plan might have a mandatory requirement of immediate termination of the existing type of use, or termination within a short time span, for example, within 1-2 years. The last approach is generally used only if the present type of use is illegal, dangerous or poses high risks for health¹.

While activities of a certain enterprise might be recognized as “non-conforming” from the point of view of permitted land use, whole industrial enterprises might be “non-conforming” from the point of view of a zoning plan, if their buffer zones go well beyond the boundaries specified for them by urban planning (in accordance with legal zoning maps), and if their operation inflicts incommensurate damage on the owners of real estate in neighboring urban planning zones. In this respect, enterprises, whose activity is inconsistent with the legal zoning plan, might be ordered by court to buy out: within a certain period of time, housing units and other real estate, the owners of which are subjected to incommensurate damage, and/or to compensate for the damage in any other acceptable manner, including relocation of residents to new places of residence.

In order to induce enterprises to meet requirements of a legal zoning plan, the city can resort to certain economic levers, like granting tax breaks and other benefits to those enterprises which are withdrawing from a given zone.

It should be noted that with regard to solving the problems of urban development in general, and environmental problems, in particular, zoning serves a dual purpose. It is a legal mechanism for implementing the policies of urban planning, and, concurrently, it ensures coordination between the legal mechanism and

¹ Robert Odland. Model Concept of the Law on Zoning for St.-Petersburg, St.-Petersburg, Urban Institute (USA), 1996 (Working Paper).

economic mechanisms and enforcement of the latter. Coordination of these two types of mechanisms helps to address a lot of problems in a more efficient way, including environmental problems, which are most difficult to solve, for example, the problems of conversion of activities and relocation of hazardous industries²

It can be best illustrated by a typical example. Let's take a situation which is rather typical for Russian cities, a "smoking" factory in the center of a city. It was privatized, the land parcel was bought out. The city would be interested either in closing this facility or moving it to the suburbs. However, the city fails to carry out its plans. Why?

The reason is the absence of any legal mechanism and, accordingly, the lack of coordination between this mechanism and the economic mechanism. The point is, that the existing urban planning documentation (including the Genplan) does not contain a list of legally permitted real estate uses that should be applied to certain regions of the city, in this particular case - applied to the location of the factory. If the Genplan contained such a list, this list would envisage more profitable types of real estate use, compared to its current use. Since this place is earmarked for construction of a public business center, this list would contain, for example, banking and insurance activities, shops, restaurants etc with obviously higher profitability than profitability of most types of industrial production.

If this happened, the factory, under the pressure of urban planning requirements, would be, sooner or later, induced to move to some other location or to convert to other activities. For example, the normative value of the land and taxes on its use would significantly increase. To pay such taxes one should have much higher revenues, and the factory in its present condition would never be able to generate such revenues. The owners of this factory have several options. One option is to hand over the land parcel (the value of which increased) as collateral for a bank loan, to buy a cheaper land parcel in the countryside and to construct a new factory on it, or they can sell the factory to a new owner who will be able to use the urban land more efficiently.

It's clear that zoning is a rather flexible mechanism which makes it possible to implement tasks of urban development (including environmental problems) integrally.

Naturally, the potential of zoning itself is not sufficient for addressing a number of issues of primary importance in the sphere of environmental protection. An independent mechanism of environmental regulations and control was created and enforced in virtually all countries of the world, including Russia. However, as follows from Chapter III, in developed countries, for example, in the USA there is an obvious trend towards integration of land use and environmental protection. In a number of Western cities there exists only one document which contains provisions for environmental, historical and ordinary urban planning control. We can opt for another

² T Afanasyeva, E Trutnev, B Valletta et al. City Zoning of a City. Introduction in the Problems of Organizing a Modern System of Land Use and Development in Russian Cities Under Conditions of Emerging Real Estate Market. Moscow, 1997 (Working Paper)

approach laws and regulations on zoning and on environmental control, as well as the corresponding maps, might be developed separately, but they must be interrelated through a system of references to each other, and activities of environmental control agencies and those of the zoning commission must be coordinated within the framework of a unified system of permitting

In this respect, environmental requirements shall be tentatively divided into two areas

- Formation and maintenance of an environmentally healthy habitat for humans
- Protection of the environment (water, air, soil, flora and fauna) from negative and damaging impact ³

The first area - ecological and city planning Its development is connected with serious consideration of ecological factors while establishing zone boundaries, physical parameters of land parcels, ratio of solid surface, ratio of development and territorial use and other features Typical example - greenery standard per capita

After appropriate provisions are included in the city zoning regulation, management of these issues should be conducted strictly according to the regulation's procedures Moreover, for more in-depth consideration of ecologists' requirements, while making decisions on the issuance of "special permits", it is logically correct to include representatives of nature protection agencies on the Zoning Commission

The second area - actually ecological Its development shall be connected with preparation of permitted quantitative and qualitative parameters of enterprises, which have an impact on the environment, and establishment of strict bounds for their activity As an example, we can mention the following ecologically vital standard standards of maximum permissible exhaust emissions (PEE) applicable to different types of zones

The issues on wordings of the requirements and control over their implementation are under the jurisdiction of agencies which report to federal agencies, and, consequently, these issues can be included in the zoning regulation, but they can also be in the form of an independent document, but connected with this regulation

However, it is important that ecological agency activities be coordinated with the zoning procedures as far as unification of requirements and supervision of procedures over their implementation is concerned

It is worth mentioning that definitions of the zoning nature protection restrictions for different uses of land and resources require complex ecological research of the city

³ Refer to Draft Land Use Regulations Pushkinskiy district St -Petersburg Bancroft Group, 1996 (Work Document)

2 ECOLOGICAL COMPONENT OF URBAN PLANNING AND LAND USE CONTROL THE NORTH AMERICAN EXPERIENCE

Traditionally land use planning regulations in the United States were created and administered at the local government level by cities and counties, and environmental protection regulations and standards were initiated by the Federal government. However, recent trends indicate state and local governments are instituting land use regulations that also protect the environment.

Aspects of the environment that may be managed through land use controls at the Federal, state and local level include coastal zone management, wetlands, soil conservation, farmland preservation, floodplain regulation, preservation of water quality, groundwater, air quality, noise control, critical or sensitive areas regulation (such as riparian areas) and habitat conservation for endangered species.

Three of these - preservation of riparian areas, management of floodplains, and protection of water quality - will be discussed in this section. Primarily the attention will be focused on riparian area protection and floodplain regulation. Water quality protection will be discussed generally, as it relates to riparian and flood management. From the authors' point of view the US approach to these land management scenarios may be useful in formulating an approach for riparian area and floodplain management for Russian cities.

2.1 Land Use Control in the United States

For over half a century, local governments have been empowered to regulate land use within their boundaries. In 1926 the United States Supreme Court upheld the right of municipalities to divide land into various use districts, based on the broad police power of protecting the health, safety, welfare and morals of the public. Zoning by use districts or "Euclidean zoning", named after the Supreme Court case, is ineffective in its protection of the environment and environmentally sensitive lands because it focuses on social and economic values rather than on natural resources. By focusing primarily on protecting economic and social values, Euclidean zoning addresses the immediate use of land within the municipality, but ignores the cumulative effect of all the permitted uses of the land upon the environment.

Traditional zoning also fails to protect environmentally sensitive land because zoning is specifically addressed to the needs of a single community, while the effects of such zoning are felt outside that community. In many instances, environmentally sensitive areas that are located adjacent to towns are indirectly affected by a town's zoning laws. Even though a development is in full compliance with the town's zoning laws, it might, for example, increase the amount of drainage and runoff flowing into catch basins and flood areas outside its boundaries and this will affect land outside the town.

Euclidean zoning also fails to protect reservoirs and aquifers because towns usually get their water from outside their boundaries. Thus, the receiving town's

zoning laws will not ensure the quality of the water it receives from the reservoir or aquifer of a neighboring town. For example, on Cape Cod, Massachusetts, all of the Cape's fifteen towns share a single groundwater aquifer. Because population and development explosions as well as gasoline contamination threatened the integrity of this sole source of drinking water for the Cape, the Cape Cod Planning and Economic Development Commission proposed a model ordinance, a type of overlay zone, to protect the aquifer. The fifteen towns have virtually ignored the model and have continued enforcing their existing zoning ordinances, resulting in continued degradation of the aquifer.

The environment also suffers from Euclidean zoning because there is no financial incentive for developers to actively seek to protect the environment. For example, the benefit that one receives from keeping a wetland on one's property (which is a naturally occurring filtering mechanism for upland runoff) is public in nature, and will probably be outweighed by the profits one can receive by draining and filling the wetland so as to have more land to develop. Developers are often interested in maximizing profits, and they will generally build to the maximum level permitted by local ordinances. Because there are no provisions in traditional Euclidean zoning to discourage development to the maximum level allowable, the pursuit of maximum profits causes environmental damage that affects the ecological, health and aesthetic benefits of natural resources.

2 1 1 Environmental Protection and Land Use Regulation The National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969 (NEPA) and the Clean Water Act also fail to properly protect environmentally sensitive lands from poorly controlled land use decisions.⁴ NEPA states that any federal action taken that will have an adverse impact on the environment should only continue if proper steps are taken to safeguard the environment and maintain its preservation. NEPA provides the environmental review procedures by which Federal development projects are reviewed for their affect on the environment and potential violation of other Federal environmental laws. This environmental review process requires the developer prepare an Environmental Impact Statement (EIS) of the development site. The EIS provides important environmental data about a development project and guides the development approval process.

NEPA requires that all federal agencies proposing a major development plan prepare an environmental impact statement describing the anticipated effects of the proposed development on the environment. All federal government agencies shall include in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on

- the environmental impact of the proposed action,

⁴ See W. Fischel, *The Economics of Zoning Laws: A Property Rights Approach to American Land Use Controls* 223-224 (1985).

- any adverse environmental effects which cannot be avoided should the proposal be implemented,
- alternatives to the proposed action,
- the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity,
- any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented

Many states and local governments have adopted measures similar to NEPA to regulate local developments, proposed by either governmental or private developers, that affect the natural environment. State Environmental Policy Acts or SEPA's are modeled after NEPA and require preparation of an EIS for state actions (such as approving a building permit) that significantly affect the quality of the human environment. Some states provide the authority to local governments to require impact statements for local development projects.⁵ An EIS is generally required from the developer, although some states require the EIS from the governmental agency that is ultimately responsible for granting the permit for the project. Submission of this statement to a state government review body includes a duty to consult with specialized state and local government agencies. Some SEPA's also require the statement provide mitigation measures to minimize any environmental impacts.⁶

Environmental impact statements may be required by local governments as a condition of permitting new development or may be required by zoning regulation. In addition to the federal EIS requirements local governments may also include in their EIS process

- administrative review procedures and timing of final decisions,
- options in the event of a finding of environmental impact, such as requirements for a more thorough environmental assessment and measures to mitigate damage,
- appeal process to appeal the government agency decision to allow or deny development

The Federal EIS process does not adequately protect the environment because it does not provide definite environmental standards or procedures for environmental review and no process to ensure objective evaluation of the impact review process. There is no appeals process at the federal level. Local governments have remedied some of the faults in the federal and state environmental regulation of land use. By The EIS process is useful only if there are exacting standards for the contents of an EIS. An EIS should also be required as a matter of course and not only where the proposed development will "significantly affect the quality of the human environment." To promote objectivity in evaluation of a project, both public and private involvement is essential. Both parties must contribute to the data gathering and assessment of the project.

⁵ New York - McKinney's Environmental Conservation Law Sec 8-0101 et seq

⁶ North Carolina Environmental Policy Act of 1971, N C General Statute Secs 113A-1 to 113A-10, Environmental Quality Act of 1970 West's Ann Cal Pub Res Code Secs 21000-21151

An EIS review process includes review of a project's impact on all aspects of the environment including water quality. Environmental impacts of a development project that impact water quality must also comply with federal, state and local environmental standards that regulate water quality. The Federal Water Pollution Control Act is the primary national statute for preventing water pollution.⁷ The Act requires states to devise water quality management plans and to set minimum criteria for state water quality standards.

State water quality standards are implemented through water quality control measures such as issuance of permits, construction of public treatment works, and use of best management or technology practices.⁸ State water quality standards consist of uses and criteria. Uses are the functions the state or local government give to a designated body of water such as "recreation." Criteria are the technical standards or maximum pollutant levels compatible with each use and which are scientifically determined based on public health determinations.

State water quality standards apply to absolute limits specific to pollutant categories discharged in to water sources. These standards do not focus on a single polluter. Once standards are set states must translate them into specific limits on individual discharges. Pollution discharge limits into water sources are established by permit. Through a permitting system states may allocate total pollution loads among discharges along a given water source by "mixing zones" or by allowing variances to state or local regulations.

State and federal water quality regulations are also inadequate to protect the effects of development on water quality for the following reasons. The Clean Water Act has failed to eliminate or significantly reduce non-point source pollution, "best Management Practices" fail to ensure compliance with water quality standards, there is inadequate utilization of biological criteria, and wetlands and riparian areas are not protected under the Act.

Local governments may remedy this by adopting special standards and management programs to remedy the problems created by the federal law. Water quality requirements that may be adopted in the form of land use regulations include

- Permits for point source polluters that may, for example, require technological standards on "end-of-pipe" discharges from constructed industrial sites
- non point source pollution management such as stormwater run-off regulations through building codes or permitting
- Enforcement mechanisms such as monetary fines for non compliance
- Regulations for erosion of water course banks that cause sediment discharges
- Limitations on pollution discharges for construction activities

⁷ FWPCA Sec 3031, 33 U S C Sec 1313

⁸ 40 CFR Secs 130, 130.2

- waste disposal systems located away from known surface and groundwater sources

An environmental review process requiring an Environmental Impact Statement for development projects (ecological examination) is a useful tool for local government regulation and protection of the environment. Such a review process may be incorporated in city's land use code or zoning laws and regulations, and as part of the permitting and approval process for new development. In addition, to the extent water pollution control standards exist, a local government may institute implementation requirements, such as special permitting procedures that regulate siting of industry, disposal of waste water and storm water run-off.

2 1 2 Local Land Use Methods to Protect Natural Resources

As it was mentioned above Euclidean zoning is often too inflexible to accommodate the irregular boundaries of environmentally sensitive areas. Federal environmental laws, including the National Environmental Policy Act (NEPA),⁹ and the Clean Water Act (footnote) also suffer from one or more deficiencies that render them inadequate in the protection of environmental areas. Deficiencies in traditional local zoning and in federal and state environmental protection have been addressed by local governments in their use of land use tools combined with performance standards.

Performance standards are criteria established to control and minimize offensive by-products of land uses, such as noise, odor, pollutants, and runoff. There are two types of performance standards: primitive and precision. Precision standards may be defined as those that contain both a scientifically developed means of measurement and a scientifically known and accepted level of performance. For example, an agency such as the United States Environmental Protection Agency may scientifically develop maximum pollutant discharge levels for an industry that may be subsequently adopted by a local community in its zoning ordinance or land use code.

Primitive standards have a more general character, that are not scientifically substantiated, but are based on expert studies. For example, an ordinance that prohibits "land uses which will emit any offensive odor, dust, noxious gas, noise, vibration, smoke, heat or glare beyond the boundaries of the lot on which such use is conducted"¹⁰ is a primitive standard because violations are defined by the general term "offensive." Primitive standards have their roots in the common law of

⁹ 42 U.S.C. sec. 4321-4370 (1982)

¹⁰ *State v. Zack*, 138 Ariz. 266, 268, 674 P.2d 329, 331 (1983)

nuisance¹¹ Thus, an Illinois court upheld an ordinance that required that the noise and fumes of manufacturing plants not be disagreeable or annoying¹²

A more recent method used by cities to protect the environment from development projects is to combine certain types of zoning with performance standards. Zoning can be used to divide a city into flood and riparian zones or districts in which certain (residential, commercial, industrial, recreational) are permitted and not others. Zoning may establish the height of buildings and other structures, minimum allowable lot sizes, minimum setback requirements, preservation of natural vegetation and allowable density of development. By controlling urban land uses and densities, zoning combined with performance standards can protect critical areas, such as riparian areas and floodplains and separate conflicting land uses.

The following list of land use regulatory instruments are some of the tools used by local government to implement environmental protection goals of sensitive land areas¹³

Lot size zoning

Lot size zoning is typically used to reduce density in residential areas and can reduce negative impacts on environmentally sensitive areas such as flood zones.

Cluster zoning

Cluster zoning allows flexible design and clustering of residential development in higher densities on the most appropriate portion of a land parcel so as to allow agricultural development or to provide increased open space elsewhere on the parcel or within the zone. This technique is useful in floodplain and riparian management when these areas are divided into zones with varying degrees of regulation, such as floodway and flood fringe zones.

Performance zoning

Performance zoning allows flexibility in design as long as certain standards are met. Proposed uses whose impacts would exceed specified standards would be prohibited. To protect water quality in a flood zone, for example, a set of performance standards may require an environmental assessment of the building site, building design and construction standards, and mitigation of negative environmental impacts.

¹¹ A branch of tort law, nuisance law operates under the general principle that landowners may use their property in any way desired so long as they do not injure others. It becomes a land use control only as a result of the effects of proximity to incompatible activities such as hog farms and most anything else. Nuisance law therefore can only be an appropriate land use control in situations where offensive activities are located adjacent to fragile environmental areas.

¹² See *Chicago v Reuter Bros Iron Works Inc* 75 N E 2d 355, 358 (1947)

¹³ See Palmer, *Environmentally Based Land Use Regulations*, 22 Pace Envtl L Rev 25-26-27 (1984). "Environmentally sensitive lands" are those whose destruction or disturbance will immediately effect the life of a community by either (1) creating hazards such as flooding or landslides, or (2) destroying important public resources such as water supplies and the water quality of lakes, and rivers or (3) wasting important productive lands and renewable resources."

Overlay zoning

Imposition of special regulations and standards to a designated area that may cut across several different pre-existing zoning districts, such as commercial and residential. An overlay water protection zone may impose additional requirements on already existing uses and standards requirements.

Open space zoning

Preserves designated land areas for future uses such as recreation.

Building Codes

Materials used to construct new buildings and the manner in which they are constructed is controlled. They address fire protection, structural safety, resistance to natural disasters, sanitation, and aesthetic considerations. To regulate loss due to flood these codes may require minimum floor elevations, prohibit or restrict the use of certain building materials, require proper anchorage or foundation stabilization.

Moratoria and Interim Development Regulations

Designed to restrict development for a limited time period. They can impose a complete temporary ban on all development or on specific types of intensive development. A moratorium can apply to zoning approvals, subdivision approvals and building permits.

Environmental Controls

Local government officials and land use managers may require developers to prepare an EIS outlining a project's affect on the environment. Such a procedure will assist local government agencies to determine the suitability of a development project for a certain location and additional environmental mitigation measures that may be required.

Permits

Permitting is an integral part of land and environmental management strategies. Permits are usually required by law before proposed development actions can proceed to construction. Conditions for permit approval need to be clearly defined. Land use planning data, critical area protection data and data from environmental impact assessments provide local governments with the information they need to make decisions on issuing permits. For example, local governments can use conditional permit approvals to require that developers minimize or compensate for negative impacts of projects on air and water quality, wetlands, open space or cultural resources. Permits may be withheld or approved according to whether certain conditions are met. These conditions should be clearly defined to avoid discouraging private investment and development.

Economic Instruments

Property tax benefits may be used, for example, to encourage development or redevelopment of areas in flood zones that require costly design and construction standards. Tax benefits may be given to industrial and commercial businesses that invest in new technologies to prevent environmental degradation of air and water resources.

Impact and betterment fees may be required of developers, builders or industry as a one time payment at the time of development approval to finance various public facilities, infrastructure or environmental services needed to increase the carrying capacity of land. These required improvements may be off site within riparian areas, for example, and generally benefit the public at large instead of the development site.¹⁴

Tourism taxes and user charges can be effective methods of raising funds for conservation and protection of natural and cultural resources. Taxes may be assessed on transportation, hotels, restaurants and other tourist facilities.

2 1 3 Overlay Zones

One of the most effective methods used by municipalities to protect natural resources areas is overlay zoning. Overlay zones are those that are specifically tailored to protect the environmental area at issue, whether it be a reservoir, aquifer, forest, or beach area. An outgrowth of traditional zoning, overlay zones in effect circumscribe an environmental area that is already subject to Euclidean regulation, and impose additional requirements thereon. Overlay zones are more effective than other land use controls in environmental protection because of their flexibility, their concentrated focus on specific environmental areas, and their use of performance standards.

Overlay zones are those zones, created by local legislative enactment, that are coterminous or circumscribed by an existing Euclidean zoning district, and that impose additional regulations on the underlying zone. A parcel within an overlay zone will thus be simultaneously subject to two sets of zoning regulations: the underlying and the overlay zoning requirements. Local administrations can use different types of zoning in their combinations with overlay zones, and a zone with special requirements, (such as procedures on permits' issuance, height limits or facade trims) that cover more than one zoning district on the traditional zoning map and do not change the underlying use and density standard.

Excerpts from Fairfax County Virginia's Overlay District Regulations are helpful to show how municipalities may apply overlay zoning.

Sec 7-101 Purpose and Intent

Overlay districts, as presented in this Article 7, are created for the purpose of imposing special regulations in given designated areas of the County to accomplish stated purposes that are set forth for each overlay district.

¹⁴ For example in Florida a Beach Impact Fee Ordinance requires developers contribute to a fund based on the projected recreational demand resulting from the proposed development on beach-front property.

Overlay districts shall be in addition to, and shall overlap and overlay all other zoning districts within which lands placed in each district also lie in one or more of the other zoning districts provided for by this Ordinance

Sec 7-102 Establishment

In general, overlay districts and amendments thereto shall be established in the same manner and by the same procedures set forth in Article 18 for other zoning districts provided for by this Ordinance, unless such procedures are qualified by the provisions of a particular overlay district as set forth herein

If conflicts arise between the requirements of the overlay zone and the underlying zone, a municipal code will usually indicate which regulation will prevail. The overlay regulations generally prevail because they are usually more restrictive.¹⁵ Communities can thus “map out” areas of concern, sometimes with the help of outside experts, and then implement an appropriate overlay zoning ordinance

Establishment of overlay zones, due to their inherent flexibility, presents an attractive alternative to a municipality that has already zoned the entire town and needs only to alter the zoning for the benefit of a specific area. Overlay zones are flexible because they may be specifically tailored to apply only to the underlying parcels requiring regulation. This flexibility saves the municipality the trouble and expense of amending the underlying zoning for just a few parcels and does not affect the applicability of the underlying zoning regulations to every parcel in the district. In addition, overlay zones may be utilized on a state or region wide basis to control land use in districts that extend over municipal boundaries. Further, an overlay zone is flexible because there is no precise format it must follow. Rather, overlay zoning simply encompasses any additional zoning regulations that govern or modify the uses of any underlying district.

Most municipalities that have enacted local environmental regulatory programs have utilized overlay zones. For example, San Diego, California, uses an overlay zone to protect the Tecolote Canyon Natural Park area from uncontrolled residential development. Birmingham, Alabama and New Hanover County, North Carolina, have enacted more general natural resource conservation overlay districts to protect important environmental resources that are located throughout the underlying zones. New Hanover County’s conservation overlay zone exists specifically for the preservation of ecological resources such as swamp forests, natural ponds, primary nursery areas, and salt marshes. It thus subjects development within or affecting such areas to the requirements of both the underlying district and the overlay zone. Specific regulations within the ordinance regulate density requirements, conservation space

¹⁵ See Prince George’s County, MD, Proposed Chesapeake Bay Critical Area Plan and Policy Overview 2-7 (May 21, 1987) (“The overlay zoning technique allows for the modification or augmentation of specific regulations while, for the most part, existing regulations remain intact”), Cottage Grove, Minn. City Code art. VIII, Sec. 28-69 (c) (Supp. 1983) (“Within the overlay district, all uses shall be permitted in accordance with the regulations for the underlying zoning districts, provided, that such uses shall not be entitled to or issued the appropriate development permit until they have first satisfied the additional requirements established in this article.”)

preservation, buffer strips, conservation space setbacks, and retention of runoff from developed areas¹⁶

Spokane County and the City of South Tacoma, both in Washington state, have enacted overlay zones specifically to protect the quality of the region's drinking water contained in groundwater aquifer systems. The focus of the regulations are to protect water quality by requiring permits for the use of certain toxic materials on property within the overlay zone. In addition, Cottage Grove, Minnesota, has isolated a single environmental area within its borders, the Mississippi River, and has chosen to protect it through the use of an overlay zone¹⁷. In this zone, Cottage Grove regulates growth in the vicinity of the river to protect the river's transportation, ecological and recreational benefits.

Overlay zoning is more effective at protecting environmentally sensitive lands than other land use controls because it adequately addresses the weaknesses of those controls and takes an additional step to further protect the environment. Overlay zoning meets the shortcoming of pure Euclidean zoning - - protecting social and economic values while ignoring environmental values - - by allowing municipalities to create zones specifically for regulating the treatment and effects of development on the environment.

Overlay zoning also makes up for the shortcomings in federal, state and local NEPA's which suffer from subjective EIS reports. Overlay zones utilize objective standards rather than developer-imposed standards to measure environmental impact. In addition, overlay zones correct another shortcoming of the NEPA process - lack of administrative and judicial review of EIS's - - in that all zoning action is subject to administrative review through a designated appeals board and then, once administrative appeals are exhausted, an aggrieved party may have access to the courts. Overlay zoning in effect mimics the EIS process, which is NEPA's attempt to superimpose environmental considerations upon land use regulation. Overlay zones, however, do so with objective standards that help eliminate conflicts of interest and are more attuned to environmental protection.

2 1 4 Overlay Zones and Performance Standards

Not only do overlay zones meet most of the inadequacies of other land use controls but they also go one step further in protecting environmentally sensitive areas by establishing performance standards. Performance standards are defined as "criteria established to control noise, odor, smoke, toxic or noxious matter, vibration, fire and explosive hazards, and glare or heat generated by or inherent in uses of land or buildings"¹⁸. Performance standards can also be used to regulate stormwater runoff, soil erosion, and vegetation protection. Communities utilizing overlay zones maintain existing Euclidean zoning but add another level of regulation through special use provisions.

¹⁶ *Id.* At Sec 59 4-4 to 59 4-5

¹⁷ Cottage Grove Minn , Zoning Ordinances art VII, sec 28-69 (b) (1983) (Mississippi River Corridor Critical Area Overlay District)

¹⁸ R. Anderson, *American Law of Zoning* sec 16 11, at 67 (1977)

Through these provisions land owners may use their land for uses other than those specified in the zoning ordinance if they meet specific environmental performance criteria. These criteria generally delineate the key functions that the community wishes to preserve, such as the water retention capabilities of wetlands. Landowners are allowed to develop the land any way they wish if they can show that it will not adversely affect these natural processes.

Performance standards are a supplement to and not a replacement for overlay zones. The overlay segregates the environmental area to be protected and the performance standards preserve natural functions or processes independent of the zonal designation. Thus, the protection of environmentally sensitive lands occurs on two levels: the delineation of the areas to be preserved (overlay zoning) and the creation of performance standards for all such land similarly situated. Performance standards used in an overlay zone further protect the environment because they require all landowners in a buffer zone, not just those within or immediately adjacent to the protected area, to adhere to the standards.

Although no local government has totally abolished its Euclidean zoning districts, many have adopted performance standards to compensate for the major shortcomings of Euclidean zoning. Specifically, performance standards address the inherent weaknesses in traditional ordinances that define permitted and prohibited uses in a zone. Because this list-type zoning cannot possibly encompass all uses that may exist in the future, and because it ignores the wide variations of impact of different uses, it is inherently inefficient. Performance standards rectify this situation by allowing all uses as long as each and every use meets the standards for that district.

An ideal combination to preserve environmentally sensitive lands would be the use of an overlay zone, with its ability to be tailored to fit closely over the often irregular shape of such lands, and the use of performance standards - - both primitive and precision standards - - to ensure that potentially offensive by-products from particular land uses will not reach environmentally harmful levels. Such a zone is proposed for Chesapeake Bay, Maryland, and similar zones already exist in the New Jersey Pinelands, Sanibel Island, Florida, and the coastal zones of Rhode Island.

The Chesapeake Bay Critical Area Commission developed criteria to preserve the environmental integrity of the Chesapeake Bay. It requires local governments in the critical area to develop their own land use programs that are consistent with this criteria. Prince George's County, Maryland, chose to meet this requirement by creating three county-wide overlay zones: the Intense Development, the Limited Development, and the Resource Conservation Zones. The zones will utilize precision and primitive performance standards.

New Jersey created an overlay zone to preserve a one million acre ecosystem of pine forests, aquifers, and cranberry bogs. Although, the zone's administration was headed by a state commission, local governments within the zone would be re-empowered to zone after they adopted a master environmental plan consistent with that of the commission. The zone utilizes both primitive and precision standards.

2.2 Riparian and Open Space Management Water Quality Control

Land development reduces the amount of natural or open space. If development continues without proper planning, a city, county or state will face fragmentation or complete loss of natural space, which can have disastrous consequences on the ecology of the area, especially on degradation of water resources. Natural space along river corridors is referred to as the “Riparian zone”. The Riparian zone is generally composed of the stream, its flat floodplain, the steeper banks, and the uplands¹⁹ which are often wooded.

The Riparian zone performs a variety of critical functions related to water resources, such as controlling floods, trapping sediments, filtering out toxins and supporting a rich assortment of wildlife and plant species. These same areas are often favored for development because they are flat, arable, or have high residential value. Developing these areas, however, reduces their capacity to fulfill their functions and threaten the health of the surrounding environment.

Riparian zones can maintain the following functions essential to preserving the ecological integrity of an area:

- Moderation of water flow Floodplain vegetation (not farmland or paved areas) acts as a sink, absorbing much of the flood water and slowing the flood.
- Nutrient and sediment filtration A Riparian zone can filter nutrients, chemicals and toxins attached to sediment or dissolved in surface runoff, groundwater or soil water (water stored in soil).
- Temperature regulation Overhanging and near stream vegetation lowers water temperature and provides habitat that many fish species depend on.
- Bank stabilization A Riparian zone stabilizes a stream’s banks by providing structure through its system of roots.
- Food and habitat for aquatic communities Vegetation within Riparian zones also offers important cover and source of food for fish.

The design of Riparian zones depends on the surrounding land uses, the ecology of different sections of land adjacent to water bodies and the land’s ability to filter pollutants from runoff. When designing the width and location of Riparian zones one should consider the following:

- Make Riparian zones or greenways continuous along the river and both sides of the river,
- Include the river’s floodplain, riparian forest, associated wetlands, intermittent tributaries, gullies, and swales,
- Undertake a comprehensive study of the site’s sediment and nutrient flow to establish how much is entering the Riparian zone and how much it will need to filter,

¹⁹ An “upland” is uphill, away from, or perpendicular to, the stream.

- Base Riparian zone width on a comprehensive study of the site. Riparian greenways which neighbor intensive land uses such as clear cutting, industrial uses, and shopping malls will need to be wide enough to absorb excess nutrients and toxins
- Riparian zones may be graded or categorized based on their ability to absorb and filter run-off and flood water
- Maintain a band of natural vegetation along the stream bank to protect its temperature moderation function
- Supplement natural sediment trapping function of the riparian area with retention basins or vegetated berms where necessary
- Allow recreational and educational uses and limited industrial and residential uses in select areas

Riparian zones are a critical element in floodplain and sensitive land management, and have been incorporated in many local U S land use plans. One example of such a plan is found in Atlanta, Georgia.

The Chattahoochee River is the largest stream in the Atlanta region. The river provides over 70 % of the drinking water for the area, treated wastewater is discharged into the river for assimilation, water is diverted for irrigation, and manipulated for hydro-electric power generation. The river also drains excess storm water, supports fish and provides food and habitat for wildlife.

The Metropolitan River Protection Act required the Atlanta Regional Commission to develop a plan to protect the land and water resources of the Chattahoochee river corridor. The plan was to create standards that

- Protect the water quality of the river and public water supplies
- Protect recreation values
- Prevent activities that contribute to floods and flood damage
- control erosion, siltation and the intensity of development
- Provide for the location and design of land uses, and
- comprehensive planning for the stream corridor

The Atlanta Regional Commission devised three sets of standards that include, Vulnerability standards, buffer zone standards, and floodplain standards. The vulnerability standards require that all land is placed in six categories based on natural characteristics. Maximum limits on land disturbance (any activity disturbing land activity and existing vegetation) and impervious surfaces (any paved, hardened or structural surfaces) are set for each category and are stated as percentages of the area in the category. 50 feet of vegetation must be left in its natural state along banks of the river and 35 feet along the banks of other flowing streams. Within 150 feet the plan generally prohibits any structures or impervious surfaces, with limited exceptions for footpaths, bridges and water intakes. Floodplain standards are required in the 100 and 500 year floodplain, including removal of soil introduced as land fill.

2 3 Floodplain Management

Development in areas subject to flooding may result in loss of life and property of significant proportions. The U.S. Federal Government has typically provided flood disaster relief through the National Flood Insurance Program²⁰. While the Federal program provides much needed financial support for victims of flood areas, the consequence of the Federal program has been to provide subsidies to reconstruct areas subject to recurring floods. State and local governments realized a land use planning program to restrict development in flood-prone areas was necessary to prevent further damage from floods. State and local governments began to institute appropriate land use controls by adopting floodplain management regulations as part of their state, city and county land use plans.

State floodplain regulations vary in degree and form. Some states have statutes that specifically regulate or call for management of floodplain areas²¹. Other states rely on their general subdivision control, zoning and or police power to “take” private property for the public purpose of managing floodplains²². Floodplains are also indirectly regulated by many states through such mechanisms as state erosion, sediment, stormwater, and pollution control programs²³.

In most cases state and local government floodplain regulations have succeeded in limiting loss of life and property by implementing land use controls, such as building codes, subdivision requirements, zoning regulations and other land management tools that may encourage development designed to withstand flooding or which does not concentrate people or property in floodplain areas so as to unduly risk their safety. By regulating siting, density and quality of construction in flood hazard areas local governments can reduce a community’s vulnerability to damage. Some of the regulatory controls included in a local government’s flood management plan may include

- **Land use planning and mapping** For maximum effectiveness any flood regulatory program must be backed by solid technical data and good land use planning. Potential flood hazard areas must be identified, and mapped. Flood hazard areas should be further divided into zones of comparable risk, and these zones should form the basis of the land use plan.

²⁰ 42 U.S.C. sec 4001-4128

²¹ Maryland Natural Resources Code Annotated, Secs 8-9A-01 to 8-9A-09, Minnesota Statutes Annotated Secs 104 01 to 104 50, Pennsylvania Statutes Annotated Secs 679 101 to 679 601

²² Montana Annotated Statutes Secs 64 010 to 64 905, South Carolina Code Annotated Secs 6-7-510, 6-7-710, Utah Code Annotated Secs 10-9-10, West Virginia Code Secs 8-24-28, 8-24-39

²³ Maryland Natural Resources Code Annotated Secs 8-1001 to 8-1008, New Jersey Statutes Annotated Secs 40 68-27 to 40 68-52, New York Environmental Conservation Law Secs 34-0101 to 34-0133

- **Zoning** Zoning can be used to control all aspects of land development, from height, bulk and siting of structures, to the density and use of the land itself. Where hazard zones can be clearly delineated through mapping, zoning can be used to prohibit or control the placement and intensity of uses and activities within the zone²⁴. Flood hazard areas may be graduated based on the severity of the hazard for each particular site or area²⁵.
- **Building codes** Building codes or minimum construction standards are often employed to protect residents and protect property through such regulations as minimal floor elevations, proper anchorage of structures and floodproofing of sections subject to flood inundation. Building codes may also be used to affect older buildings in flood zones that present hazards to a community²⁶. Grading and drainage requirements for new buildings are also important for site planning and can be used to mitigate flooding, stabilize soils and prevent erosion.
- **Flexible land use regulations** Land use regulations should also provide a “safety valve” permitting the local governing body to allow for exceptions to the regulations when application of the restrictions would cause individual hardship with little community gain²⁷. Such safety valves may include variances, special permits, and procedures for special review. These approaches will preserve the overall fairness of the regulatory scheme.

Let us consider an example of regulation of such areas in Boulder County, Colorado.

Boulder County in Boulder, Colorado passed a Floodplain overlay zone as part of its Land Use Code²⁸. The overlay zone is divided into Floodway and Floodfringe zones. Uses are designated for each zone. Uses are permitted in the “Floodway”, or the area at greatest risk of flood, to the extent that they are not prohibited by an

²⁴ For example, Little Cottonwood Canyon, Utah adopted a single multiple hazard zone in its zoning regulations. Construction of permanent structures is not permitted in areas subject to flood hazard.

²⁵ Graduated use restrictions may be used such that only open space uses such as agricultural uses, golf courses, parking areas etc. are permitted in “high hazard” areas. In “general hazard” areas construction guidelines are established for first floor elevations and floodproofing. UNITED STATES WATER RESOURCES COUNCIL, 2 REGULATION OF FLOOD HAZARD AREAS TO REDUCE FLOOD LOSSES 165-170 (1971).

²⁶ For example the city of Los Angeles amended its building code to require that all pre-1934 unreinforced masonry buildings be either strengthened or removed. The ordinance established both reinforcement standards and a system of priorities for handling the city’s estimated 8,000 target buildings.

²⁷ Waivers and other safety valve provisions are routinely included in most zoning enabling acts such as that found in Colorado. COLO. REV. STAT. Sec. 31-23-301 (1986).

²⁸ Boulder County Land Use Code, Secs. 4-400 to 4-409.

underlying zoning district and only if they do not adversely effect the efficiency of the floodway, change direction of flow or increase base flood heights The entire floodplain area is subject to performance standards

(a) Floodproofing standards shall be met as follows

- (1) Such building or structure shall be floodproofed to the flood protection elevation in such a manner that the building or structure is watertight with walls substantially impermeable to the passage of water,
- (2) Such building or structure shall have structural components capable of resisting projected hydrostatic and hydrodynamic loads and the effects of buoyancy, and
- (3) Such floodproofing shall be certified by a Colorado registered professional engineer or registered architect to comply with this subsection

(a) Hazardous materials no person shall store a hazardous substance at or below the flood protection elevation for the area of the floodplain in which it is located

(b) All structures shall be

- (2) Designed and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,
- (3) Constructed with material resistant to flood damage,
- (4) Constructed using methods and practices that minimize flood damage,
- (5) Constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and located so as to prevent water from entering or accumulating within the components during conditions of flooding, and
- (6) Designed so that fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters

Development is allowed in the "Floodway" upon application to the County Engineer and issuance of a floodplain development permit Development in the "Floodfringe", or areas less susceptible to flood, also require a permit from the County Engineer Any use permitted in the underlying zone may be permitted in the "Floodfringe", provided the use meets the floodproofing requirements of the Act Floodproofing requirements are as follows

- All insubstantial improvements where the lowest floor of the improvement is not above the flood protection elevation shall be floodproofed so the structure is watertight, anchored to prevent flotation, collapse or lateral movement of the structure All improvement must be certified by an Engineer
- New construction or substantial improvements shall have the lowest floor elevated to or above the flood protection elevation

- The storage or processing of materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human health, animal or plant life shall be above the flood protection level

2 3 1 Riparian Area Management

Riparian zones are a critical element in floodplain and sensitive land management, and have been incorporated in many local U S land use plans. One example of such a plan is found in Atlanta, Georgia. The Chattahoochee River is the largest stream in the Atlanta region. The river provides over 70 % of the drinking water for the area, treated wastewater is discharged into the river for assimilation, water is diverted for irrigation, and manipulated for hydro-electric power generation. The river also drains excess storm water, supports fish and provides food and habitat for wildlife.

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The Atlanta Regional Commission devised three sets of standards that include, Vulnerability standards, buffer zone standards, and floodplain standards. The vulnerability standards require that all land is placed in six categories based on natural characteristics. Maximum limits on land disturbance (any activity disturbing land activity and existing vegetation) and impervious surfaces (any paved, hardened or structural surfaces) are set for each category and are stated as percentages of the area in the category. 50 feet of vegetation must be left in its natural state along banks of the river and 35 feet along the banks of other flowing streams. Within 150 feet the plan generally prohibits any structures or impervious surfaces, with limited exceptions for footpaths, bridges and water intakes. Floodplain standards are required in the 100 and 500 year floodplain, including removal of soil introduced as land fill.

3 LEGAL BASIS FOR USE OF NATURAL RESOURCES AND ECOLOGICAL ACTIVITIES IN RUSSIAN CITIES

Development of a legal mechanism for regulating ecological urban planning for land use and real estate investments (i.e. capital investment in land, commercial and residential real estate, other real assets in the production and services sector) in Russian cities involves a substantial number of laws and regulations because this mechanism lies at the "juncture" of ecological law proper, land law and urban-planning laws. In addition, this mechanism must be established with due regard for the existing division of power between cities, federation subjects and the federal

government, the established structure and procedures for coordination between governmental agencies in management of natural resources, land allocation, environmental protection, architecture, sanitary inspection, etc

It is beyond the scope of this Manual to provide a comprehensive review of legislation in every one of the above listed areas. The purpose of this section is to review environmental protection issues within the sphere of local government, and identify some unresolved problems in the legislation on use of natural resources and typical defects in management of urban ecological activities, primarily those relevant to or directly connected with urban land use and development regulation.

We will start by pointing out that successful legislation on use of natural resources and environmental protection is closely tied to the legal resolution of the issue of ownership rights to land (and, naturally, other natural resources). However, effective land legislation lacks the basic structural element to establish new land relations - a federal law on land (new Land Code). Article 17 of the Civil Code, governing ownership rights to land and other material rights to land and which may be used as the starting point for the whole set of land laws is not effective until enactment of a Land Code. Despite the shift in priorities demanded by the market, the focus in the legislature is still on agricultural lands, with no detailed regulation on use of urban lands and land for industrial, transport facilities and other special uses.

However, land legislation is within the joint jurisdiction of the Federation and its subjects. Therefore, in a number of the subjects, a provision on rights of the subjects, to adopt their own laws (if there are no federal laws) is included in the division of power agreements being negotiated on issues of joint jurisdiction between the Federation and its subjects. Hence, those subjects of the RF who are really interested in implementing land reforms have the opportunity to adopt their own land laws.

Similarly, there is no law code on urban ecology with the status of a law. One cannot help but agree with S. A. Bogolyubov, an eminent Russian legal expert in urban ecology, that we “need a special law regulating the entire complex of legal relations on use of natural resources within a city or settlement (land use, water use, flora and fauna protection, air quality and other natural elements within a city or a settlement)”²⁹. The central law in current ecological legislation is still the 1991 Law “On Environmental Protection”³⁰. Adopted long before the new Civil Code and the Law “On General Principles of Organizing Local Self-Governance”, this law fails to reflect reality and attracts the justified criticism of many specialists. As is known, a new law on environmental protection is presently being drafted.

The rights of local self-governance in the sphere of environmental protection are regulated by a number of federal laws and laws of the federation subjects. The most important among them are

²⁹ S. A. Bogolyubov, Yu. G. Zharikov. Legal basis of ecological activities in the city. Moscow, 1995, p. 16.

³⁰ Laws of the RF amended No. 2397-1 dated 21.02.92 and No. 5076-1 dated 02.06.93.

- 1 Law of the RSFSR dated 14 07 82 “On Air Protection”
- 2 Law of the RF dated 19 04 91 # 1034-1 “On Sanitary Epidemiological Safety of the Population”
- 3 “RF Land Code” dated 25 04 91 # 1103-1
- 4 Law of the RSFSR dated 19 12 91 # 2060-1 “On Environmental Protection”
- 5 “Fundamentals of the Russian Federation Legislation on Forestry” dated 06 03 93 # 4613-1
- 6 “RF Water Code” dated 16 11 95 # 167-FZ
- 7 Law of the RF dated 14 03 95 # 33-FZ “On Specially Protected Nature Areas”
- 8 Law of the RF dated 24 04 95 # 52-FZ “On Animal Life”
- 9 Law of the RF dated 28 08 95 # 154-FZ “On General Principles of Organizing Local Self-Governance in the Russian Federation”
- 10 Law of the RF dated 23 11 95 # 174-FZ “On Ecological Examination”

While the laws regulating legal relations in different aspects of use of natural resources define the authority of local self-governance in each particular sphere, the laws which establish the general principles of local self-governance permit RF municipalities to establish local rules. Thus, in Article 6 of “On General Principles of Organizing ” Paragraph 9 specifically identifies the “regulation of planning and development of areas within the municipal establishment” as lying within the authority of local self-governance (which means the right to adopt local zoning rules for land use and development purposes³¹) Paragraph 12 similarly identifies “regulation of use of water sources of local importance ” (which, in particular, means the right to establish provisions within the land use regulation the use of riparian areas), Paragraph 29 provides for “participation in environmental protection activities within the area of the municipal formation”

These laws and regulations form the legal background for development of a municipal legal base in the area of ecology. However, it must be admitted that a number of important issues concerning the definition of rights of federal and regional authorities and local self-governance in land use and urban-planning regulation need a special legal act. In particular, the law “On Environmental Protection” grants the right to issue permits for discharge of pollutants to agencies of Minpriroda, governments of the federation subjects and local agencies.

Also, although the division of ownership of land and other natural resources is declared in the Constitution and a number of federal laws, in particular, in the Land Code and Water Code, - namely, in federal ownership, state ownership of krais, oblasts, etc., and municipal ownership - in practice such a classification has not yet been legally formulated for specific land parcels and a nature facilities.

³¹ It is pertinent to note here that Article 23 of the draft Urban Planning Code gives the authority to local-self-governments “ for adoption and amendment of town-planning and development rules, other regulations of local self-governments in the sphere of town-planning and architecture”, and Article 27 assigns such activities to local town-planning and architectural agencies.

Another fundamental law in the sphere of environmental protection - "On Ecological Examination" provides that such review is carried out by specially authorized state agencies, and the powers of local self-governance are limited to assigning experts to participate in the sessions of expert commissions as observers. It is also provided that such expert review is mandatory for all construction, renovation, reconstruction projects at every stage starting with the feasibility study.

The fact that the Institute of Ecological Examination and Environmental Impact needs to be reorganized and adapted to existing reality has been discussed for a long time among professional ecologists and meets with little disagreement. It will be enough if we cite as an example the point of view of a famous Russian architect and specialist in city planning theory, Mr. Glasichev, who said that ecological examination is inherited from the centralized planning system without hardly any changes and is conducted according to old procedures. According to these procedures, the customer and the examining inspector is one and the same government agency. In his opinion, there should be several levels of the ecological examination distinguished.³²

A. N. Kosarikov, Chairman of the "Urban Ecology" section of the Union of Russian Cities, thinks that current processes necessitate review of the existing system, primarily in terms of linking the traditional structure of specially authorized federal agencies on environmental protection with local self-governance of large industrial centers.³³

The current practice in this area also is not directed at correcting the overall deficiency of the federal legislation on assessing environmental impacts and the overall deficiency of the Government Ecological Examination Report related to the fact that these procedures are not public, do not make provisions for such an important thing as the opportunity of approving an ecologically "problematic" project on the condition that environmental amelioration be undertaken. They also are not supported by such an important element, as was shown above on the basis of the American experience, as thoroughly developed, precise quantitative parameters (right down to quantitative characteristics of amelioration measures) for many of the criteria used for the ecological examination.

Analysis of procedural documents produced by Ministroi, Minzdrav, Minpriroda and other agencies shows that the system of criteria for environmental quality of the urban area does not exist.³⁴ Old rules are gradually abolished, but the

³² V. L. Glasichev, "Examination as a tool of city policy. Refer to Information Section 'City Ecology' Union of Russian Cities. City Ecology" N 7, July, 1996. M. 1996, pages 53-63.

³³ Newsletter of the Union of Russian Cities. Section "Urban Ecology", # 7, July 1996, p. 7.

³⁴ "Ecological safety of cities during transition to the market. Proceedings of the I scientific technical conference on environmental protection and rational use of natural resources of the "Urban Ecology" Section of the Union of Russian Cities, 1993, p. 9-18.

new ones have not been developed yet³⁵ Different documents contain such term as “dangerous substances”, however, it is not clear what these substances are

At present there is a substantial need for use of “performance standards”, which were mentioned when the US experience was described, to less formal ecological quality parameters, differentiation of sanitary and ecological standards for different parts of the city, types of residential developments, industrial zones, recreation zones, etc

For example, at present recovery of small rivers in the center of a city is hardly possible, but, on the other hand, with respect to such rivers improvements made in dense development areas should not be copied in new developments Differentiation is also necessary for green spaces, air quality, water protection areas, etc In this case there will be no need to compare incomparable territories, and greater attention will be focused on refining the structure and stability of their components

A comprehensive ecological survey of a city should be used to define zoning (or structural) ecological restrictions for different types of use and natural resources, which can produce compact development of the city and a steady-state equipment of its elements

Analysis of ecological problems in urban territories should take into account the specifics of urban-planning structure and interrelation of individual components within it The majority of Russian cities have centers with residential, administrative and commercial developments, industrial “estates” with satellite settlements and relatively new, purely residential districts A transport network joins them in various cobweb structures, the vectored interaction of which has a great impact on the essence and taxonomy of ecological problems However, the existing administrative and regional division cuts such structures in pieces (regardless of their integrity and commonality of ecological problems) Nature protection agencies and agencies which deal with statistics frequently work with areas which consist of heterogeneous parts and separate pieces of the system

And finally, it has already been mentioned, but needs to be pointed out again, that until now ecological problems were resolved without participation of the citizens In general the city population fights with particular enterprises, power station construction projects, waste processing plants, but actually the population has never been involved in environmental protection The reason is that the population does not have any access to easily-accessible, truthful and, the most important, understandable information People do not understand such quantitative indexes as PDK (air pollution) People mostly care about the quality of the environment Any ecological program should not be aimed at decreasing the PDK index, but at how people see their city, block, surrounding areas, rivers and parks and etc

³⁵ Noteworthy, the European Community has practically completed work and is starting transition to unified ecological standards known as ISO 14000

As for Use and protection of watercourses and land use within the surrounding areas, they are regulated by the following legislative and statutory acts of the Russian Federation

- 1 Russian Federation Water Code, # 167- ÔÇ as of 11/16/95
- 2 RF Government Resolution “On Approval of Regulations On Water Protection and Riparian Zones”, # 1404, as of 11/23/96
- 3 RF Government Resolution “On Approval of Regulation On Enforcement of Public Control Over Use and Protection of Water Bodies”, # 716, as of 06/16/97
- 4 RF Government Resolution On Approval of Regulation On RF Ministry of Natural Resources”, # 588, as of 05/17/97
- 5 RF Government Resolution “On Approval of Regulation On the RF State Committee for Environmental Protection”, # 643, as of 05/26/97
- 6 RF Government Resolution “On Approval of Rules On Transfer into Use of Publicly-Owned Water Bodies, Devise and Review of Water Use Standards, and Water Use and Disposition Licensing”, # 383, as of 04/03/97
- 7 RF Government Resolution “On Procedures for Devise, Review, State Expert Appraisal, Approval and Implementation of Plans for Multipurpose Use and Protection of Water Bodies”, # 1097, as of 10/13/96
- 8 RF Government Resolution ”On Approval of Regulation On Water Bodies Public Monitoring”, # 307, as of 04/14/97
- 9 RF Government Resolution “On Devise and Approval of Minimum Criteria for Adverse Environmental Effects on Water Objects”, # 1504, as of 12/19/96
- 10 “Regulations on Surface Water Control (Standard Requirements)” approved by Goskomprroda [State Committee for Nature and Environmental Control] as of 02/21/1991
- 11 “Devise and Approval Procedures for Establishing Standards of Maximum Permitted Concentration and Overall Biological Impact of Polluters in Water Bodies Used by Fisheries”, approved by RF Fishing Industry Committee, # 987, as of 12/06/95

This list may be complemented with some more statutory acts and collections of construction norms and rules, state standards

In conformity with Article 65 of the RF Water Code the RF authorities are responsible for instituting rules and procedures governing the design of water protection and riparian zones, and establishing conditions for their use Zones shall be designed and established by the RF subjects Article 68 of the Code reads that central government authorities may delegate some of their powers related to water use and control to local self-governance bodies

Subsequent to the RF Water Code the RF Government passed another set of Regulations called “Regulations On Water Protection and Riparian Zones”, #1404, as of 11/23/96 It supersedes the previously adopted Regulation “On Water Protection Zones along River, Lake and Water Reserve Corridors”, # 91, as of 03/17/89 (amended as of 12/27/94 by the RF Government Resolution, # 1428)

A detailed review of these two documents and comparison of them can be found in Appendix 1. Here it is important to mention that the new Regulations as well as the old one are primarily directed at agricultural areas. Moreover, Regulation 1404 already clearly excludes from areas under its jurisdiction and established width of water protection and riparian zones transferring the regulation of their sizes to local city planning documents (Genplan) with the total absence of such zones under certain conditions.

4 SYSTEMATIC APPROACH TO INTEGRATION OF URBAN LAND ECOLOGICAL CONTROL AND ZONING REGULATION

4.1 Methods of Introducing Land Use and Development Regulation in Urban Riparian Areas and Experience of Their Testing in the City of Novgorod

Many Russian cities are located around or along rivers, lakes and other water ways. Such cities need a detailed plan of managing water protection, riparian and floodplain zones in order to preserve the high quality of water resources, control the process of development of riparian and floodplain areas and provide for purification of industrial and agricultural waste water. This implies establishment of parameters for development and requirements for permitted land uses in riparian and floodplain zones, based on the existing or developing zoning rules and the city's resources and opportunities for implementing this kind of regulation. One of the final results of development of this plan will be a series of actions to transform and develop those areas and parcels that do not comply with the requirements of permitted uses of riparian land (i.e. they gain the status of "non-conforming" use) or those areas that require improvement of ecological condition or redevelopment, or those parcels that can be used for new construction. The plan of regulating use and development of urban riparian areas should be a part of the program of municipal development and should correspond to the city (oblast) budget and the investment program. Following are some recommendations for developing a mechanism to manage water protection, riparian and floodplain zones.

If a city already has detailed Zoning Regulations or another regulatory document on land use and development, a simple and efficient way of implementing the riparian land management plan could be the establishment of a general water protection zone including riparian zone and floodplain zone. Boundaries of these zones and subzones should be determined based on the specific ecological situation and shall be shown on corresponding maps. A local regulatory document should be adopted as an amendment to the existing Zoning Regulations or as a separate document under its own title but based on and extending the Regulations (we should note by the way that many separate documents of this kind may be adopted not only for some ecological issues, but also for historic preservation and other issues).

Within each zone, standards are established providing for specific water quality, supporting a unified conditions for use of riparian land, flood protection measures and regulation of development on especially allocated parcels. To be exact, regulations and standards for development of water protection, riparian and floodplain zones should include

1) determination of several overlay zones (water protection, floodplain and riparian) having different sizes and special restrictions on their use, methods of calculating the width of such zones, official status of overlay zone maps,

2) a list of permitted and non-permitted land uses within each zone,

3) additional regulations based on restrictions on use of water protection zones with respect to maximum (capacity) parameters of real estate, technical and ecological standards, requirements for flood protection (for instance, marking the minimum level for construction above the flood line or the height of the ground floor of buildings in different zones, methods of construction of new buildings and infrastructure facilities, etc ,

4) special measures with respect to the existing buildings that do not conform to the requirements established for the three overlay zones under consideration (and, possibly, a list of real property having the status of “non-conforming” use),

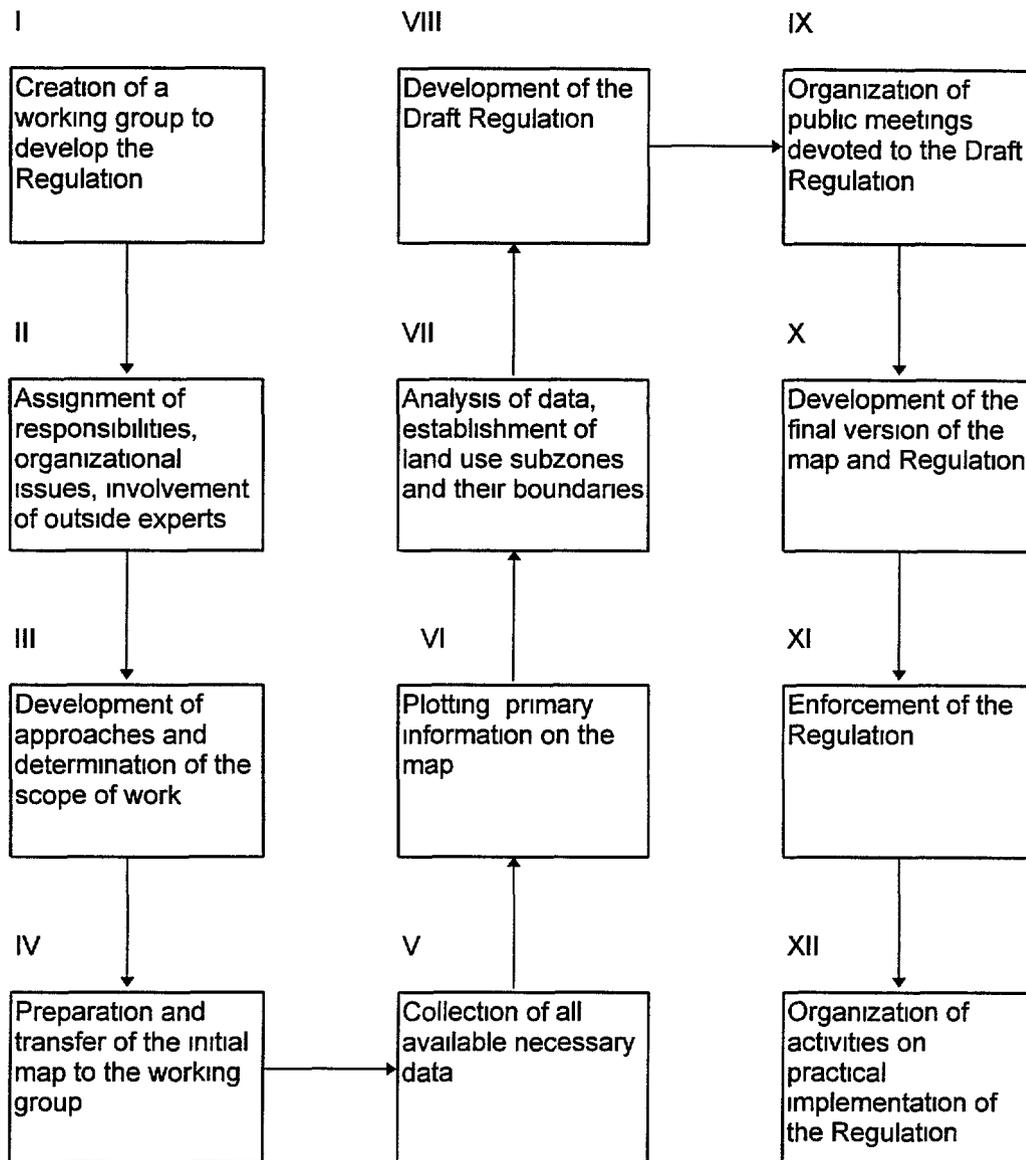
5) procedures for submitting the Environmental Impact Statement and procedures for conducting ecological examination of construction projects within protection zones, procedures for issuance of special permits and construction permits,

6) procedures for supervising land use and construction in these areas, determining the degree of involvement, rights and responsibilities of ecological and other agencies in the process of allocation of land within water protection zones, issuance of additional approvals for redevelopment and construction projects, supervision over construction and use of real property that is harmful to the environment,

7) requirements for updating the information on the established zones and its availability to the public

Appendix 5 contains a model Regulation on Water Protection Zones adopted as a separate document (or as a supplemented document to Land Use and Development Regulations) In its general form, this document demonstrates how some of the above mentioned mechanisms for land use regulation can be used to develop an efficient strategy for protection of riparian and floodplain zones

A model (step-by-step) procedures for development of a local regulatory document on urban land use and development in riparian zones is shown in the following diagram



The above model for developing a legal/regulatory base and introducing principles of land use zoning regulation in riparian zones was tested in the city of Novgorod Veliki (Novgorod the Great) In the city of Novgorod, a “Temporary Regulation on Riparian Zones of Water Courses within the City of Novgorod” existed, they were approved by Resolution 152 of the City Administration of 11 10 94 and developed according to the superseded Federal Regulation 91 mentioned above (see Appendix 1) Thus, the task was to bring the city document in line with current Federal Regulation 1404 In addition, the Land Use in the city and Development Regulations based on zoning principles were already effective, Part II of

the Regulations contained a special section 2.3 “Characteristics of Zones Shown on the Unified Map of Ecological Restrictions” It was proposed to develop this section and include it in the text of future Regulations

The first issue that had to be resolved and was discussed with Deputy Administration Head and chiefs of the corresponding administrative departments was whether to develop the Regulation on Riparian Zones as a separate document or as part of these Regulation. In order to assess the first alternative, a model structure of such a document was developed based on the analysis of the American local law on riparian zones (see Appendix 5) and a model text based on excerpts from the US local law (not provided in this manual). As a result of this discussion and based on the proposal of the city Architecture and Urban Development Committee (see Appendix 4), a decision was made to develop a new Regulation on Water Protection and Riparian Zones as part of the above stated Section 2.3 of the Regulations. One of the important considerations in making this decision was, apparently, the fact that in this case the subject of the Regulation will be the urban land use, the adoption of regulatory documents on which, as we have already stated above, is within the jurisdiction of local agencies.

In order to develop such a Regulation, by the Resolution of the Administration Head, a Coordination Group was formed including the Deputy Administration Head who is responsible for ecological issues in the city, and representatives of the following departments of the city and oblast administrations and municipal services:

- City Land Resource and Land Management Committee,
- City Architecture and Urban Development Committee,
- City Ecological Committee,
- Oblast Environmental Protection Committee (for coordination),
- Oblast Water Management Committee (for coordination),
- Legal department of the City Administration,
- Municipal enterprise “Novgorodskiy Vodocanal”,
- City Center for Hygiene and Disease Control

(Later, an expert of “Novgorodgrazhdanproject”, who was a member of the city Land Use and Development Commission, was included in the group)

These departments and services are the basic agencies responsible for issues of protection of water resources and land use regulation in riparian zones and this list may be recommended to other cities creating similar working groups. This group may also include representatives of other departments involved, and government architecture control agencies, in particular.

When the working group is formed, it is necessary to resolve the issue of involving professionals, including architects, planners, computer system information experts and ecological experts. In Novgorod, these local professionals were authorized by the Group Leader to obtain all necessary information and maps from the corresponding departments of the city administration. In addition, the Draft

Regulation was developed with the assistance and participation of outside consultants of the USAID Program for Technical Assistance

During the first stage, the Working Group was supposed to prepare recommendations and proposals on the concept and contents of the new Regulation, including the mechanism and procedures for regulation of land use in water protection and riparian zones. To do this, a questionnaire was compiled and sent to members of the group. The main results of this questionnaire are presented in Appendix 4. The results of this questionnaire made it possible to obtain the viewpoints of the corresponding departments of the city administration on key issues and were used as the basis for approaches to these issues when the Draft Regulation was developed. In addition, though the initial version of the separate document based on the American law was rejected (due to considerable difficulties in adapting it to Russian conditions), all commentaries and suggestions received from the city and oblast departments in the process of its discussion were very useful and were used as the basis for development of the structure, concept and basic provisions of the Draft Regulation.

Simultaneously, all documents available on water protection and floodplain zones were collected and analyzed in the city. Among the basic documents were Temporary Regulation (TR) 152 and a Map for Establishment of Riparian Zones of the Rivers Volkhov and Veryazhka, developed pursuant to the TR in 1996, and an Explanatory Note to the TR. This map was available in electronic format and was overlaid on the city zoning map. Another basic document was "The Land Use and Development Regulations for the City of Novgorod".

As for city Regulation 152, this document diverges a great deal from Federal Regulations 91 and 1404. An analysis demonstrated, first of all, that with respect to non-permitted land uses, its requirements are considerably stronger than the federal requirements. In a riparian zone, any "industrial, housing/communal, agricultural and social construction" is prohibited, i.e. practically any construction in general, while in the federal regulation this restriction is formulated in a completely different way: "construction and reconstruction of buildings, structures, communication facilities and other objects is not allowed without approval of water use and management agencies of the Ministry of Natural Resources of the Russian Federation" (see Appendices 1 and 3). In addition, along with other disputable concepts, the city Regulation does not differentiate between water protection and riparian zones and, correspondingly, between their special ecological conditions. Only the riparian zones are discussed, while the water protection zones are not mentioned at all.

Judging by the methods for calculating the width of riparian zones, this concept combines both the function of protecting the waterways from pollution, etc. and the function of protecting residents and real property from floods, because for steep and clearly defined river banks "the width of the riparian zone is measured from the edge of the basic bank - 100 meters for the river Volkhov and Ilmen Lake, and 50 meters for the rivers Pitba and Veryazha, which conforms to the standards of water protection zones (see Regulation 91 and 1404), for shallow (gently sloping) river banks the width is measured from the maximum point of a 10 % probability of spring flooding. The same 100 or 50 meters are added to these values.

We do not have any objections to these methods for calculating the level of flood protection, but note that according to Regulation 91 and 1404, the width of the riparian zone is calculated not based on “the percentage of flood probability” but based on the angle of the slope in the adjacent area (which proves the primary function of the riparian zone as that of preventing pollution of reservoirs, including, Regulation 1404 states, “reservoirs especially important for fish industry”), which is not the same thing as flood protection and which would bring other results. From the flood protection point of view, the value of 10 % flood probability in Novgorod, that corresponds to 22.3-mark under the Baltic system, seems to be well-founded, taking into account that the 23-mark was reached in 1922, 1924, 1955, 1956 and 1966 (average 100-year flood mark in the city is 21 meters)

The main argument for use of such methods for calculating the riparian zone, including water protection zones, presented by the Water Resources Committee of Novgorodskaya oblast, was the specific nature of water courses in the Oblast, and, in particular, the fact that more than 50 rivers flow into Lake Ilmen, but only one large river flows out of it. The result of it is that the map of riparian zones of the rivers Volkhov and Voryazhka, developed based on the above methods, derives a rather considerable percentage of the area from the total city area.

Although the final conclusions may be made only based on the results of special hydrological studies, one can say that as the riparian zone calculated based on the flood criteria considerably exceeds the size required from the water protection point of view (note that according to Regulation 91 and 1404 the riparian zones are established within the water protection zones), it is evident that there is a need for clear distinction between restrictions on types of use of riparian zones that are connected, on the one hand, to flood protection considerations and, on the other hand, to protection of bodies of water from pollution.

In addition, then in the first case, in contrast to the current Regulations that prohibit any “industrial, housing/communal, agricultural and social construction in this zones”, we can recommend that a construction permit shall be issued in these zones only if the necessary technical and engineering requirements are met (for instance, filling the ground up to the 23-mark, filling with concrete, basement requirements, etc.) that guarantee the required degree of protection and safety of buildings and structures in flood time. We also consider it necessary to distinguish between the water protection zones and riparian zones of the city.

Based on the results of the completed analysis, recommendations of the members of the coordination group, and based on the principles of “the overlay” approach stated above, the outside experts prepared draft amendments to the city Land Use and Development Regulations, i.e. Section 2.1 related to the permitted and non-permitted land uses as defined in Federal Regulation 1404, and Section 2.3 related to the organization and procedures for land use regulation in riparian zones, assuming that a considerable part of these standards will also be effective for the remaining parts of this Section devoted to other of ecological and nature protection issues.

Simultaneously with the Draft Amendments, a number of issues were presented to the Coordination Group in order to resolve them and develop a unified coordinated approach by all the group members - representatives of the city and oblast administrations, including

1) issues of the division of authority between the city and oblast committees and departments, issues of the delegation of power,

2) criteria for determining the size and boundaries of protection zones

a/ water protection zones (determining the zone width by the average water level in the summer, by topographic, geological data, soil analysis, characteristics of water collection, existence of buffer zones),

b/ riparian zones (correlation of approaches of the Federal Regulation 1404 and Temporary Regulation of the city of Novgorod 152),

c/ flood zones (the zone width according to a 10% flood probability or 1% flood probability and other criteria, formation of subzones of a high and low flood hazard),

3) in addition to the permitted and non-permitted uses in accordance with the Federal Regulation, what uses may be permitted in each zone?

4) which of the approval procedures require provision of additional ecological information (general zoning approval, special permit, construction permit, acceptance of the construction object)?

5) what list of uses will require special zoning approval in these zones?

The next step was the discussion of the proposed Draft at the meeting of the Coordination Group, where the Draft was accepted as the basis for future work. The members of the Coordination Group were requested to prepare written comments on the Draft and proposals on the above issues.

The representative of the Water Resources Committee pointed out that in order for the committee to change its approach and make the transition from regulation of a unified riparian zone to the three-tiered regulation - water protection, riparian and floodplain zones - it would be necessary to study the draft boundaries of these zones and the zones themselves. The Coordination Group requested that a map of the water protection, riparian and floodplain zones be prepared based on the criteria for establishment of their boundaries stated in Federal Regulation 1404, and that this map be overlaid on the basic map in the form of the boundaries in the Land Use and Development Regulations.

When this manual was written, the members of the Coordination Group were working on the amendments to the Draft and on the development of a mutual understanding on the above issues.

A local professional designer was working on the map of water protection, riparian and floodplain zones, and on the development of additional regulations for those areas of “legal” zones that are located within (overlay with) the boundaries of water protection, riparian and floodplain zones, respectively

Further steps on introduction of the legal regulation of land use and development in riparian areas, shall be as follows

- 1) development of the amended and coordinated Draft Amendments and a corresponding map,
- 2) organization of the Draft coordination up to its approval and appointment of committees and persons to be responsible for this
 - organization of presentations of the Draft to the public, developers and professionals,
 - making changes to the Draft based on the results of the public open discussion,
 - submitting the final Draft to the City Duma,
 - approval of the Draft as Amendments to the Land Use and Development Regulations in the City of Novgorod

4 2 Methods and Principles of Development of Mechanisms and Strategies of Regulating Land Use within Sensitive Areas, Some General Recommendations

Every city has its own unique environmental problems and development goals. The characteristics and scale of problems connected with land use vary depending upon physical, demographic, socio-cultural and economical conditions of a specific area. Reaching a balance between environmental protection and development requires a strategy for regulating land, water and other natural resources. This strategy should provide for the appropriate protection of natural resources and sites and also provide for development of the urban land market. In order to resolve this “dual” problem, local authorities and interested citizens should discuss and work out a mutual point of view on this strategy taking into account the existing conditions and plans for development of the area.

We have already mentioned several recommendations in Section 2 of this Manual and in Section 3. Therefore, we will not repeat them here again. In this section, the authors provide a more detailed look into some areas of local authorities’ activity during development of regulatory mechanisms for ecologically sensitive areas and to summarize or add to recommendations already given.

4 2 1 Resource Conservation Goals

When constructing a sensitive lands program there are eight land management goals which should be considered. These are as follows:

- 1 1 Short term and long term impacts of development upon sensitive areas, the reversibility of impacts, and alternatives to development

Sensitive area programs should require the developer, whether public or private, to evaluate development impact and consider development and preservation alternatives. Many programs require Environmental Impact Statements for larger programs. Impact information is needed to apply regulatory criteria.

- 1.2 Uses incompatible with sensitive area values or hazards and not requiring a sensitive area location should be shifted to other sites.

Development projects should be shifted to alternate sites if the total societal benefits of development at the sites equals or exceeds those within critical areas. Programs often require developers demonstrate why proposed activities require sensitive area locations and why alternate sites cannot be used. For example, the Vermont site review act denies permits to larger developments where there is evidence that development or subdivision will endanger necessary wildlife habitat or endangered species and that a "reasonably acceptable alternative site is owned or controlled by the applicant which would allow the development of subdivision to fulfill its intended purpose."

- 1.3 Uses which cause nuisances, threaten public safety, or violate pollution standards should be prohibited.

For example, the primary objective of floodway and erosion area programs is the prevention of uses with serious "offsite effects," blocking flood flows, accelerating erosion, increasing storm drainage, or causing water pollution.

- 1.4 Resource areas should be protected from incompatible uses.

The encroachment of development into renewable and nonrenewable resource areas physically pre-empts resource use. To protect resource areas from incompatible residential and second home development, Hawaii and many local communities have adopted exclusive agricultural and forestry districts.

- 1.5 Essential water resource and related ecological systems should be protected.

The majority of sensitive area programs have been adopted to protect the quantity and quality of inland and coastal waters and associated rich plant and animal life. Protection of water resources and ecological systems requires a multi-jurisdictional perspective and consideration of both individual impacts and the cumulative impact of existing and anticipated uses.

- 1.6 Uses in hazard areas should be reasonably protected against hazard.

Regulations adopted for flood, erosion, seismic and other hazard areas are designed to protect adjacent lands, the public, and uses within areas from increased hazards. Flood plain regulations typically require that residences and

other structures be elevated above the 100 year flood level or structurally flood proofed to that level

- 1 7 The impact of permitted uses should be minimized by controlling density, design, precise location, construction materials, methods of construction and operation, tree-cutting, dredging and other features

Sensitive area programs emphasize careful control of uses to minimize development impact through performance standards and conditions attached to permits rather than outright prohibition of uses. This approach reduces waste and conserves resources but may result in the gradual destruction of an area unless cumulative impact is considered and the overall density of uses limited.

- 1 8 Sensitive area programs should serve broad local, state and national economic, social, and environmental goals

Sensitive area programs are often designed to serve broad local, state and national economic, social and environmental goals. Regulations require that proposed uses comply with applicable rules and regulations at all levels of government, including local zoning, subdivision, building and other codes, state dredge and fill regulations, plumbing codes, housing codes, mining regulations, and federal rules. Programs also require that proposed uses be consistent with public service policies governing roads, sewers, waters and broader land and water plans. In some instances, broader social and economic concerns justify intensive development of sensitive areas. However, all costs and benefits should be considered and the case for development clear.

4 2 2 Regulatory Standard Setting

Once a city identifies its resource conservation goals or land use zones that need additional regulation from adverse environmental affects, standards must be set to enforce those goals. Most development standards in sensitive area programs are performance oriented. They are designed to maintain the performance of the natural system, preserve resource values, and protect the public from hazards. The following recommendations provide examples of some regulatory standards that should be considered before drafting an ordinance. The standards provided below primarily address performance standards for resource protection and hazard reduction.

- 2 1 Sensitive area use standards should not be prohibitory for most areas and uses. The overall degree of destructiveness in a given circumstance should be no greater than necessary to achieve management objectives.

Sensitive area regulatory objectives differ from program to program. Nevertheless, similarities are found in the goals and general standards applied to coastal areas, lakeshores, wild and scenic rivers, flood plains and wetlands. These regulations tend to serve similar broad environmental and welfare goals as follows.

Minimize water pollution Standards to minimize water pollution may

- (a) control direct discharge of pollutants by industries and waste treatment plants,
- (b) regulate grading and construction on slope areas to reduce erosion,
- (c) control filling and dredging of watercourses,
- (d) mandate setback requirements and other requirements for septic tank systems,
- (e) establish specifications for solid waste disposal,
- (f) regulate tree-cutting and vegetation removal along the immediate shore of water to reduce erosion,
- (g) regulate wetland alteration to protect their function as sediment filters,
- (h) require building and road sites to be mulched to minimize erosion, and
- (i) regulate removal of topsoil, sand and gravel operations and mining

Protect scenic beauty Standards to protect scenic beauty may

- (a) control water pollution sources,
- (b) prohibit heavy industries and similar visually disruptive uses,
- (c) establish maximum building heights,
- (d) regulate tree cutting and vegetation removal,
- (e) regulate architectural design,
- (f) require minimum lot size and width requirements to reduce density,
- (g) require building setbacks from road and water,
- (h) regulate construction of buildings on slopes and valley crests, and
- (i) regulate open burning and other air pollution

Protect wildlife Standards to protect wildlife may

- (a) control wetland alterations,
- (b) regulate tree-cutting and vegetation removal,
- (c) control pesticide use,
- (d) require that structures be designed and located to reduce impact of uses on wildlife, and
- (e) regulate fill, grading and mining operations

Minimize flood damage Standards to minimize flood damages may

- (a) prevent encroachment in floodway areas to preserve flood flow capacity,
- (b) tightly control uses in coastal wave action and wave induced erosion areas,
- (c) require that uses in outer flood fringe areas be elevated or flood proofed to a regulatory flood protection elevation (often the 100 year flood), and
- (d) protect flood storage areas

Restrictive standards are sometimes required to achieve objectives. For example, all structural uses may be prohibited in severe earthquake hazard areas. All structural uses may also be prohibited in floodways, wetlands, and prime agricultural lands to minimize hazards, preserve natural values or protect the productive capability of the land. More often, use standards prohibit selected

structural uses with high conflict potential and permit a wide range of additional uses conditionally. These are examined on a case by case basis.

Extensive conditions are typically attached to development permits. Equally important, it promotes multiple uses of land, provides options in uses, and imposes only the degree of restriction required to achieve resource protection.

2.2 Standard setting for a particular area must consider three major factors³⁶ (1) the special values and hazards found within the area, (2) the probable impact of particular types, designs, and densities of uses, and (3) acceptable levels of impact reflecting the sensitivity of the area of particular types of development, resource management, preservation goals and legal and political considerations.

Diversity of natural resource hazards and values encountered within particular areas often complicate sensitive area standard-setting. Variations in topography, vegetation, fauna, hydrology, soils, and geology must be reflected in reasonable regulations.

The impact of particular uses upon a sensitive area also depends on (1) the precise location of the use, (2) its design, (3) the manner in which the use is constructed and carried out, (4) the impact of conjunctive uses such as roads, sewers, and water, and (5) the cumulative impact of similar uses. Case by case evaluation of uses is desirable in many instances to consider these variables.

2.3 The necessary destructiveness to achieve particular goals may often be achieved through (1) prohibiting a small number of uses with serious and unacceptable impact, (2) permitting a substantial number of open-space uses with minimal impact, and (3) requiring special permits for a variety of uses which may not have acceptable impact.

An acceptable degree of regulatory control may combine prohibited, permitted, and special permit uses. Permitted uses or uses permitted "as of right" are those uses nearly compatible with critical area values. Permits may be required, but will most likely be issued automatically. Permitted uses must conform to minimum regulation standards such as tree-cutting regulations, restrictions on filling and grading, or minimum lot size. Special permits are issued for uses that may or may not have an adverse impact upon the resources and adjacent uses depending upon their design, precise location, the natural values and hazards at the site, adjacent uses and other factors. Special permit uses may be termed "special exceptions," "variances," "conditional uses," or simply special permit use. Special permits must be evaluated on a case-by-case basis by a regulatory board such as a state agency, a zoning plan commission, a city council, or a city plan commission prior to issuance.

³⁶ See Table 1 for a more complete list of factors.

2.4 Special permit requirements combined with performance standards should be applied to most areas and uses

Special permit approaches combined with performance standards are often appropriate for sensitive areas with diversity in natural resources. Here the impact of individual uses varies. Case-by-case evaluation identifies values and hazards at sites and determines the impact of individual uses. Where special permit approaches are broadly applied, for example in a coastal zone, tight supplementary restriction may be appropriate or narrow subzones requiring special treatment dunes, wildlife areas, scenic areas, and high hazard areas where flooding, erosion, or seismic activity threaten health and safety.

2.5 Sensitive area standards should anticipate the cumulative impact of uses

The major shortcomings of a special permit approach is its failure to consider cumulative impact. One technique for considering impact is to assume the worst and prevent all development with the theory that one permit will open a "wedge" for others. This approach has a simple logic but is generally unacceptable. Another technique projects future uses in evaluating permits. For example, a Minnesota flood plain zoning ordinance requires that in evaluating flood heights caused by a proposed encroachment in a floodway area the height increase be calculated "based upon the reasonable assumption that there will be an equal degree of encroachment on both sides of the stream."

Two approaches are available for dealing with future uses. Both require the definition of a maximum upper limit for present and future impact or define an overall environmental quality standard. Once this upper limit is defined, development standards can be promulgated which either (1) permit development on a "first come first serve" basis until the maximum acceptable impact limit is reached or (2) allow particular levels of impact for specific uses assuming that, over a period of time, a stated total number of uses may be permitted.

The first approach has been used for control of air, water, and noise pollution emission and the control of floodway encroachment. Air, water, noise, or flood standards are promulgated, for example water quality standards, which establish maximum tolerable levels of degradation or impact within a given area.

Uses are permitted until the maximum limit is reached. Then, new uses are prohibited unless emission levels of existing uses are cut back so that overall quality is maintained.

This approach has the advantage of simplicity, but it does not encourage minimization of impact by initial users. In addition, it results in differing treatment between permitted uses prior to reaching maximum quality levels and those subsequently proposed. Attempts to require existing uses to reduce pollution emissions or other impacts to permit new uses when maximum impact levels are reached have met with some success.

The second approach is more complicated but satisfactory in taking into account potential users. It has been embodied in some pollution control and floodway regulations, and involves three steps: (1) calculation of the maximum permissible impact or deterioration for an area (quality standards), (2) calculation of total number of uses which now exist and may occur within an area, and (3) calculation of the total contribution acceptable for each potential use.

The key to such an approach is, of course, not only the determination of overall permissible impact but control over the total number of uses. One approach for calculating and limiting total uses is through acreage requirements, for example each dwelling requiring a five acre lot. A second approach has been employed in the Adirondack State Park in New York which established "use indices", for example requiring maximum permissible density levels for various classes of land within the park. Intensity indices range from unlimited intensity in urban areas to one dwelling unit for each forty three acre unit of land in conservation areas (about 65% of the park).

2.6 Interim standards of a restrictive nature are justified to prevent irreparable harm to areas

The regulation of areas often requires time consuming mapping and preparation of regulations. Restrictive interim protection standards, based on the best available information, are often justified during this period. Interim regulations are expressly authorized by some state sensitive area statutes and local zoning and subdivision enabling acts.

2.7 Regulations should apply primarily to new uses. Extensive retroactive regulation is rarely acceptable politically and may result in successful court challenges.

As a matter of political and legal necessity, regulations should be applied primarily to new uses or major alterations or extensions of existing uses. Retroactive regulation, while authorized by some statutes, has often proved unacceptable politically and difficult to enforce. However, regulations can be applied to new and old uses in areas where a considerable number of existing non-conforming uses exist. In addition, tight control of existing uses may be acceptable if they are nuisances or if they are abandoned, or substantially altered. Amortization of existing uses over a reasonable time period has been applied in some instances.

2.8 Nonstructural as well as structural uses should be controlled in highly sensitive areas

Traditional land use regulations and most sensitive area regulations focus on structural uses. However, nonstructural activities such as fill, removal of top soil, mining, and tree cutting may cause more complete damage to wetlands, areas of scientific interest, erosion areas, and agricultural lands. Nonstructural uses are

regulated in some sensitive area programs. Fills, for example, are regulated in most wetlands and floodplain programs.

2.9 Sensitive area standards should apply to government activities. Governmental uses are often a primary cause of resource degradation.

Dams, roads, utility lines, and power generation plants are often major offenders in the destruction of sensitive resources. They should be subject to regulatory control.

2.10 Sensitive area standards should often combine (1) quantified standards for amenable subjects, (2) nuisance standards to minimize impacts upon adjacent uses, and (3) environmental standards to set limits for acceptable levels of environmental impact.

Specific standards are desirable to (1) provide landowners certainty in their use of land, (2) guide administrative boards in processing individual development permits, and (3) provide guidelines for judicial review of administrative action.

2.11 Often programs combine various types of standards to provide both specificity and flexibility.

(12) *Quantified standards* establish minimum numeric use specifications: lot sizes and widths, building setbacks from water and roads, flood protection elevation requirements, maximum air, water, and noise pollution contributions, and park and open space dedication requirements.

(13) More general *nuisance standards* control the impact of uses upon adjacent lands: blockages to flood flows, dust from sand and gravel operations, incompatibility of an industry in a residential neighborhood, and threats to public health and safety.

For example, North Carolina state law requires that local governments in regulating floodway areas consider the effects of floodway uses on other lands, including potential damages caused by (1) water which may be backed up or diverted by such obstruction, (2) the danger that the obstruction will be swept downstream to the injury of others, and (3) the injury or damage to the site of the obstruction itself.³⁷

(14) *General environmental standards* control the impact of uses on wildlife, scenic beauty, mineral deposits, soils, geology, and vegetation. Some statutes establish general guidelines for acceptance impact. For example, the North Carolina coastal zone act directs that permits for development in critical environmental areas are to be denied if development "will result in loss or significant reduction of continued long-range productivity that would jeopardize one or more of the environmental requirements of more than local

³⁷ N.C. Gen. Stat. Sec. 143-215.57 (1974).

concern”³⁸ Although these standards are not unquantified, the magnitude of acceptable impact is suggested by terms such as “substantial,” “significant,” and “major irreversible damage” The regulatory agency may be aided in its determination of acceptable impact by a list of relevant factors and considerations

2 15 Varying analysis procedures and methods are needed to establish standards for individual types of areas

Detailed technical studies rarely precede the adoption of use standards in state and local sensitive area programs Nevertheless, general principles of analysis are applied and more specific use evaluations often carried out by the regulatory agency on a case-by-case basis as individual special permit applications are submitted Analysis procedures for particular areas include

- (16) Quantitative evaluation of the frequency and severity of hazards and the adequacy of proposed protection measures are desirable in flood, seismic, erosion, and landslide areas In some instances, quantified evaluation may be carried out for individual uses For example, case-by-case analysis can evaluate the impact of floodway uses upon flood heights and flood velocities, including the threatened damage to adjacent, upstream and downstream uses
- (17) Informal supply and demand analysis is desirable in coastal and inland recreation areas and for renewable and nonrenewable forestry areas, prime agricultural lands, and mineral resource areas Use potential is determined by natural soil features, geology, slopes, availability of water, accessibility and size
- (18) Land water interrelations should be analyzed prior to adoption or on a case-by-case basis for flood plain, shoreland, wetland, watershed, aquifer, and coastal areas and uses Impacts should be determined through analysis of soils, vegetation, ground water flow systems, and surface drainage³⁹
- (19) Uniqueness, fragility, sensitivity, and degrees of disturbance should be considered in standard setting and permit processing for wetlands, scientific areas, wild and scenic rivers, wilderness areas, sites of rare and endangered species, and wildlife habitats Development standards and buffer areas should reflect the sensitivity of areas and possible threats

2 13 Special permit approaches are particularly useful in areas with diverse resources, a limited data base, and broad management objectives

The special permit approach is particularly appropriate for areas with highly diverse resources Here the impact of individual uses differs greatly and

³⁸ N C Gen Stat Sec 113A-120 (1975)

³⁹ See Table 2 for more detail on land use standards for protecting water resources

inflexible uniform standards make little sense. Special permit approaches have several important advantages:

- (14) They may be adopted where little data exists or wide variations occur in the mapped sensitive area. Much of the necessary data gathering is carried out as development proposals are submitted. The cost of data gathering is reduced through environmental impact statement requirements and other techniques that shift a portion of the data gathering burden to the developer.
- (15) They increase the number of uses possible within an area. They promote multiple land uses, reduce landowner complaints, and reduce possible judicial attack on the grounds that the regulations unconstitutionally take private property.
- (16) They permit tailoring of use restrictions to the specifics of each proposed use and the natural resources found at a site. This reduces under or over regulation of uses which often accompanies inflexible traditional zoning.
- (17) They permit more complete protection of natural resources by regulating many aspects of proposed uses through discretionary, nuisance, environmental, and public welfare standards.
- (18) They may achieve broad regulatory objectives without lengthy and complicated regulations by establishing general goals and criteria.
- (19) They permit weighing and balancing complex factors rather than rigid evaluation of single factors.

2.14 Examination and data gathering capability must be available during administration of special permit programs.

Sources of technical data and analysis include special expert advisory boards such as conservation commissions, shifting of a portion of the data gathering and analysis burden to developers, employment of consultants, and use of technical assistance provided by state and federal agencies.

2.15 Sensitive area standards should reflect the practical limitations of impact evaluation methodologies.

Numerical standards more precise than can be measured through available evaluation techniques present administrative nightmares and may undermine the political and legal acceptability of regulations. For example, it will be meaningless to prohibit floodway uses raising flood heights one-tenth of a foot at any point on a stream if hydrologic evaluation techniques are precise only to one-half foot. Of course, more precise standards may be adopted as refinements, in evaluation methodologies become available.

- 2 16 Goals and procedures for special permits should be drafted with care to guide agency action and insure due process where precise quantified standards are not practical or feasible

A clear statement of regulatory goals and findings of fact is particularly important for processing special permits. The factors relevant to a permit decision should also be listed. Courts have recognized regulatory goals and findings of facts as an integral part of use standards. Clear permit processing procedures are also important. Procedures should be (1) spelled out with certainty, (2) provide an expeditious review of proposed development, (3) involve data gathering by the developer or the regulatory agency or both, and (4) provide public notice and review, including public hearings, wherever major developments or policy issues are involved⁴⁰

Data gathering and administrative mechanisms should reflect special permit needs. Sensitive area programs utilizing special permits apply several approaches to facilitate permit processing

- (1) A portion of data gathering funds reserved for use during program administration
- (2) Gradations and subzones are identified for some areas, for example floodways within broader flood plains, to aid permit evaluation
- (3) Detailed air photos are acquired and carried into the field to help evaluate applications
- (4) Lists of interested agencies and individuals are prepared. Notices of permit applications are sent to them soliciting opinions and attendance at public hearings. Interested individuals and agencies may also review environmental impact statements and help monitor and enforce regulations
- (5) Administrative appeals to appeal boards or commissions are provided for local special permit decisions in some instances. This facilitates expert review of technical issues

- 2 17 Combined permit processing procedures should be developed where several agencies or local units of government issue permits for a single use

Delays and expenses are considerable when multiple, sequential reviews for permit applications occur. Some programs, such as North Carolina coastal wetland protection program, circulate permit applications to many agencies for comment and simultaneous review

⁴⁰ See Table 3 for a more detailed list of permit evaluation procedures

4 2 3 Special Permit Evaluation Procedures

The processing of special permits at RF subject or local levels often involve the following steps

Step 1 Preliminary discussion The developer discusses the proposed project with the regulatory agency prior to submission of a formal project application. Preliminary discussion is particularly likely for large-scale development where the developer does not wish to invest in detailed plans until preliminary assurances of approval are given by the regulatory agency. Informal discussion provides an early screening of projects and negotiation as to project design before formal positions are taken by either the developer or regulatory agency.

Step 2 Submission of formal application The regulatory agency supplies a special permit application form and guidelines concerning the submission of detailed project information. The agency may require an environmental impact statement or other fact-finding required to evaluate the impact of the proposed project.

Step 3 Review of the application by the regulatory agency Review of an application may involve six substeps

- 1) Circulation of the permit application to other interested agencies or regulatory bodies to help develop relevant data and insure that the project meets other relevant regulatory specifications
- 2) Conduct necessary fact-finding to determine the compliance of the project with regulatory standards. Often the developer may be required to supply much of the needed data. However, the agency may also undertake original data gathering or hire outside consultants. Data gathering may concern not only environmental impact but the effect of the project upon public services, public health, and the local or regional economy.
- 3) Conduct of a public hearing. Virtually all special permit procedures require a public hearing to assist the agency in the gathering of facts, permit the developer to publicly introduce evidence in his behalf, provide other landowners and interested individuals with an opportunity to express support or disapproval, and generate a record for possible appeal of the regulatory decisions. Usually a hearing examiner conducts the hearing with little in the way of formal rules of evidence.
- 4) Application of use standards in light of all facts. Following the public hearing the regulatory agency makes a decision on the permit in light of the regulatory standards and all of the facts brought to light. The cumulative effect of similar uses should and are often considered.
- 5) Preparation of findings of fact and a proposed decision. This usually takes the form of written recommendations with supportive materials assembled by the agency staff member in charge of the application.
- 6) Final approval or disapproval of the recommendations by the regulatory board, commission, or other body with decision making responsibility. Usually this is a "rubber stamp" operation for the staff agencies' recommendations except where substantial policy issues are involved. The final decision is, in some instances, issued as a formal order. Conditions or mitigation measures are often attached to permit approvals.

Step 4 Monitoring and development Monitoring is needed to insure compliance with the approved permit application and any attached conditions. This may be done by agency staff or by law enforcement officers. It may also involve the filing of periodic reports by the developer.

Step 5 Appeal of the Permit This would precede monitoring in the case of permit refusal. In some instances statutes or ordinances provide for rehearing of permit applications by the administering agency. In others, an administrative appeal is provided to an appeal board. Court appeals is the most common procedure even where earlier administrative appeals are provided.

4 2 4 Regulatory Data Gathering

It is difficult to apply rational performance standards without detailed information about specific natural resource values and hazards at particular sites, specifications of proposed uses, and the manner in which uses are to be conducted. Lack of accurate high resolution data and analysis mechanisms have sometimes led to simplistic definition and standard setting criteria, poor political acceptability, and administrative problems.

Common data deficiencies include

- 1) flood, vegetative existing use, or other essential data types are missing,
- 2) data lacks sufficient scale of resolution,
- 3) data is inaccurate,
- 4) data is inaccessible to regulatory decision-makers,
- 5) data is insufficiently geo-referenced, or not linked to particular points on the ground, and
- 6) data lacks manipulative capability

The data gathering process should include the following

- Data gathering should focus on essential data - its absence would prevent program implementation - rather than merely desirable data. Essential data often includes large scale sensitive area maps and data required for case-by-case evaluation of development proposals.
- Ideally data gathering efforts should develop several data scales and formats for use in the four steps of regulatory program implementation.

Each step in sensitive area implementation favors slightly different data types, scales and formats

- 1) Specific maps and research information are useful in formulating detailed definition criteria including subclassification. However, extensive data gathering rarely precedes formulating specific criteria or adopting administrative regulations.
- 2) Detailed maps are almost always needed prior to formal designation of areas. These maps must usually be prepared at a minimum scale of 1:24,000 for rural areas and up to 1:12,000 for urban areas. Identification of gradations and subzones may also be required.
- 3) Site specific data gathering is required for processing individual regulatory permits at oblast or local levels, enforcing regulations, and monitoring.

development Site specific data is needed to evaluate the special values or hazards at particular sites and the impact of the proposed development The impacts include principal uses, associated development such as roads, transmission lines, and accessory structures, and the cumulative impact of future uses Usually data contained in data banks and soil and topographic maps are at an inadequate scale to provide the required site specific information For this reason, regulatory agencies must rely on field surveys conducted by staff on a case-by-case basis or information provided by developers and consultants through preparation of environmental impact statements and permit applications Data acquired at a site is sometimes translated into large scale maps

- A variety of techniques should be used to minimize high data gathering costs, maximize efficiency, and allocate available resources to essential data

To reduce costs, programs often incorporate a number of measures, such as

- 1) Data is gathered on a priority area basis,
- 2) Federal and local cost-sharing and data exchange,
- 3) Existing data sources are used,
- 4) Data suitable for regulatory mapping is generated without prior stages of generalized data gathering,
- 5) Data is gathered on an area-by-area or case-by-case basis where development will occur in only a small portion of a total area and an overall review of the resource is not essential,
- 6) Air photos are used,
- 7) A portion of the data gathering burden is shifted to developers,
- 8) Small scale data is used on an interim basis until more detailed data gathering can be carried out,
- 9) Detailed data, for example high resolution air photos, is initially gathered This may be interpreted on a first cut basis and used later for more detailed interpretations without new raw data gathering

- Emphasis should be placed on dissemination as well as acquisition of data

Too often, large sums have been spent on data acquisition with little attention to distribution Distribution of data to users may be encouraged through

- 1) preparing data lists and inventories,
- 2) reproducing reports, air photos, topographic maps, and the like through low cost techniques,
- 3) sponsoring workshops, adult education courses, and seminars by universities and agencies, and
- 4) adopting an "open files" policy for state agencies

- Zoning boundary lines must be drawn and located with precision

Relative precision in zone boundaries has been necessary to give landowners certainty in their use of lands Failure to accurately map areas at relatively large scale has resulted in landowner confusion and administrative problems Due to limitations in map scale and accuracy, however, most programs utilize a two-step procedure to define critical area boundaries and evaluate project impact

First, maps determine the general boundaries

Second, written definition criteria are incorporated in regulations and filed investigations are carried out to apply the written criteria if disputes arise

Other techniques to facilitate location of map boundaries on the ground include

- 1) delineating boundaries on air photos which show natural and cultural features,
- 2) using boundaries coincident with political jurisdiction boundaries,
- 3) locating boundaries through metes and bounds description or referring to a defined distance from water bodies, and
- 4) locating boundaries in relationship to particular elevations such as in flood mapping

- The delineation of gradations and subzones is needed for some areas

Maps or other identifications of gradations and subzones are desirable in some circumstances to help provide appropriate development controls for specific areas. The extent to which mapping gradations and subzones is desirable (as opposed to the identification of such areas on a case-by-case basis as individual permits are submitted) depends on many factors including the type of area, natural diversity of the area, regulatory approach used, size of the area, regulatory objectives, and whether the regulations require more detailed data gathering during administrative phases of a program

- Sufficient data must be gathered to satisfy the criteria and tests selected for defining critical areas

Criteria and tests for defining sensitive areas have emphasized natural resources such as soils, topography, vegetation, wildlife, water resources, and geology. However, some programs have taken into account existing uses, the path of development, and accessibility of areas of particular uses

Principle data types needed in definition and regulation of individual types of areas include

- 1) Flood plains Hydrologic data, including stream flow, flood rainfall records, topographic maps, vegetation data (to calculate roughness coefficients), and information concerning existing uses,
- 2) Erosion areas Soil maps, topographic maps, air photos, vegetation maps. Time series information is sometimes used to indicate erosion rates,
- 3) Shorelands of inland lakes and streams Air photos, topographic maps, soil maps, other maps, and data to define subzones including flood areas, wetlands, recreation areas, wildlife areas, etc
- 4) Forestry areas Soil maps, topographic maps, climate, timber inventories (size, diversity, condition), inventory of existing uses, and ownership

- Data gathering for hazard areas should, as the long-term goal, quantify the severity and frequency of hazards

Flood hazard and to some extent erosion and seismic area programs have stressed quantified data gathering concerning hazard frequency and severity. Quantified information is needed to evaluate the probability of harm to proposed uses and to apply performance standards. Quantified flood data usually should use the 100 year flood as the basis for regulation

Although quantified data is desirable for the administration of programs, generalized unquantified data such as flood photos, soil maps, and historic flood maps have been used with success on an interim basis in urban areas and on a long-term basis in rural areas. This is particularly true where procedures incorporated in the regulations help to carry out detailed, quantified hazard analysis on a case-by-case basis as individual development proposals are submitted.

- Regulations should not be delayed until the completion of all data gathering.

Interim regulations based on existing data are sometimes adopted for areas threatened by immediate development. Interim regulations may either freeze all development until more detailed data gathering is possible or incorporate procedures for refining the data base during implementation phases of a program. Data used for interim mapping often include existing data, no matter how imprecise, data gathered pursuant to nomination procedures, and generalized data gathered on a priority areas or case-by-case basis.

- Relatively imprecise data may be used for mapping when more detailed data gathering is undertaken on a case-by-case basis for individual permits.

Sensitive area programs with imprecise initial maps often incorporate procedures for site specific data gathering on a case-by-case basis. This approach is used in flood plain, wetland, shoreland, and coastal area programs.

The key regulatory data is developed on a case-by-case basis. However, the regulatory agency must have the necessary examination and consider cumulative effects of development. Problems can be minimized through careful data-gathering standards.

- Initial data gathering should focus on areas threatened by development.

Mapping efforts are usually conducted on a priority basis. This maximizes resource protection consistent with budgetary and staff limitations. Formal or informal priorities are set based on

- 1) available knowledge concerning location of critical areas,
- 2) development pressures and other threats,
- 3) the adequacy of existing controls including land ownership and regulations, and
- 4) the willingness of local units of government to use data.

- Case-by-case or area-by-area gathering of detailed resource data may be efficient on a long-term basis for some areas.

Detailed data gathering on a blanket basis may be impractical or unnecessary.

- 1) where large quantities of site-specific data are required but the specifics depend on the features of proposed uses,
- 2) where the resource base is rapidly changing, for example, changes in vegetation, flood runoff and water quality, and blanket data gathering at a detailed scale would quickly become dated, and
- 3) where low density development is proposed and only a small percentage of the total area will ever be impacted.

- Regulations should shift a portion of the data gathering burden for evaluating special permit uses to developers through environmental impact statements and other data gathering requirements

Enabling statutes, ordinances and administrative regulations commonly require that developers prepare environmental impact statements or supply data concerning topography, vegetation, existing uses, soils, water, depth to bedrock, and other factors. Private or public developers are often in a unique position to generate a portion of the site specific data through on-site investigation or surveys conducted during early phases of a project. The quality of data generated may be improved if the regulatory agency adopts precise data gathering standards and criteria.

- Data gathering efforts may focus on natural resource characteristics during initial definition efforts, but should also identify existing uses and other cultural characteristics in setting standards and administering permits

With little exception, sensitive area maps have been based on natural resource characteristics. However, subsequent standard setting and permit processing often require broader data. Existing uses, for example, will not affect the designation of an area as a flood plain but may determine its appropriate use once designated. Land ownership, adjacent uses, highway access, and other factors are also relevant to appropriate use.

- In oblasts attempting comprehensive definition of sensitive areas, it may be desirable to authorize a single agency to act as coordinator for all data gathering efforts and to assemble data into an oblastwide sensitive area inventory. However, individual line agencies should be principally responsible for carrying out critical area definition and other data gathering efforts.

Despite the political and practical necessity of a multi-agency data gathering approach, it is important that some lead agency, perhaps the oblast land committee or committee on architecture and construction, coordinate data gathering efforts between various oblast agencies, regional administration bodies, and bodies of local self-governance. This agency could establish minimum standards of compatibility for data gathered by individual agencies, help disseminate data to local units of self-governance and the private sector, compile and distribute a list of data gathering efforts underway in the oblast, conduct special data gathering efforts for oblast or federal agencies or local units of self-governance and make budgetary recommendations concerning data gathering priorities to the appropriate legislative body.

- Data generated through permit procedures, public work projects, and environmental impact statements may be used to monitor development, establish data gathering priorities, and supplement local, oblast, and federal data banks.

Data contained in regulatory permits and environmental impact statements prepared by private and public developers have potential for supplementing more conventional data gathering efforts. This data has rarely been compiled but holds promise for

- 1) assisting in the gradual development of data banks,
- 2) updating existing data,
- 3) monitoring change, and

4) establishing data gathering priorities for areas under development pressure

To serve these purposes, rigorous data gathering standards pertaining to data scale, type and format will be necessary to insure the objectivity and consistency of the data supplied through regulatory permit procedures

Appendix 1

NEW FEDERAL REGULATION ON WATER PROTECTION AND RIPARIAN ZONES ANALYSIS AND COMPARISON WITH THE PREVIOUS LEGAL ACT

The main legal act at the federal level in the sphere of protection of water resources is the Regulation on Water Protection and Riparian Zones adopted by Resolution No 1404 of the RF government, dated 23 11 96, (hereinafter referred to as Reg No 1404) It has replaced the previous Regulation on Water Protection Zones of Rivers, Lakes and Watercourses in the RF which was adopted by RF government Resolution No 91 dated 17 03 89 (hereinafter Reg No 91)⁴¹

Let us make a brief analysis of Reg No 1404 as compared to Reg No 91, because, though these two documents are rather similar, there are some serious differences between them, which should be taken into account by the administrations of the cities which have not yet brought their land use regulations within water protection and riparian zones into compliance with the new Reg

Regarding the status of surface water objects, Regs No 1404 and No 91 contain similar definitions a special regime for economic and other types of activity is established within water protection zones, riparian zones are established within these zones which, in Reg No 1404, are defined as coastal buffer zones, additional nature use restrictions are effective within these zones Similarly, there are no practical changes in calculation standards and principles for the width of water protection zones and coastal buffer zones

Furthermore, Reg No 1404 provides water protection zones and protection zones for swamps, but No 91 did not This is a rather important issue for cities where swamps are included in the city area (for example Tver)

It can be considered a positive move forward that the new document does not contain the definition which says that the width of water protection zones and coastal buffer zones of "unique lakes of significant national importance" is established by the government according to special procedures without any relationship to the legal act In Novgorod Oblast this type of a "unique lake" would probably include Lake Il'men, before, this meant that this issue was not under the jurisdiction of the oblast authorities, let alone under the jurisdiction of the city authorities

In connection with the changed structure of the executive branch of the government, the procedures and agencies in charge of defining the width of

⁴¹ With amendments introduced by the RF government Resolution No 1428 as of 27 12 94 It is worth mentioning that "Orders of the Ministry of Land Reclamation and Water Resources of the RSFSR Gosagroprom RSFSR, Gosagroprom of Nechernozemnoy Zone of the RSFSR as of 23 January 1990 on designing water protection and riparian zones of rivers, lakes and other watercourse in the RSFSR" were used as an appendix

water protection zones and coastal buffer zones have changed. Now they are established "taking into account the predictions on changes of the watercourses' coastal lines" (this is rather important and did not exist before) "and are approved by the executive branch of the government of subjects of the federation upon presentation of the data by authorized regional agencies of the Ministry of Natural Resources of the RF, approved by the especially authorized environmental protection agencies, disease control agencies and border forces agencies according to their jurisdiction"

In Reg No 1404 there is wording⁴² which is especially significant for cities. It reads "width and boundaries of water protection zones within the area of the city or other settlements are established based on concrete planning and development conditions according to the approved General Plans"

As far as coastal protection zones are concerned, there is the exact same table of minimum widths for these zones in Regs No 1404 and No 91 regarding such areas adjacent to watercourses sites as fields, meadows, hayfields, forests or shrubbery, among which only the latter two are encountered in the city. Therefore, the table provided for calculating coastal protection zones obviously is applied to agricultural lands and can not be considered a method for calculating these zones within the cities⁴³. Regarding the actual cities and other settlements, the New Reg only states that "if there is a storm water drainage system and an embankment, it is permissible to combine the boundary of the coastal protection zone with the embankment edge"

A paragraph on procedures for drafting and approving water protection zone plans was added to the New Reg. These plans are developed in order to define and clarify the boundaries of water protection zones while emphasizing that planning of the above mentioned zones is done according to "legal acts approved by the Ministry of Natural Resources of the RF and coordinated with the specially authorized government environmental protection agencies". Before the plans of water protection zones are approved, the "minimum sizes of water protection zones" are effective. They are marked on the General Plans of cities and other settlements, land use plans (authors' emphasis) and other plans and maps.

Apart from this, there is now an important requirement to inform the population about establishment of these zones and rules for conducting business and other types of activities within these zones.

Regarding the main issue - land use restrictions within water protection zones, the list of them is practically the same. Taking into account the importance of this list, clause 6 of Reg No 1404 is given below in toto.

⁴² Before, i.e. in the Provisions No 91 it did not exist. It existed in the Orders which provided additional details and were mentioned in footnote 26.

⁴³ It is worth mentioning that for those cities which possess agricultural lands the above mentioned calculating formula can be applied for such areas.

Within water protection zones it is prohibited

- *to spray chemicals by aviation,*
- *to use chemicals against pests, plant diseases and weeds,*
- *to use manure for soil fertilization,*
- *to place stocks of poisonous chemicals, mineral fertilizers, POL, refueling sites for toxic chemical equipment, live-stock complexes and farms, to store or bury industrial, domestic or agricultural wastes, to establish grave-yards, cattle burial grounds, waste-water collectors*
- *to store litter,*
- *to fuel, wash, and repair cars, trucks, and other vehicles and machinery,*
- *to set up summer cottages and garden plots, if the width of the water protection zone is less than 100 meters and/or the abutting territories slope gradient is over 3 degrees,*
- *to set up parking lots for vehicles, including those at summer cottages and garden plots,*
- *to clear cut timber,*
- *to build and reconstruct buildings, facilities, communications and other objects, as well as to perform mining, earth moving and other similar types of work, without the approval of water basin and other territorial water use and protection bodies of RF Ministry of Natural Resources,*

On the sites of single family houses, dachas and garden plots located within water protection zones, the rules of their operation shall be enforced in order to eliminate the possibility of pollution and drying up of watercourses

Within the water protection zones it is permitted to make selective cutting of timber and to carry out other forest management measures designed to protect water objects

Regarding the list of restrictions for types of use of water protection zones, it has been expanded somewhat by clause 7 of Reg No 91, and it boils down to the following

Within the coastal protection zones , in addition to the restrictions listed in clause 5 of the present Regulation, it is prohibited

- *To plow land,*
- *To use fertilizers,*
- *To graze cattle or establish summer camps,*
- *To set up tent camps*

Actually, all these types of uses are not related to urban conditions, and, therefore, according to Reg No 91 a list of prohibited types of land uses for coastal protection zones within city areas and other settlements can be considered the same as the list of prohibited uses for water protection zones

In Reg No 1404, the following is added to the additional restrictions for riparian protection zones

- *To store eroded soil,*
- *To set up summer cottages and garden plots or to allocate parcels for individual development,*
- *Movement of motor vehicles and tractors, except special-purpose vehicles*

As we see the last two clauses have a direct relationship to cities and their introduction can be considered an extremely serious additional restriction on the use of land and urban riparian protection zones as related to water protection zones overall. The restriction on locating summer cottages and garden plots, although it is different for riparian protection zones (a total ban) and water protection overall (permitted when the above mentioned conditions are complied with) evidently is related to the growing and virtually uncontrolled process of cottage and other construction along the banks of drinking water in many oblasts recently.

Reg No 1404 also contains a clarification that "land within riparian protection zones shall be allocated for the siting of water supply, recreation, hunting and fishing facilities, water intake, port and hydrotechnological facilities when they have water usage licenses which contain requirements to comply with the water protection rules". As a rule, riparian protection zones shall be covered by trees, bushes or meadows.

Reg No 1404 establishes a more logical procedure for maintaining water protection zones in the proper condition. Previously this requirement was levied on all legal entities natural persons who were using the land located within the boundaries of the zones, now, according to the recent Reg this requirement shall be borne by water users. Further, it simply states that "the owners, possessors and users of land upon which water protection zones are located shall comply with the established rules for using these zones".

An extremely important new feature is the proposition (second paragraph clause 8) that "the establishment of water protection zones shall not entail the taking of land from land owners, possessors and users or a prohibition on transactions with land, with the exception of those cases provided by the law".

Overall, it can be said that the adoption of Reg No 1404 means the movement of the legal foundation for water protection toward a more flexible approach, with the clarification and more in-depth development of individual aspects of it. Moreover, somewhat more strict requirement related to types of activities within riparian protection zones can be observed.

However, the most significant aspect can be considered to be the fact Reg No 1404 unambiguously removes the city areas from its sphere of operation and from its established standard width of water protection zones, by transferring the regulation of their sizes and boundaries within cities to the

level of the local city planning documentation (General Plan), right up to permitting the complete absence of such zones under specific conditions

Overall, it is thought that Reg 1404 demonstrated the general flaw of current Russian Environmental Protection legislation which insufficiently considers the special ecological features of cities. The Reg under review is primarily oriented at agricultural areas and, the proper use of water protection zones in cities remains unclear. Based on information of RF Ministry of Natural Resources, a more detailed development of rules for planning water protection zones in cities and other populated areas shall be provided in the administrative and procedural documents of this agency. The preparation and adoption of these documents provided for in Reg No 1404.

**AUTHORITY OF LOCAL GOVERNMENT AGENCIES
FOR ENVIRONMENTAL PROTECTION**

Legal Act	Authority of local agencies
1 Law of the RSFSR dated 14 07 82 "On Air Protection"	<p>Article 7 Jurisdiction of local committees of the Council of Peoples' Deputies on state management of ambient air protection</p> <p>Executive committees of the local Councils of Peoples' Deputies, within the limits and procedures established by USSR legislation, this law and other legal acts of the RSFSR, shall within their areas provide for development and implementation of air protection actions, participate in planning of ambient air protection, carry out state control over air protection, take steps to improve city amenities and greenery in built-up areas, and resolve other issues on city planning concerning protection of ambient air</p>
2 Law of the RSFSR dated 19 04 91 No 1034-1 "On Sanitary Epidemiological Safety of the Population"	
3 "RSFSR Land Code" dated 25 04 91 No 1103-1	
4 Law of the RSFSR dated 19 12 91 No 2060-1 "On Environmental Protection"	<p>Article 10 Jurisdiction of local agencies in environmental protection</p> <p>The following environmental protection issues are under the jurisdiction of local agencies</p> <ul style="list-style-type: none"> ■ defining the main area of protection of the city's environment development of ecological programs, ■ recording and controlling environmental conditions and natural resources of areas under their jurisdiction ■ recording and controlling the volume of industrial discharges from sites located in areas under their jurisdiction regardless of the type of ownership or subordination, ■ planning, financing, providing material and technical support for environmental protection activities, ■ co-ordinating activities of ecological departments of enterprises, offices and organizations regardless of the type of ownership or subordination ■ conducting of ecological examinations of projects and state ecological control over the environment ■ issuance of permits for individual types of nature use discharge of poisonous substances burial of toxic wastes, ■ making decisions on restriction, termination and moratorium on ecologically harmful activities, ■ resolving disputes in the area of environmental protection, ■ protecting nature landmarks and other special natural areas, ■ conducting ecological education, ■ providing citizens with appropriate ecological information, ■ making decisions on other environmental issues which are under the

	<p>jurisdiction of local Council of Peoples' Deputies and local administrations pursuant to the Law of the RSFSR "On Local Self-Governance in the RSFSR"</p>
<p>5 "Fundamentals of RF Legislation on Forestry" dated 06 03 93 No 4613-1</p>	<p>Article 6 Jurisdiction of regional (city) Council of Peoples' Deputies in the area of regulating forest relations</p> <p>The following is included within the jurisdiction of the local Councils of Peoples' Deputies concerning forest relations</p> <ul style="list-style-type: none"> ■ participating in the development of federal and regional programs of forest expansion, ■ coordinating with appropriate government agencies of republics within the RF, autonomous oblasts autonomous regions krajs oblasts, cities of Moscow and St -Petersburg of principles for setting taxes and rental rates for use of forest areas, ■ establishing rates and amounts of forest taxes, rental rates and granting benefits on forest payments to certain groups of forest users as well as defining the form of payments, ■ making decisions, together with possessors of forest resources, on transfer of forest areas into long-term possession (or lease), in this case participation of forest possessors is limited by defining the conditions which are in compliance with the established forest and water use requirements ■ controlling use reproduction and protection of forests, ■ defining the form of procedures for selecting a forest user (direct negotiations, auctions, bidding), ■ setting restrictions on, terminations or moratoria on the right to use forest resources in compliance with established procedures <p>Article 7 Jurisdiction of regional (city) administrations in the area of forest relations</p> <p>The following is under the jurisdiction of local administrations in the area of forest relations</p> <ul style="list-style-type: none"> ■ recording forest resources, ■ allocating approved limit for timber harvesting between forest users according to recommendations of government agencies in charge of forest resources management, including activities aimed at providing for timber deliveries for state needs, ■ arranging activities aimed at protection of forests from fire, diseases and harmful impact, ■ implementing control over use, reproduction and protection of forests together with especially authorized environmental protection agencies, ■ making decisions, together with possessors of forest resources, on allocation of forest areas for short-term possession, in this case participation of forest possessors is limited by defining the conditions which are in compliance with the established forest and water using requirements, ■ arranging for and conducting auctions and bids for allocation of forest resources for use and possession together with the local department of State Forest Management Agency of the RF ■ setting restriction on terminations or moratoria on the right to use forest resources in compliance with established procedures
<p>6 Law of the RF dated 21 12 94 No 68-FZ "On Protection of People and Territories from natural disasters and</p>	<p>Article 11 Authority of government agencies of the subjects of the federation and local agencies in the area of protection of people and territories from emergency situations</p> <p>2 Local agencies shall independently</p> <p>a) prepare and maintain appropriate forces and funds in order to protect</p>

<p>emergency situations</p>	<p>people and territories from emergency situations, teach people protection methods and actions in these situations,</p> <p>b) make decisions on the conduct of evacuation activities in emergency situations and arrange for their conduct,</p> <p>c) conduct, according to the established procedures, collection and exchange of information in the area of emergency protection, provide for timely notification about the danger of or actual emergency situations,</p> <p>d) provide for reserve financial resources and facilities to clean up after emergency situations,</p> <p>e) arrange for and conduct emergency rescue activities, provide for public safety while conducting these activities, in the event resources are lacking, call for assistance from executive agencies of the subject of the RF,</p> <p>f) provide for safe operation of enterprises and organizations during emergency situations,</p> <p>g) establish permanent agencies which are especially authorized to resolve issues during emergency situations</p>
<p>7 Law of the RF dated 14 03 95 No 33-FZ "On Specially Protected Nature Areas"</p>	
<p>8 Law of the RF dated 24 04 95 No 52-FZ "On Animals"</p>	<p>Article 8 Authority of local agencies in protection and use of animals</p> <p>Local agencies may acquire some authority in the area of use and protection of animals according to the RF legislation and legislation of the subjects of the RF as well as funds and facilities needed in order to administer such authority This activity remains under the state control</p>
<p>9 Law of the RF dated 28 08 95 No 154-FZ "On General Principles for Organizing Local Self-Governance in the Russian Federation"</p>	<p>Article 6 Subject matters of local government</p> <p>1 Issues of local significance as well as authority acquired from government agencies are under the jurisdiction of municipalities</p> <p>2 The following issues are considered to be of local significance</p> <ul style="list-style-type: none"> ■ comprehensive socio-economic development of the municipality, ■ establishment and development of municipal health clinics, providing for peoples' hygiene, ■ regulation of planning and development within the municipal area, ■ control over land use within the municipal area, ■ regulation of use of waterways of local significance, sites of natural resources and raw materials and use of underground areas for construction of facilities of local significance, ■ establishment, maintenance and development of municipal energy, gas heating, water and sewer facilities ■ providing for supply of fuel to people and municipal agencies ■ city amenities and greenery ■ waste treatment ■ supporting funeral services and maintenance of cemeteries ■ participation in environmental protection within the municipality, ■ fire safety and establishment of a municipal fire service, <p>Municipalities can consider other issues which are treated as local issues by the laws of the subjects of the federation, as well as issues which were not excluded from their jurisdiction and which were not transferred to other municipalities or state agencies</p> <p>Specific government authority may only be assigned to local</p>

	<p>government agencies by federal law and laws of subjects of the Federation and then only with the simultaneous provision of the necessary material and financial resources</p> <p>The execution of the transferred power is under control of the government</p> <p>Conditions and procedures for monitoring execution of government power by local agencies shall be established by appropriate federal laws and laws of the subjects of the RF</p>
<p>10 Water Code of the RF dated 16 11 95 No 167 -FZ</p>	<p>Article 68 Authority of local agencies in the area of use and protection of waterways</p> <p>Local agencies may acquire specific government authority in the area of use and protection of waterways pursuant to RF legislation as well as funds and facilities needed in order to administer such authority The execution of the transferred power is under control of the government</p>
<p>11 Law of the RF dated 23 11 95 No 174-FZ 'On Ecological Examinations'</p>	<p>Article 9 Authority of local agencies in the area of ecological examinations</p> <p>1 the following is under the jurisdiction of local agencies regarding ecological examinations on appropriate territories</p> <ul style="list-style-type: none"> ■ assignment of experts for participation as observers in meetings of expert commissions of the state ecological expertise regarding sites of ecological expertise if these sites are built on a certain area and in case of harmful environmental impact of these sites during their business and other activities, ■ making decisions and implementing them within their jurisdiction on ecological expertise based on the results of public hearings, polls, referends, appeals of public ecological organizations (associations) and movements, information on sites of ecological expertise, ■ holding public hearings, conducting public polls and referends regarding anticipated economical and other activities which are to undergo ecological examinations, ■ conducting ecological examinations on public demand, ■ informing specially authorized government agencies on ecological examinations about anticipated economic and other activities within a municipality, ■ informing the public prosecutor and specially authorized government agencies on environmental protection and ecological examinations and government agencies of the subject of the RF on commencement of site construction (which requires an ecological examinations) without a positive conclusion from the State Ecological Expert Committee, ■ implementation of other authority in this area which is in compliance with RF legislation <p>2 Local agencies have a right</p> <ul style="list-style-type: none"> ■ to obtain appropriate information from government agencies on projects subject to ecological examinations whose implementation may have an environmental impact within the area of the appropriate municipality and information on the results of the state ecological examinations and public ecological examinations ■ to direct in writing substantiated proposals on ecological aspects of anticipated economic and other types of activities to specially authorized government agencies on ecological examinations

Appendix 3

INTERIM PROVISIONS ON RIPARIAN ZONES OF WATERCOURSES WITHIN THE CITY BOUNDARY

1 Riparian and water protection zones are defined within the Novgorod area, as areas located on river, stream, lake banks

These zones are the area of special use conditions and limited economic activity

Riparian and water protection zones are established as part of environmental protection measures aimed at protection from pollution, and improvement of hydrological conditions of watercourses

2 The width of riparian and water protection zones within the Novgorod area are established at the following

The River Volkhov at	100 meters
Lake Il'men	100 meters
Pitba River	50 meters
Veryazha River	50 meters
Other Streams	15 meters

The measure of the width of riparian and water protection zones with steep and acute banks - from the edge of the actual bank, with gently sloping banks - from the maximum mark of spring floods with 10% extra safety zone

3 The following is prohibited within water protection and riparian zones

- to build industrial, residential, agricultural and public facilities,
- to lay pipelines, engineering networks, motor vehicle roads,
- to cut wood,
- to plow soil, excavate construction materials, to place stores of poisonous chemicals, mineral fertilizers, fuel and lubricants,
- to store litter,
- to graze cattle,
- to arrange parking, fuel, wash, and repair cars, trucks, and other vehicles and machinery,

4 The following is permitted within water protection and riparian zones

- to build water intakes, hydrotechnical facilities, to arrange piers and moorages,
- to carry out shore strengthening work, improvement work, wood cutting for clearing purposes,
- to arrange recreation facilities

All the above-mentioned measures shall be approved by the Water Resources Department and Environmental Protection Committee of the city of Novgorod

5 Maintenance of water protection and riparian zones as well as enforcement of their use conditions is the responsibility of enterprise, organization and office managers, independently of their interdepartmental subordination and type of ownership, and the responsibility of individuals - possessors of land parcels adjacent to water protection and riparian zones

6 In case the sites, whose economic activity is not in compliance with these Provisions, are located within water protection and riparian zones, their possessors or their agents shall take actual measures aimed at restriction or elimination of the harmful effect of these sites on open watercourses

7 Individuals responsible for violation of area use conditions within these zones shall be liable according to the current legislation

8 These Provisions do not replace provisions and legal acts on clean water zones and other water protection actions set forth by the government of the Russian Federation or by appropriate ministries and departments on behalf of the RF government

9 These Interim Provisions on Riparian and Water Protection Zones of the City of Novgorod were developed according to the current Provisions on Water Protection Zones of rivers, lakes and watercourses in the RF (Resolution of the Council of Ministries of the RF No 91, dated 17 March, 1989)

APPROVED
by the resolution of the City Administration
as of 11 10 94, No 152

**RECOMMENDATIONS AND SUGGESTIONS OF COORDINATION GROUP MEMBERS
ON DEVELOPMENT OF THE DRAFT REGULATION ON WATER PROTECTION AND RIPARIAN ZONES IN THE CITY OF
NOVGOROD**

Questions	Land Committee of the city of Novgorod	Architectural Committee of the city of Novgorod	Environmental Protection Committee	Novgorod Department of Hygiene and Disease Control
<p>1 What technical assistance can your committee provide in the development of the Regulations and the map? Precisely what information available to your committee for the following parameters</p> <ul style="list-style-type: none"> - characteristics of watercourses, - data on location of springs and sources of watercourse pollution, - geological data, - land use data, - other information related to this issue 	<p>The Committee is ready to provide any technical or information support for the development of these Regulations</p> <p>The Committee possesses information on land users whose land is located within coastal zones in the form of</p> <ul style="list-style-type: none"> - land use boundaries, - targeted use of land, - holder, - time period for which the land was provided, - type of ownership <p>The Committee possesses an electronic version of the map of boundaries of the coastal zone combined with the zoning map</p> <p>Preliminary data on engineering and geological conditions within the coastal zone (on paper) will be available soon</p>	<p>The Committee possesses</p> <ul style="list-style-type: none"> - land use data, - historical and architectural sketch plan of the center (within Val Okolnogo Goroda) and its suburbs (city boundaries), - data on industrial enterprises which are not in compliance with the zoning and are subject to relocation to industrial zones 	<p>The Committee can provide information on</p> <ul style="list-style-type: none"> - sources of watercourse pollution, - location of discharge facilities, - their quantitative and qualitative characteristics 	<p>The Department possesses chemical and bacteriological indexes for water resources within the city area for many years, including</p> <ul style="list-style-type: none"> - The river Volkhov - in water intakes and beach areas, - The river Veriazha - in three locations, - The river Pt'ba - in two locations

<p>2 Judging from your understanding of the future development of the city, can you mention the areas in the city which you think</p> <ul style="list-style-type: none"> - are to be reserved as vacant land and recreation facilities - the most suitable for economic development, new construction and reconstruction 	<p>It is necessary not to increase recreation areas but decrease them (especially the zone P4, there are plenty such areas shown on the zoning map) The y shall be transferred into zone P3 Part of the coastal protection zone shall be used according to uses permitted within the adjacent areas</p>	<p>Vacant land and recreation areas, in general, are defined by the zoning map Reconstruction of the existing development, aimed at improvement of the ecological situation, is required within right and left banks of the river Volkhov in the central part of the city and within the Northern part of the city (Volkhovskiy settlement, Smetaninskaya myaza)</p>	<p>1 To leave the right bank (from Kolmovskiy Bridge to Steklovvolokno plant") of the river Volkhov as forest and park zone as well as the area along the Veriazhi river, 2 Improve the area and create a recreation zone on the left bank of the river Volkhov (from "Intourist" hotel to Spector plant), 3 To leave as recreation zone the areas of lakes and adjacent areas on the left bank of the river Volkhov at the end of St-Petersburgskaya st</p>	<p>To reserve as vacant lands and recreation zones the following areas</p> <ul style="list-style-type: none"> - area of the existing beaches, to extend the Kremlin beach to the bridge, - area near the river Volkhov - in order to arrange a recreation zone after discharge facilities are removed and dredging activities are carried out, - 100-meter zone from the water line of the rivers Volkhov, Veriazhi Pr'tba
<p>3 What permitted and prohibited types of uses construction standards and design requirements would you like to include in the Regulations, which in your opinion would provide for preservation of open space and good water quality and stop flood damage? These requirements should be put in the form of amendments to already existing federal standards</p>	<p>Within the water protection and riparian zones areas with different regimes shall be established Those located further from the water edge shall have more types of permitted uses A number of measures shall be developed for a list of permitted types of uses, after implementation of these measures these types of uses shall be permitted</p>	<p>An interrelation with the Land Use Zoning Regulation shall be reflected (as a citation) in the Regulations concerning permitted types of uses for areas located within water protection and riparian zones It might be done with additional requirements and restriction (measures providing for good water quality and preventing flooding)</p>	<p>A part of water protection and riparian zones shall be assigned to adjacent enterprises and land holders They shall be responsible for the condition of these areas</p>	<p>It is essential to eliminate discharge of polluted water into the river Tarasovets</p>
<p>4 In what way can the new Regulations simplify the procedures of ecological</p>	<p>The Regulations shall contain a list of minimum use restrictions within this zone It</p>	<p>Participation of city and oblast environmental protection and water</p>		

<p>expertise or obtaining a design approval for investors, and at the same time make them more rational and effective for the city?</p>	<p>is even more important that a number of measures be listed there, so that a larger number of permitted uses can be implemented Existence of the list of necessary measures shall simplify the procedures for obtaining a design approval and will protect the developer from subjective evaluation of his project</p>	<p>protection agencies in the preparation of the Act on choosing the location for a particular type of use and in the preparation of the architectural and planning task will help to decrease the time of ecological expertise Apart from this, precise definition of authority of city and oblast environmental protection agencies regarding inspections and project approval shall simplify this procedure</p>		
<p>5 From your point of view what is the role of your agency in the system of land use regulation within water protection and riparian zones according to the new Regulations?</p>	<p>If the Regulations are in place, the Committee will be able to point out legally established land use restrictions on the cadaster plans while issuing ownership documents To regulate land use payments depending on the number of restrictions Precise land use restrictions will make it possible to include these areas in city planning and market turnover</p>	<p>The role of the Committee as well as the role of historic preservation and environmental protection agencies is to a great extent defined by the Land Use Regulation as well as by the Regulations on the establishment of Land Use and Development Commission, as members of the Commission</p>	<p>The city Environmental Protection Committee monitors enforcement of the "Regulations on Water Protection Zones in the city of Novgorod</p>	
<p>6 What other suggestions do you have for the Draft Regulations, what other issues do you think shall be covered?</p>	<p>The development of the Regulations shall resolve city planning issues by means of finding a balance between open space and designated land within the city area and</p>	<p>It is important to include the Regulations on Water Protection Zones as an appendix to Part III of the Land Use Zoning Regulation, as well as to include an</p>		

	the desire of the developers to develop lands near watercourses	appropriate map in the unified map of restrictions on ecological requirements into Section 4.3 of the Regulation		
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**MODEL STRUCTURE OF LAND USE REGULATION ON WATER
PROTECTION ZONES
(Based on international experience)**

- Article 1 Regulation purposes and general provisions
 - Legal status and jurisdiction
 - Contents
 - Relationship to other municipal legal acts, existing standards and rules

- Article 2 Definitions

- Article 3 Responsibilities of the regulatory agencies
 - A Municipal Zoning Commission
 - B Oblast Water Resources Committee
 - C City/Oblast Environmental Protection Committee
 - D City Land Committee
 - E City Architecture Committee

- Article 4 Establishment of unified water protection zones
 - A Establishment of Floodplain zones
 - 1 Identification of Floodplain zones
 - 2 Floodplain zones
 - a Main floodplain zone
 - b Adjacent floodplain zone (once in 100 years)
 - c High Hazard Flood Area
 - d Zone with periodical flood hazard (once in 500 years)
 - 3 Floodplain zone boundaries
 - a Identification of boundaries
 - b Information needed for preparation of the flood area map
 - c Purpose of the flood area map
 - B Establishment of Riparian zones
 - 1 Identification of riparian zones
 - 2 Riparian zones
 - a Areas with special environmental protection conditions
 - b Areas with special water filtration regime
 - c Recreation areas and vacant lands

- 3 Riparian zone boundaries
 - a Identification of boundaries
 - b Information needed for preparation of the flood area map
 - c Purpose of the flood area map

- Article 5 Development rules within floodplain areas
 - A Development rules in the main floodplain zone
 - 1 Permitted types of uses
 - 2 Prohibited types of uses
 - 3 Measures of flood protection (SNIP)
 - a New construction
 - b Substantial improvement
 - 4 Uses which require special approval
 - B Development rules within adjacent floodplain zone
 - 1 Permitted types of uses
 - 2 Prohibited types of uses
 - 3 Measures of flood protection (SNIP)
 - a New construction
 - b Substantial improvement
 - 4 Uses which require special approval
 - C Development rules within High Hazard Flood Areas
 - 1 Permitted types of uses
 - 2 Prohibited types of uses
 - 3 Measures of flood protection (SNIP)
 - a New construction
 - b Substantial improvement
 - 4 Uses which require special approval
 - D Development standards within other floodplain zones
 - E "Non-conforming" types of uses and buildings

- Article 6 Development rules within riparian zones
 - A Areas with special environmental protection conditions
 - 1 Permitted types of uses
 - 2 Prohibited types of uses
 - B Areas with special water filtration conditions

- 1 Permitted types of uses
- 2 Prohibited types of uses
- C Recreation areas and vacant lands
 - 1 Permitted types of uses
 - 2 Prohibited types of uses
- D “Non-conforming” types of uses and buildings

- Article 7 Permitting
- A Application for obtaining permit for development within floodplain and riparian zones
 - 1 Site plan
 - 2 Technical conditions for construction and public amenities
 - 3 Ecological evaluation
 - B Standards used for application’s consideration and issuance of permits
 - C Appeals from decisions
 - D Fines and fees
 - E Validity of the permit, obligations for certification

- Article 8 Exceptions, special permits, permits for temporary use
- A Grounds for issuance
 - B Conditions for issuance
 - C Appeals from decisions

- Article 9 Date of effect and amendment procedures

**Draft Amendments to the Land Use and Development Rules
for the City of Novgorod**

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Shown on the Zoning Map of Legal Zoning of
the Novgorod area**

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- 2 1 2 1 Water Protection Zone
- 2 1 2 2 Riparian Protection Zone
- 2 1 2 3 Floodplain Zone, Including High and Low Hazard Flood Zones

**2 3 Ecological and Environmental Protection
Requirements Concerning Regulation of Land Use
in Areas Adjacent to Bodies of Water**

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- Article 2 3 1 2 Water Protection Zone, Riparian Protection Zone and Floodplain Zone Boundaries and Mapping
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Section 2 1 Characteristics of Territorial Zones Marked on the Zoning Map of the Novgorod Area

Chapter 2 1 1 Types of Zones

WP	Watershed Protection Zone
RP	Riparian Protection Zone
FP	Floodplain Zone
HFP	High Hazard Floodplain Zone
LFP	Low Hazard Floodplain Zone

Chapter 2 1 2 Lists of Types of Permitted Use of Real Estate in Various Territorial Zones

Article 2 1 2 1 WP Water Protection Zone

Main prohibited types of land use include

- to spray chemicals by aviation,
- to use chemicals against pests, plant diseases and weeds,
- to use manure for soil fertilization,
- to place stores of poisonous chemicals, mineral fertilizers, fuel and lubricants, charging areas for toxic chemicals equipment, live-stock complexes and farms, to store and bury industrial domestic and agricultural wastes, to arrange graveyards and cattle burial grounds, waste-water collectors
- store litter,
- to fuel, wash, and repair cars, trucks, and other vehicles and machinery,
- to arrange summer cottages and gardening plots, if the width of the water protection zone is less than 100 meters and/or abutting territories slope gradient is over 3 degrees,
- to arrange parking lots for vehicles, including those on summer cottage and gardening plots,
- to conduct clear felling of wood,
- to build and reconstruct buildings, facilities, communications and other objects, as well as to perform mining, earth moving and other similar types of work, in case it is not authorized by water basin and other territorial water use and protection bodies of RF Ministry of Natural Resources,

2) Main permitted uses include

- Selective wood cutting and other forest management measures aimed at protecting water objects
- All types of uses permitted within Riparian Protection Zones

Article 2 1 2 2 RP Riparian Protection Zone

Main prohibited types of land use include

- All those uses prohibited in Water Protection Zones,
- To plough land,
- To use fertilizers,
- To store erosion soil,
- To arrange cattle pasturing and summer camps,
- To set up seasonal tent camps, summer cottages, garden plots, to allot parcels for individual development,
- Traffic of cars and tractors

Main permitted uses are

- Water supply,
- Recreation,
- Fish farming and hunting,
- Water intake, port and hydro-technical facilities

Article 2 1 2 3 FP Floodplain Zone, High Hazard and Low Hazard Floodplain Zones

The main permitted and prohibited types of land use, including those provided for the underlying zones, are in compliance with permitted and prohibited types of use within the zones shown on the map

**SECTION 2 3 Ecological and Environmental Protection
Requirements Concerning Regulation of Land Use in Adjacent to Water
Bodies**

Definitions

Base flood means the flood having a one (1) percent chance of being equaled or exceeded in any given year

Breakaway wall means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system. A breakaway wall shall have a design safe-loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. A wall with a loading resistance of more than twenty (20) pounds per square foot requires an architect's or professional engineer's certificate.

Elevated Building means a non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls or breakaway walls.

Erosion is the process by which ground surface is worn away by the action of wind, water, ice or gravity.

Flood or flooding means a general and temporary condition of partial or complete inundation of normally dry land areas from
(1) The overflow of inland or tidal waters, and
(2) The unusual and rapid accumulation of run-off of surface waters from any source.

Flood protection elevation The elevation to which structures and uses regulated by this chapter are required to be elevated or floodproofed.

High Hazard Flood Area means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) meter.

High Hazard Flood Area encroachment lines Lateral limits of a High Hazard Flood Area district along a stream or other bodies of water, within which, in the direction of the stream or other body of water, no structure or fill may be added. Their purpose is to preserve the flood-carrying capacity of the High Hazard Flood Area. Their location is such that the High Hazard Flood Area between them, including the channel, will handle the base flood flow.

Low Hazard Flood Area The land area located between the encroachment lines of the High Hazard Flood Area district and maximum elevation subject to inundation by the base flood as defined herein.

Hazardous material means any waste, product, substance or combination of these which will impair the portability of the public water supply or which will be harmful to human, plant, animal or property due its biological and chemical characteristics or those substances identified as hazardous according to Federal law

Highest adjacent grade means the highest natural elevation of the ground surface, prior to construction, next to the proposed walls of the structure

Lowest floor means the lowest floor of the lowest enclosed area including the basement and/or attached garage (see "floor") An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area, is not considered a building's lowest floor,

Mean water level means the average height of the water for all stages of the tide It is used as a reference for establishing various elevations within the floodplain

Nuisance means a public nuisance, or use of property that is environmentally offensive and causes injury to surrounding property, persons or natural resources

Protected Areas is a term that includes the three zones regulated by this Section the Water Protection Zone, Riparian Protection Zone and Floodplain Zones

Riparian refers to an area that is strongly influenced by water and that occurs adjacent to streams, shorelines and wetlands, serves as a habitat for hydrophytic vegetation and aquatic life, and provides natural water filtration functions

Sanitary nuisance means an action by any person resulting from the operation of a construction activity that threatens or impairs the health or life of other persons

Sediment is solid material, both organic and inorganic, that is in suspension, is being transported or removed from its site or origin by air, water, ice or gravity as a product of erosion

Stormwater is surface or subsurface water that enters a ditch, stream, storm drain or other concentrated flow during and following rainfall

Stormwater management means the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to minimize channel erosion, damage from flood, and degradation of water quality through a system of measures that control the increased volume and rate of stormwater caused by man-made alterations to the land surface

Substantial improvement means any repair, reconstruction or improvement of a structure, where the cost equals or exceeds fifty (50) percent of the market value of the structure, either

- (1) Before the improvement or repair is started, or
- (2) If the structure has been damaged and is being restored, before the damage occurred

Water pollution shall mean the introduction in any surface or underground water any organic or inorganic matter or deleterious substances in quantities or accumulations that are injurious to human, plant, animal, fish or property

Watershed means the drainage area contributing stormwater runoff to a single point

Section 2 3 1

General Provisions

Article 2 3 1 1

Legal Grounds, Scope and Application

1) This Section applies to all areas within the Water Protection Zone, Riparian Protection Zone, and Floodplain Protection Zones adopted pursuant to the criteria established for designating these Protected Areas under Federal, Oblast and municipal law as provided in Article 2 3 1 2. These Protected areas shall be prepared on the Official map of the City of Novgorod

2) This Section is adopted in accordance with the Russian Federation Law on Protection of the Environment, the Russian Federation Water Code, The Russian Federation Law "On Hygiene and Disease Control" the Resolution of the Government of the Russian Federation dated 23 11 96 No 1404 "On Establishment of Provisions for Water Protection Zones of the Bodies of Water and Their Riparian Strips", and other legislation and legal norms of the Russian Federation

3) The Water Protection Zone, Riparian and Floodplain Zones are meant to function as overlay zones. These Zones require environmental restrictions on land use in addition to the permitted uses and associated regulations within the underlying zones as provided in Section II of this Regulation

4) It is not intended that this Section repeal or supersede any existing federal, oblast, municipal law, or other legal and normative acts. However, if this chapter imposes greater or more stringent restrictions than other Chapters within this Regulation or than other relevant laws, the provisions of this Section shall prevail

5) The General Provisions in this Chapter shall apply to regulation of the Water, Riparian, and Floodplain Zones. However, additional requirements for each single Zone may be required in other Chapters within this Section

Article 2 3 1 2 Water Protection Zone, Riparian Protection Zone and Floodplain Zone Boundaries and Mapping

1) Watershed Protection Zone, Riparian and Floodplain Zone maps at a scale of 1"=2000' with boundary delineations are hereby adopted and will be maintained on file in the mapping and records office of the City Committee on Land Resources and Survey

2) The Water Protection Zone boundary is established according to the Federal law as follows

The River Volkhov at	_____meters
Lake Il'men	_____meters
Pitba River	_____meters
Veryazha River	_____meters
Other Streams	_____meters

The measure of the width of the Water Protection Zone is according to the average level of the high water in summer

3) The Riparian Zone boundary is established as required by Federal law at _____ meters

4) The Floodplain Protection Area boundary, including special high and low hazard flood areas are established according to a 10 % probability of flooding in any given year, which is equal to 23 3 meters elevation. The boundaries for the high hazard flood area or High Hazard Flood Area Zone are measured at _____ meters in elevation and the low hazard flood area or Flood-fringe Zone are measured at _____ meters elevation

5) The Land Use and Development Commission shall review the adopted zoning maps as new maps are obtained and will recommend amendments. All proposed changes to the adopted maps shall be submitted to the Land Use and Development Commission. Any change to the above mentioned Zones shall be adopted by proper resolution as provided in Article 1 2 6 2 of the Rules of Land Use and Development

Article 2 3 1 3 Duties and Powers of the Appropriate Agency Regulating the Administration and Management of Land Use Under This Section

The duties, functions, powers and responsibilities of the appropriate agency in the administration of Protected areas under this Chapter shall include the following

1) The City Committee on Land Resources and Survey shall keep records for the protected Water, Riparian, and Floodplain Zones which shall include the following

- a) Total hectares eligible for development (non-critical areas) in each Protected area for the purpose of assessing the land uses appropriate for issuance of Special Zone Approvals and Construction Permits
 - b) Individual records for each project that receives a General or Special Zone Approval or Permit by the issuing agency with the location, hectares, site documentation, use, stormwater management plan as applicable, erosion and sedimentation control plan as applicable, and inventory of hazardous materials on the construction site
- 2) The City Environmental Committee shall be responsible to study and observe water pollution, watershed and riparian conditions, institute actions necessary to abate nuisances caused by water pollution, and take appropriate action for violations of those activities within its authority as defined in this Section
 - 3) The City Environmental Committee shall make inspections of property, facilities, equipment and processes operating under the provisions of this Section to determine whether the provisions of this Section are complied with, and make recommendations for methods by which water pollution may be reduced or eliminated
 - 4) The City Environmental Committee and the Hygiene and Epidemiological Monitoring Center shall establish, operate and maintain a continuous program for monitoring water pollution by means of Citywide water quality surveillance networks designed to provide accurate data and information as to whether the requirements of this chapter are being complied with and whether the level of water pollution is increasing or decreasing throughout the territory
 - 5) The Land Use and Development Commission has the power and authority to order a moratorium on the issuance of Zone Approvals and Construction if it is determined that the limitations of the public or private water or sewage system will be exceeded by any new development so as to endanger or threaten the public health, or property or creates a nuisance
 - 6) The Land Use Development Commission has the power and authority to prevent the issuing of any individual Approval or Permit by the appropriate agency if it is determined that one or more serious violations of this Section are occurring by other property owners in the Protected area near to the applicants development project

**Article 2 3 1 4 Additional Duties and Responsibilities of the
Appropriate Agency Concerning Floodplain Zone Administration and
Management**

- 1) The City Environmental Committee and the Oblast Water Resources Committee shall review and provide written conclusions concerning all Zone Approvals and Construction Permit applications for projects in the Floodplain Zones to assure that the requirements of this Section are satisfied

2) The City Environmental Committee shall prevent encroachments within High Hazard Flood Areas, unless the certification and flood hazard reduction provisions of Article _____ (d) are met

3) The Architecture and Construction Supervising Body shall verify and record the actual elevation of the lowest floor (including basement) of all new or substantially improved structures, and for the new or substantially improved structures that have been floodproofed, in accordance with Article 2 3 2 4

4) Where interpretation is needed as to the exact location of boundaries of the Floodplain Zone or subzones (for example, where there appears to be conflict between a mapped boundary and actual field conditions), The Committee on Land Resources and Survey shall make the necessary interpretation The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation to the Land Use and Development Commission

5) All information, data, records and other information pertaining to the provisions of this Chapter and kept by the appropriate agency shall be open for public inspection

Article 2 3 1 5 Inspection and enforcement

1) The City Environmental Committee shall periodically inspect the sites of construction for which Zone Approval and Permits have been issued to determine if the activities are being conducted in accordance with the design documentation and permit conditions and if the measures required in the documentation or permit are effective in controlling water pollution

If it is deemed that a construction activity has failed to comply with the approved site plan, with permit conditions, or with the provisions of this Section, the City Environmental Committee may require the construction activity or operation of the development activity be stopped until corrective action and mitigation are taken

2) A written notice to comply with this Article shall be served upon the owner of the real estate site by the City Environmental Committee, and the notice shall set forth the measures necessary to achieve compliance and shall state the time within which such measures must be completed If the person engaged in the development operation fails to comply within the time specified, he shall be deemed in violation of this Regulation and the City Environmental Committee may issue a Stop Work Order

3) After Inspection of the facility and an opportunity to remedy the violation, The City Environmental Committee may issue a notice to immediately stop construction or operation of the site The notice shall be in writing and shall be given to the owner of the property, the owner's authorized agent or the person in charge of the activity on the property and shall state the conditions under

which work may be resumed Where an emergency exists, no written notice shall be required

Article 2 3 1 6 Civil and Criminal Penalties

- 1) Any person operating within Protected areas that violates any provisions of this Section, provisions of the permits' issuance procedures, or deliberately does not act in compliance with the orders of the Environmental Committee, shall be liable according to the provisions in Chapter 1 2 5 2 "Liabilities of the real estate holders" of the Land Use and Development Regulation The City Environmental Committee and the Oblast Water Resources Committee shall establish civil fines and penalties for violations of this Chapter
- 2) The inter-regional ecological prosecutor may initiate criminal proceedings in a court of law for violations of this Chapter according to relevant Russian Federation laws

Article 2 3 1 7 Appeals From Actions or Decision of Any Agency with Authority to Operate under this Section

- 1) Any person in disagreement with or injured by any action or decision of any agency operating under the authority of this Section may appeal to the Land Use and Development Commission by filing within fifteen (15) days after the agency decision, a written appeal of the decision that describes the action or decision appealed from and the reasons or grounds for the appeal The Land Use and Development Commission shall set the appeal for a public hearing at the earliest possible date, according to Article 1 2 4 6 of the Land Use and development Regulation and notify the appropriate affected parties of the date and time of the hearing
- 2) Any person aggrieved by a decision or order of any agency as a result of requirements under this Section, and after exhausting all remedies and appeals as provided in this Regulation shall have the right to seek judicial review in a court of appropriate jurisdiction

Article 2 3 1 8 Rules and regulations

The Land Use Development Commission on its own initiative or at the initiative of any other interested party or City agency and in consultation with the appropriate City Committees shall propose revisions, or amendments to this Section as necessary, and in order to provide effective and continuing control and regulation of land use in Water, Riparian and Floodplain Zones Amendments shall become effective according to the modification and public hearing procedures provided in Article 1 2 6 2

**Chapter 2 3 2 Additional Requirements and Procedures for Issuing
General and Special
Zone Approval and Construction
Permits in Protected Areas**

Article 2 3 2 1 General or Special Zone Approval Required

No person shall conduct any construction activity or operation within the Water Protection Zone, Riparian Protection or Floodplain Protection Zone, and no Approval or Permit shall be issued, unless an application meets all the requirements in this Section, in addition to the requirements provided in Chapter 1 2 4 of The Land Use and Development Regulation

**Article 2 3 2 2 Additional Requirements for the Construction Permit
Application in Protected Areas**

- 1) In addition to the design documentation information required in Article 1 2 4 7 , an applicant for a Construction Permit whose real estate project is in any Protected area shall submit additional design documentation and other application information to the Architectural and Town Planning Committee as provided in this Article

- 2) Other data required for the Construction Permit application includes
 - Explanatory notes, and other information to be located on the site documentation,
 - Description of existing land use at the project site and description of the proposed project,
 - Stormwater and sediment management systems-storage capacity, hydrologic study and calculations, including off-site drainage area,
 - Vegetative plan for all temporary and permanent vegetative practices, and
 - Maps, drawings and supportive computations

- 3) Maps, drawings and supportive computations shall bear the following
 - Graphic scale and north point or arrow indicating magnetic north
 - Vicinity maps showing location of project and existing streets
 - Boundary line survey
 - Delineation of disturbed areas within the boundary
 - Existing and planned contours, with contour lines drawn with an interval of not more than five meters The procedure or method used in arriving at the contour intervals shall be indicated
 - Adjacent areas and features areas such as streams, lakes, residential areas, etc , which might be affected should be indicated on the plan
 - Proposed structures or additions to existing structures and paved areas
 - Delineate the Protected area boundaries where applicable,
 - Location of erosion and sediment control practices shall include
 - Construction exit
 - Sediment barrier

Sediment basin
Grassed waterway (open swale)
Storm drain outlet protection
Volume in cubic meters of both cut and fill

4) Maintenance of all soil erosion and sedimentation control practices, whether temporary or permanent, shall be at all times the responsibility of the owner

Article 2 3 2 3 Additional Requirements for General and Special Zone Approval Applications in Protected Areas

In addition to the Zone Approval application requirements provided in Articles 1 2 4 4 and 1 2 4 5 , an application for Approval within Protected areas regulated under this Section shall include the following information

- 1) A description of why avoidance and less damaging alternatives have been rejected by the applicant,
- 2) The source, type, and method of transport and disposal of any fill material to be used,
- 3) A comprehensive Environmental Impact Statement ("EIS"), or a detailed report, based upon current data obtainable at the time of permit application submittal, which describes the proposed work and its purposes and which addresses the following assessment points so as to permit assessment of the probable environmental impacts, benefits and detriments of the proposed Construction project on surrounding and adjacent areas within the Protected areas

a)An analysis of the probable impact of the proposed work in the Protected areas including impact on ecological systems and water bodies Both direct and indirect potential adverse environmental impacts shall be included in the analysis The statement shall include the effect, if any, of the proposed work upon the ability of the Protected areas to

- Receive and store surface waters and to recharge groundwater,
- Contribute to quantity and quality of the water supply
- Provide filtration and uptake of nutrients and pollutants from surface waters
- Provide protection for the recharge area of a wellfield

b) An analysis of other adverse environmental impacts which cannot be avoided if the application is approved, such as water pollution, urban congestion, threats to health or other consequences adverse to the City's environmental goals

c) A description and analysis of alternatives to the proposed work which avoid or mitigate some or all of the probable adverse

environmental impacts of the proposed work or which increase the beneficial environmental effects of the proposed work. An economic cost-benefit analysis may be submitted by the applicant for the proposed work and each alternative.

d) An analysis of the cumulative and long-term effects of the proposed work. The analysis shall compare the proposed work's short-term use of the environment with long-term environmental parameters including, biological productivity, habitat quality, protection of hydrological resources, and nutrient and pollution attenuation capacity.

e) An analysis of all irreversible commitments of natural resources which would occur if the proposed work is implemented. This analysis shall include the extent to which the proposed work would curtail the range of beneficial uses of the environment.

4) A Zone Approval application will be accepted when the Commission determines that it is complete. If an application does not comply with the requirements in this Chapter it is not complete. Such determination shall be made within five days of the submission of the application.

5) Upon submission of a complete application, the Land Use and Development Commission shall publish a Notice of Public Hearing as required in Article 1246, and the following persons shall be notified personally by the City not later than 15 days before the hearing:

a) The owners of properties within _____ meters of the property boundaries of the property included in the application, and

b) Other interested parties who have requested personal notification.

The above mentioned persons and the general public may comment in writing on a proposed application for Zone Approval or Construction in Protected Areas no later than 5 days before the date of the hearing provided in the published notice as required in Article 1246.

Article 2324 Additional Construction Permit Requirements in Floodplain Zones

An application for a Construction Permit within a Floodplain Zone shall include the requirements provided in Articles 1247 and the following information:

1) Where base flood elevation data is provided by the applicant, the application for a Construction Permit within the Floodplain Zone shall show:

a) The elevation (in relation to mean water level) of the lowest floor (including the basement) of all new and substantially improved structures, and

b) If the structure has been floodproofed in accordance with Article _____, the elevation (in relation to mean water level) to which the structure was floodproofed

2) Where the base flood elevation data is not provided, the application for a development permit must prove construction of the lowest floor at least two (2) meters above the highest adjacent grade

3) Where any watercourse will be altered or relocated as a result of a proposed construction project, the application for a Construction Permit shall include A description of the extent of watercourse alteration or relocation, a report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to the properties located both upstream and downstream, and a map showing the location of the proposed watercourse alteration or relocation

4) When a structure is floodproofed, the Architectural and Construction Supervision Body shall inspect the floodproofed structure and certify to the Architectural and Town Planning Committee that the floodproofed structures meet the floodproofing criteria in Article _____)

Article 2 3 2 5 Zone Approval and Construction Permit Conditions in Protected Areas

1) The Land Use and Development Commission may attach conditions to the Zone Approval and the Architectural and Town Planning Committee may attach conditions to the Construction Permit as are reasonably necessary to carry out the purposes of this Section To ensure the construction and operation of real estate projects takes place without adverse impact on the Protected areas , such conditions may include

a) Requiring that structures be elevated on piles and otherwise protected against natural hazards,

b) Modifying individual waste disposal and water supply facilities,

c) Requiring deed restrictions concerning future use and subdivision of lands, including without limitation preservation of undeveloped areas as open space and restrictions on vegetation removal,

d) Restricting the use of an area, which may be greater than the Protected area,

e) Requiring erosion control and stormwater management measures,

f) Restricting fill, deposit of soil, and other activities which may be detrimental to a Protected area ,

g) Modifying the project design to ensure continued water supply to the Riparian Zone, and

h) Requiring a mitigation plan which may involve the creation of new Riparian areas or the restoration of damaged or degraded Riparian areas as set forth in Article 2 3 2 6

2) The Land Use and Development Commission may require a financial guarantee in an amount sufficient to secure compliance with the conditions and limitations set forth in the Approval or Permit

Article 2 3 2 6 Mitigation Plan for Protected Area Projects

1) As a condition of a Zone Approval or Construction Permit , the Land Use and Development Commission may require a mitigation plan A mitigation plan requires the applicant to engage in the restoration or creation of Protected areas in order to offset, in whole or in part, the losses resulting from that applicant's actions This mitigation plan shall not be an alternative to the standards set forth in Articles _____, but shall be used only to compensate for unavoidable losses In making a determination as to whether a mitigation plan will be required, and the degree to which it is required, the following factors will be considered

a) The type and value of the altered Protected area's functions, the functions and associated resources to be impaired or destroyed as a result of the proposed construction activity, and an evaluation of whether the altered area and area to be restored have equal ecological value,

b) The type, size, and location of the altered Protected area, and

c) The cost and probability of success of the mitigation measures

2) A mitigation plan shall contain

a) An evaluation of all of the factors set forth in this Article at subsections 1 (a) - (c),

b) An evaluation of the suitability of the proposed mitigation site for establishing the restored or created Protected area,

c) The source of any water to be used for establishing or maintaining the restored or created Protected area,

d) The site hydrology of the restoration or creation area,

e) A maintenance program for a period of not less than five years, including without limitation weed control, litter and debris removal,

watering, repair of water control structures, maintenance of vegetation and wildlife habitat, and clearing of culverts,

f) A timetable for construction and monitoring program, and

g) A demonstration of fiscal, administrative, and technical competence to successfully execute the overall project

3) In a mitigation plan, replication of the same or greater Protected area functional value is required, unless a Protected area of a different type or in a different location is justified based on the functions and values of the Protected area which is proposed to be altered

4) Upon adoption of a Protected area mitigation banking program, if the Land Use and Development Commission determines that the public interest is better served, a fee may be accepted in lieu of direct action on the part of the applicant to initiate a Protected area restoration or creation project to offset Protected area destruction or impairment from the proposed construction activity. Fees for compensation of Protected area destruction or impairment will be set based upon the amount that would be required to perform equivalent Protected area restoration or creation in another location. Such fees shall be held for the express use of Protected area restoration and creation projects

Chapter 2 3 3 Environmental Review Standards for Zone Approvals and Construction and Operating Permits in Protected Areas

Article 2 3 3 1 Review Standards for Issuing Zone Approval and Construction and Operating Permits in Protected Areas

No Zone Approval or Construction or Operating Permit for development in Protected areas will be issued and no approved Construction activity or development project shall be allowed to continue unless the standards in this article are satisfied

1) Conservation practices, technology or management measures (conservation practices) designed to control water pollution, erosion and sedimentation shall be required for all construction activities. All construction projects shall meet the following requirements

-Stripping of vegetation, re-grading and other construction activities shall be conducted in a manner so as to minimize erosion,

-Excavation of soil or other matter, organic or inorganic, and placement of excavated products on a land surface must be kept to a minimum,

-Construction design documentation must conform to topography and soil type so as to create the lowest practical erosion potential,

-Natural vegetation shall be retained, protected and supplemented,

-Disturbed soil shall be stabilized as quickly as possible,

- To the extent necessary, sediment in runoff water must be trapped by the use of debris basins, sediment basins, silt traps or similar measures until the disturbed area is stabilized,
- Excavated soil or other materials may not be placed so as to encroach upon natural watercourses or constructed channels in a manner that adversely affects other property owners, and
- Construction activity plans for erosion and sedimentation control shall include provisions for treatment or control of any source of sediments and adequate sedimentation control facilities to retain sediments on site or prevent sedimentation of adjacent streams

2) The applicant must demonstrate that the project does not degrade water quality within City area according to water quality standards and prohibitions against water pollution established by federal, oblast or municipal law, precisely, the project will not degrade water quality higher that established PDK rate, and other hygiene standards The applicant shall prove that the project will not cause the following

- Discharge into a sanitary sewer, any of the following substances any gasoline, fuel oil or other flammable or explosive liquid, solid or gas, any pollutants which may create a fire or explosion hazard in the public treatment works
- Any waters or wastes containing any pollutant, a toxic or poisonous substance in sufficient quantity or flow rate to injure or interfere with any sewage treatment process, or constitute a hazard to humans or animals
- Any pollutant in amounts which alone or in combination with other discharges will cause obstruction to the flow in the public treatment works
- Any substance that will pass through the sewage treatment plant and exceed oblast or federal requirements for the receiving water
- Any effluents in excess of the appropriate sewage treatment standards, including chemical, physical standards or biological characteristics

3) Any violation of subsection (2) of this Article shall require the applicant or developer to

- a)To pay established fines for such violations
- b)To take all appropriate measures in order to avoid such violation in future

4) Existing uses that do not conform to the requirements and standards in this Section, the Land Use and Development Commission can impose a “non-conforming” status according to Article ___ of the Regulation It shall also notify that they will have 2 years from the date of notification to comply with the requirements and standards in this Section Failure to comply with this Section within the designated time period shall be considered a violation of this Regulation

**Article 2 3 3 2 Additional Standards for
Construction and Operating Permits in Floodplain Protected Areas**

1) In all Flood Protected areas the following construction modifications may be required

- a) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure. Methods of anchoring may include, but are not limited to, the use of over-the-top or frame ties to ground anchors,
- b) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage,
- c) Electrical, heating, ventilation, plumbing, air-conditioning equipment and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding,
- d) All new and replacement water supply and sewage systems shall be designed to minimize or eliminate the infiltration of floodwaters into the system,
- e) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding, and
- f) Any alteration, repair, reconstruction or improvements to a structure, which is in compliance with the provisions of this Section, shall meet the requirements for "new construction" and shall be subject to the requirements in this Article

2) In all areas Flood Protected areas, the following provisions are required

- a) New construction or substantial improvement of any residential structure shall have the lowest floor, including basement, and attached garages elevated no lower than one (1) meter above the base flood elevation. If solid foundation perimeter walls are used to elevate a structure, openings sufficient to facilitate the unimpeded movements of floodwaters shall be provided
- b) New construction or substantial improvement of any commercial, industrial or nonresidential structure shall have the lowest floor, including basement, elevated no lower than one (1) meter above the level of the base flood elevation. Structures located in High or Low Hazard Flood Areas- may be floodproofed in lieu of elevation, provided that all areas of the structure below the required elevation are watertight with walls substantially impermeable to the passage of water

3) In the High Hazard Flood Areas no encroachments, including placement of excavated soil or other material, new construction, substantial improvements and other developments shall be permitted, unless certification (with supporting technical data) by the Architectural and Construction Supervision Body are provided, demonstrating that such encroachments shall not result in any increase in flood levels during occurrence of the base flood discharge