

Section 6. Regulations

While the three previous sections are oriented toward dealing with the existing flood problem, regulations focus on the future. These activities are designed to keep the problem from getting worse by ensuring that future development does not increase flood damage and by maintaining the river system's capacity to carry floodwaters away.

6.1 Planning and Zoning

6.1.1 General: Advance planning can match the land's use with the land's hazards, typically by reserving flood hazard areas for open space, parking lots, backyards, or similar low-damage activities. A land use plan proposes appropriate uses. However, it is a plan, i.e., it is what the community would like to see. Generally, a plan has no real authority.

Plans are usually implemented by two local measures, zoning ordinances and capital improvements programs. A zoning ordinance regulates development by dividing the community into zoning districts and setting development criteria for each district. Appropriate zoning districts for a floodplain include public use, conservation, agriculture, and low density residential development. Public use and conservation generally require public ownership of the land to avoid a legal challenge that the restrictions are so severe they amount to a "taking" of the land.

The community's capital improvements program identifies where major public expenditures will be made over the next 5-20 years. These include acquisition of land for public uses, such as parkland, and extension of roads and utilities. If the long range plan calls for preserving the floodplain as open space, then the capital improvements program should support the plan by acquiring floodprone areas for park and by not improving or extending roads into the floodplain.

Acquiring open space in the floodplain has two benefits: it prevents hazardous development and it provides attractive sites for parks. While this can be expensive, there are sources of financial assistance for park acquisition or development. Many communities have been successful in getting owners to donate land for tax purposes or to ensure it is kept open for future generations to enjoy.

As an alternative to public ownership, an easement can be purchased. With an easement, the owner is able to develop and use his or her private property but is paid to not build on the floodprone part or the part set aside in the easement. In some cases, the owner is allowed to develop the area for low hazard uses or to transfer the right to develop other flood-free parcels (known as "TDR" or transfer of development rights).

Easements do not always have to be purchased. Flood flow, drainage, or maintenance easements can be required of developers as a condition of approval of the development. These are usually linear parcels along property lines or streams. Maintenance easements can also be negotiated with riverside property owners in return for a community channel maintenance program.

6.1.2 South Holland's Planning and Zoning: The “Comprehensive Plan for the Village of South Holland” was prepared in 1989. It notes that the Village

“is basically built-up and has limited vacant land available for development... The Land-Use Plan attempts to reinforce and strengthen the established land-use pattern in the community.”

The land use plan's map shows a variety of uses in the floodplains, including residential, commercial, industrial, institutional, and parks and open space.

The Village's Zoning Ordinance was first adopted in 1956 and last amended in 1990. The zoning map is dated 1985 and generally matches the land use plan's map. As noted above, because so much of the Village is already developed, it is difficult to plan for or zone for major changes to the existing development pattern.

The impact of the land use plan and the zoning ordinance are primarily in vacant areas. The major vacant area of floodplain is on the Little Calumet River and Thorn Creek to the east of the Calumet Expressway. As shown in Figure 2-4 on page 2-6, there are few roads in this area.

Both the land use plan and the zoning ordinance have designated the area north of 170th Street and between the rivers and the Calumet Expressway as industrial. The rest of the vacant floodplain east of the expressway are designated as single-family residential.

Some development has occurred recently in conformance with these land uses. In the industrial area there is a new shipping terminal. In the residential area to the east, two “letters of map amendment” have been issued that recognized that filling has removed areas from the floodplain. Several new houses have been built above flood levels and more are expected.

South Holland does not have a formal capital improvements program. The last parkland expansion was acquisition of Gouwens Park in 1987. This floodplain park has since been developed to incorporate stormwater and floodplain storage features.

6.2 Floodplain Regulations

6.2.1 General: Subdivision ordinances and building codes come into effect after the plans and zoning ordinances have identified where various land uses are appropriate. If the zoning for a site allows buildings, these regulations ensure that the buildings will not be subject to flood damage and that the development will not aggravate the flood problem.

Subdivision regulations govern the development of large vacant areas that the developer intends to subdivide into individual lots. They set the construction and location standards for the infrastructure provided by the developer, including the roads, sidewalks, utility lines, storm sewers and drainageways. The storm sewer and drainageway standards are discussed in the next section on stormwater management.

Subdivision regulations often require that every lot have a buildable area that is entirely above the flood level. If they don't, the building code should provide flood protection standards for building construction. These should include criteria to ensure that the foundation will withstand

flood forces and that all damageable portions of the building are above or protected from floodwaters.

Most floodprone communities participate in the National Flood Insurance Program (NFIP) which is administered by the Federal Emergency Management Agency (FEMA). As a condition of making federally supported flood insurance available for their residents, the communities agree to regulate new construction in the 100-year floodplain. To reduce confusion, the 100-year floodplain is called the “base floodplain” and the elevation of the 100-year flood is known as the “base flood elevation” or “BFE.”

The 100-year floodplain is shown as the “Special Flood Hazard Area” on the Flood Insurance Rate Map (FIRM) provided by FEMA. In non-coastal areas, the 100-year floodplain is designated as an “A” Zone. The 500-year floodplain is shown as a “B” Zone and areas above the 500-year flood level are shown as “C” Zones. The designation as B or C Zone does not mean that the area is not subject to local drainage problems or overbank flooding from streams or ditches smaller than the FEMA mapping criteria.

There are four major requirements of the NFIP in a riverine situation:

1. All development must have a permit from the community. “Development” is defined as any man-made change to the land, including new buildings, improvements to buildings, filling, grading, mining, dredging, etc.
2. No development in the floodway may obstruct flood flows and cause a problem on other properties. The floodway is the channel and central portion of the floodplain that is needed to convey the 100-year or base flood.
3. New buildings must be protected from damage by the base flood. The building protection requirements of the NFIP are shown in Figure 6-1 on the next page.
4. When an addition, improvement or repair to an existing building is valued at more than 50% of the value of the original building, then it is considered a substantial improvement. A substantial improvement addition must be elevated above the BFE. In the case of remodeling or repairs, the entire building must be elevated (non residential buildings may be floodproofed).

Communities are encouraged to enact more restrictive regulatory standards, especially where warranted by the flood hazard. The most common more restrictive standard is to require freeboard. “Freeboard” means an extra margin of safety added to the BFE to account for waves, debris, miscalculations, lack of data, and floods higher than the base flood.

Other more restrictive regulatory requirements include:

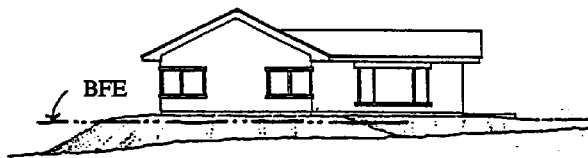
- Using more accurate or more restrictive techniques to calculate the BFE or delineate the floodway,
- Specifying foundation protection standards,

Figure 6-1 NFIP Floodplain Regulation Requirements

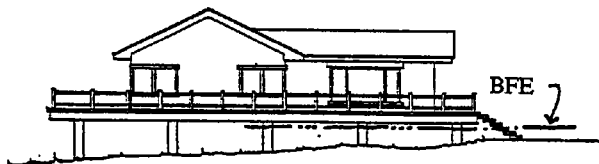
"Building" includes any man-made structure that is principally above ground and enclosed by walls and a roof. It includes mobile and manufactured homes and recreational vehicles installed for more than 180 days.

In A Zones, all residential buildings must be elevated so the top of the lowest floor (including basement) is above the BFE. The most common methods of meeting these requirements are:

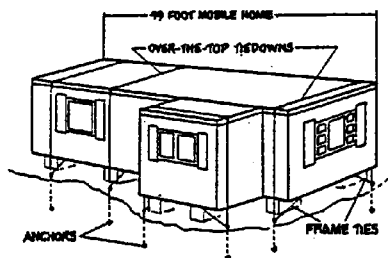
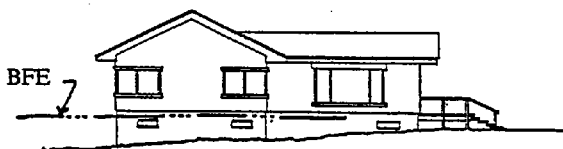
Filling the site above the BFE



Pilings, piers, columns

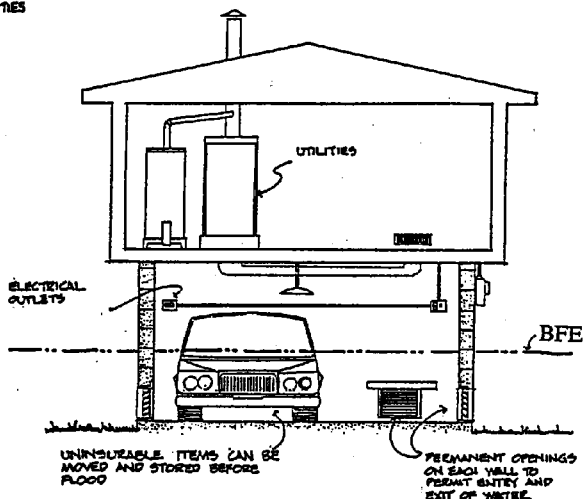


Crawlspace or raised foundation wall



Mobile homes ("manufactured housing") must be tied down.

All utilities and other structural items below the lowest floor must be free from water damage. If the building is not built on fill, water must be able to freely flow under it to prevent hydrostatic pressure from breaking the walls or floor.



Non residential buildings may be floodproofed in A Zones so that below the BFE, the floor and walls are watertight and capable of withstanding the hydrostatic and hydrodynamic forces.

- Counting improvements cumulatively to determine when a substantial improvement occurs,
- Using a threshold lower than 50% to determine when a substantial improvement occurs,
- Setting higher protection standards for critical facilities,
- Preserving the floodplain's flood storage capacity by prohibiting fill or requiring that an equal volume of fill be removed to compensate for the loss of storage, and
- Requiring buildings in B and C Zones to be elevated above the street or local drainageways.

More restrictive state regulations take precedence over the minimum NFIP criteria. FEMA uses Illinois' floodway mapping standard and defers to the Illinois Department of Transportation, Division of Water Resources' floodway regulations. In Northeastern Illinois, all new buildings and substantial improvements must be protected to a level one foot above the BFE.

6.2.2 South Holland's Regulations: South Holland's subdivision regulations have no special floodplain management requirements. The Village has adopted the Building Officials and Code Administrators (BOCA) National Building Code. Chapter 18 of the 1993 edition sets foundation protection standards, including requirements for soil testing and prepared fill, that will help protect buildings from flood damage.

South Holland's floodplain regulations are in Article II of Chapter 14 of the Village's code. This ordinance is taken from a model recommended by FEMA, the state, and the Northeastern Illinois Planning Commission (NIPC). A recent review by the Illinois Department of Transportation, Division of Water Resources, for FEMA found two problems in the Village's ordinance. These omissions are probably typographical errors, but they need to be corrected for the Village to be in full compliance with the NFIP.

The revisions were adopted by the Village Board in 1994.

The ordinance also has the following sections that exceed the minimum requirements:

- Section 14-22 defines “flood protection elevation” as one foot above the BFE. Section 14-29e requires new buildings to be elevated or floodproofed to the flood protection elevation. This is equivalent to one foot of freeboard.
- Section 14-25(4) requires that a detailed flood study using future land use conditions in the watershed be conducted by developers in floodplains where there is no BFE.
- Sections 14-26(2)b and 14-27(2)b require compensatory storage in the flood fringe and floodway. In the fringe (the floodplain area outside the floodway) filling must be compensated at a rate of 1.5 times the volume of storage lost.
- Section 14-27 allows only “appropriate uses” in the floodway. Appropriate uses do not include buildings, building additions, fences, or storage of materials. There is a list of

approved appropriate uses which includes flood control structures, recreational facilities, detached garages and accessory structures, floodproofing activities, and other minor alterations. The result of this state-mandated regulation is that vacant floodways will essentially remain as open space, free of insurable buildings.

- Section 14-29b states that improvements will be figured cumulatively beginning April 1, 1990. This will close a loophole and prevent owners from making many small improvements to avoid the requirement to bring older buildings up to flood protection standards.
- Section 14-29e.1(ii) has specifications for fill that will provide added flood protection to buildings.
- Section 14-29e.4 states that nonconforming structures in the floodway may not be enlarged. If they are damaged beyond 50% of their pre-damage value, they must be brought into compliance, i.e., removed from the floodway.

It can be seen that South Holland's ordinance includes more restrictive criteria than the NFIP requires. This is to better respond to the local flood hazard where, say, flood storage is so important, and to comply with state law. The ordinance is limited to the base floodplain. There are no requirements for elevating or protecting B and C Zone buildings from local drainage problems.

Administration of the floodplain management ordinance is dependent on accurate elevation data for each construction site. The Code Enforcement Office has transferred the flood elevations to a more accurate base map with one foot contour intervals. This map also reflects the latest map amendments issued by FEMA after areas have been filled or found to be higher than the BFE.

To transfer the flood elevation to a site, a surveyor must start from a known elevation point. This job is made more easy and more accurate if there is an elevation reference mark close to the site. The Village Engineer helps maintain elevation reference marks and replaces them if they have been moved or altered.

From the applicant's perspective, the administration of the ordinance could use some improvements. Currently, all permit applicants are required to receive a "grade order" from the engineer. In the floodplains, the grade order helps identify the minimum elevation requirement for a new building. The grade order costs the applicant \$105. The applicant must pay an additional \$105 for an elevation certificate that records that buildings in the A Zone have been protected to the flood protection elevation. Elevation certificates are kept on a FEMA form which are needed by insurance agents to write flood insurance policies.

Outside the floodplain, the grade order is a restatement of the building plans and has no regulatory authority. Because there are no elevation, grading, or drainage protection requirements outside the floodplain, applicants are paying \$105 for a meaningless requirement. On the other hand, many communities require lots to be graded or buildings to be slightly elevated to protect them from local drainage problems. While a grade order or similar elevation requirement could be a very useful way to protect new buildings, a surveyor or engineer would not be needed and the cost to the applicant could be reduced.

If a project will be in the floodway, the applicant must also apply for a permit from the Illinois Department of Transportation, Division of Water Resources. This lengthens the permit review time and requires the applicant to submit plans and explain the project to two different agencies. However, the state may delegate authority to the Village to review and approve smaller projects in the floodway.

Section 14-29e.2(I) lists the NFIP's construction standards for buildings elevated on foundation walls. These standards were developed by FEMA to be applicable throughout the country. They require relatively large openings (one square inch for every one square foot of enclosed area) to ensure that rising floodwater will enter the enclosed area fast enough to equalize hydrostatic pressure on both sides of the wall.

The large openings have discouraged residents from elevating buildings or additions on enclosed walls and, in some cases, have discouraged people from retrofitting their buildings to protect them from flood damage. Because the rivers in South Holland rise relatively slowly, smaller openings are practical and have been approved for at least one other Little Calumet River community. They could be allowed if properly designed by an engineer.

The NFIP, state, and ordinance requirements total more than 100 pages of technical floodplain management requirements. It is possible for the permit office to make errors or not be aware of all the details. The state has a program to visit communities and help ensure that local procedures meet all the mandated requirements so the Village does not jeopardize its participation in the NFIP.

Subsequent to adoption of this Plan, changes were made to the permit procedures that eliminated some of these concerns.

6.3 Stormwater Management

6.3.1 General: Floodplain regulations address development in the path of flooding. Flooding can also be increased by development outside the floodplain. When an area is urbanized, i.e., converted from farms, forests and fields to buildings and streets, the ground surface becomes more impervious. More stormwater runs off the land instead of soaking in.

At the same time, developers build gutters, sewers, and ditches to move surface water as fast as possible downhill to the river channels. Not only does this aggravate downstream flooding, it often overloads the community's drainage system. The alternative, stormwater management, requires developers to incorporate detention basins to ensure that the rate of runoff after development is no greater than under pre-development conditions.

Stormwater management requirements for detention are generally found in ordinances governing subdivisions and larger new developments. Many developments utilize wet or dry basins as landscaping amenities. Larger detention basins are more effective than smaller ones which drain relatively quickly. In some cases, advance community planning identifies the most effective location for a basin and requires developers to contribute funds for it in lieu of constructing on-site detention.

There are three general problems with the usual approach to stormwater management. If not properly planned, many small on-site basins will not help and may even aggravate the problem. Depending on their location in the watershed, flooding can be increased when small basins release their detained water quickly.

Second, most communities leave maintenance of the detention structures up to the property owner. Often the owner, such as a homeowner's association, does not appreciate the need for continued maintenance or is not interested in paying for the maintenance.

A third problem is that in urban areas, stormwater runoff is not clean. The water passes over streets, chemically-sprayed fields, and industrial areas and picks up many different kinds of pollutants. Storm sewers, ditches, and traditional detention basins simply channel these pollutants to the rivers and creeks.

It is expected that the Environmental Protection Agency will soon be requiring communities of South Holland's size to improve the quality of their stormwater runoff through the National Pollutant Discharge Elimination System (NPDES). The Village may be mandated to enact new regulations requiring developments to incorporate additional measures to "treat" runoff, such as grass filter strips.

6.3.2 South Holland's Stormwater Management: South Holland's subdivision ordinance sets construction standards for storm sewers and the use of streets for local drainage. However, it does not have any requirements for detention of stormwater runoff.

Detention requirements are set by the Metropolitan Water Reclamation District of Greater Chicago (MWRD). MWRD is concerned with excess stormwater overloading its combined sewers or causing flooding that affects its sewage treatment plants. It has had stormwater regulations in effect since the early 1970's. Before a new development can connect to sewers that MWRD serves, it must apply for a permit and show that it meets MWRD's detention standards.

MWRD's regulations only affect single family residential developments equal to or greater than ten acres and other developments equal to or greater than five acres. These developments must restrict the peak discharge from their sites during a 100-year storm to that of a 3-year storm's release under pre-development conditions.

The Northeastern Illinois Planning Commission calculates that MWRD's 3-year storm's release rate is equivalent to 0.2 to 0.5 cubic feet per second (cfs) per acre. NIPC has recommended a rate of 0.15 cfs per acre. Its studies have shown that a 100-year storm release rate 0.15 cfs is effective in preventing increases in downstream flood levels for a 30 square mile test watershed.

The only stormwater management regulations in effect in South Holland are MWRD's minimum requirements. The Cook County Stormwater Management Commission and the Northeastern Illinois Planning Commission have recommended that communities enact regulations that complement the MWRD standards. The following are ways stormwater management regulations in South Holland could be improved:

- Bring smaller developments under the jurisdiction of the ordinance (some smaller developments have built detention facilities but they are not subject to engineering review to confirm their utility),
- Have lower release rates to better reduce downstream flooding,
- Identify where larger, regional detention structures should be placed instead of relying on many small basins,
- Require that new basins be publicly maintained or enact regulations to allow for public inspection with the authority to order needed maintenance, and
- Require stormwater quality provisions as part of the stormwater quantity regulations.

Most of these provisions are included in the model ordinance recommended by NIPC, “Model Stormwater Drainage and Detention Ordinance.” This model, or derivations of it, has been adopted by several south suburban communities, including five of the seven villages in the Butterfield Creek watershed.

The value of an improved stormwater management ordinance is related to the amount of the Village still subject to development. Because most of the Village is already built up, there will actually be few opportunities to require new detention structures. However, every little bit helps, and adoption of new regulations is a signal that the Village is doing everything it can.

6.4 Debris, Erosion and Sediment Control

6.4.1 General: Floodplain regulations control major development projects in floodplains. However, debris can accumulate or be accidentally or intentionally dumped into the channels, obstructing even low flows. Stream dumping regulations are one approach to preventing intentional placement of trash or debris in watercourses.

Another thing that obstructs channels is sedimentation. As rain hits the ground, especially where there is bare dirt as on farm fields and construction sites, soil is picked up and washed downstream. Sediment tends to settle where the river slows down and will gradually fill in the channel.

Farm practices such as terracing and no-till help reduce agricultural erosion and keep topsoil where it is needed. Catch basins can be installed downstream of construction sites to slow runoff so sediment will be dropped on-site before it gets to the river. There are a variety of erosion and sediment control measures that can be taken. The key is to get them used, particularly on construction sites.

6.4.2 South Holland's Program: Article III, Division 1 of the Village's Code is an effective stream dumping regulation. In fact, it has been copied for use as a national model by the NFIP. Division 2 of Article III is an effective erosion and sediment control regulation based on a proven state model. The only shortcoming identified by the Flood Liaison Committee was that not enough people are aware of the ordinance or how to report violations.

6.5 Disclosure Regulations

6.5.1 General: Disclosure regulations are state or local laws that require sellers of floodprone properties to tell potential buyers about the hazard. Several states have incorporated such requirements in their real estate agent licensing and testing procedures. In many areas, real estate agents practice disclosure without a state or local law in order to protect themselves and their clients from possible lawsuits.

Variations on this theme include laws that require sellers to tell buyers if the property has flooded, laws that require landlords to disclose the hazard to potential renters, and laws that require plats or deeds to record the flood hazard.

Federal law requires that banks and other federally regulated lending institutions must advise an applicant for a mortgage or other loan that is secured by an insurable building, that the property is in an A Zone. This requirement only has to be met five days before closing, so often the applicant is already committed to purchase the property. This requirement does not affect renters or instances where properties are purchased without mortgages from federally regulated lenders.

6.5.2 South Holland's Regulations: Illinois Revised Statutes, Chapter 34, Section 3-5029 requires that all subdivision plats must show whether any land is located in an A Zone. Otherwise, there are no disclosure regulations in effect in South Holland.

6.6 Conclusions and Recommendations

6.6.1 Conclusions:

- a. South Holland's comprehensive plan and zoning ordinance do not address the flood hazard. Instead, they encourage what could be incompatible land uses in the floodplain.
- b. The Village's floodplain regulations exceed the minimum federal and state requirements. Additional ordinance and code amendments would encourage retrofitting buildings to protect them from flooding and better protect new buildings outside of the floodplain.
- c. The Village's stormwater management program meets the minimum requirements of MWRD but could be improved.
- d. The Village's regulations on stream dumping and erosion and sediment control are in good shape, although the requirements and procedures could use more publicity.
- f. Except for a minor disclosure requirement for new subdivision plats, potential buyers or renters of floodplain property are not advised of the flood hazard unless there is a mortgage through a federally regulated lender.

6.6.2 Recommendations:

- a. The Village Plan Commission should incorporate floodplain concerns in the next revision to the comprehensive plan and the zoning ordinance. The Commission should consider an early amendment to the zoning ordinance restricting industrial and residential buildings to areas that are currently outside the 100-year floodplain.

The original *Plan* recommendation was to prohibit industrial and residential buildings from the 100-year floodplain. Under state law and the floodplain ordinance, new buildings are prohibited from the floodway, which comprises the part of the floodplain that is most hazardous and most sensitive to development.

In 1994, staff recommended to the Zoning Board of Appeals that a floodway overlay district be created. While it was not done, the floodway is now shown on the zoning map. The zoning ordinance was amended in 1995, but there were no special provisions on flooding.

- b. The Plan Commission should draft amendments to the subdivision ordinance to require that the floodplain portions of new developments be dedicated to parks, open space or maintenance easements.

In 1996, the Flood Liaison Committee voted to recommend that the subdivision ordinance be amended to require that all new subdivisions have their streets and building sites elevated above the base flood elevation. This amendment was subsequently approved by the Board of Trustees.

- c. The Village Code Enforcement Office should continue to enforce the standards of its floodplain regulations and draft the following amendments to the ordinance:

- 1) Technical changes needed to bring it into full compliance with the NFIP,
- 2) Revised standards for openings in foundation walls to make them more appropriate to the local flood hazard, and
- 3) More restrictive standards for new critical facilities and improvements to existing critical facilities.

The first two changes were made in an amendment passed by the Village Board in 1994. After further discussion, the Liaison Committee recommended against the third amendment.

- d. The Code Enforcement Office should draft an amendment to the building code to require that the lowest opening of all new buildings located in B and C Zones (i.e., outside the floodplain) be at least one foot above the crown of the street or otherwise protected from local drainage flows.

In 1996, the Liaison Committee recommended an alternative approach to protecting new buildings from local drainage problems. It recommended a lot grading plan for every new building or addition. The Board of Trustees adopted the recommendation.

- e. The Village Code Enforcement Office should review its permit procedures in order to make them more efficient. The following should be pursued:
- 1) Dropping the requirement for grade orders for all permits in B and C Zones while keeping the requirement for FEMA elevation certificates for new buildings and substantial improvements in the 100-year floodplain,
 - 2) Checking the height of the lowest opening of new buildings before the foundation is poured,
 - 3) Receiving delegated floodway permit authority from the Division of Water Resources, and
 - 4) Having the procedures reviewed by the Division of Water Resources for compliance with state and federal requirements.

Items 1 and 2 have been incorporated into the office's procedures. Item 3 is dependent on the Division of Water Resources (now the Office of Water Resources or OWR). OWR's policy is to no longer delegate floodway permit authority.

As for item 4, in December 1995, OWR visited the Village and reviewed code enforcement procedures. In its report to the Village President, OWR said "Overall, we were impressed with South Holland's understanding and implementation of the requirements....The Village has well-established permit application and review procedures....Your files are well-organized and accessible...." OWR was also impressed with the Village's digitized floodplain maps, permit database and elevation certificates.

- f. The Village Plan Commission should review the recommended provisions of the NIPC model stormwater management ordinance to determine if they should be adopted.

In 1996, the Flood Liaison Committee voted to not adopt the NIPC provisions. Instead, it recommended that the stormwater management regulations be amended to expand their jurisdiction to cover more development projects. This amendment was approved by the Board of Trustees. A new model ordinance will soon be available from the South Suburban Mayors and Managers Association.

- g. The Village Public Relations Office should meet with real estate organizations to discuss a voluntary flood hazard disclosure program.

The Public Relations Director met with real estate offices and reviewed this issue. Due to the large number of suburbs that they serve, it was concluded that such a program in only one town would not work.

6.7 References

- Comprehensive Plan for the Village of South Holland, Trkla, Pettigrew, Allen & Payne, Inc, 1989
- “Village of South Holland Zoning Ordinance”
- Chapter 14, “Planning and Development,” South Holland Municipal Code
- Floodplain Compliance, Enforcing Your Community's Floodplain Management Ordinance, Illinois Department of Transportation, Division of Water Resources, 1991.
- Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas, Federal Insurance Administration, Technical Bulletin 1-93, 1993.
- “Model Stormwater Drainage and Detention Ordinance, A Guide for Local Officials,” Northeastern Illinois Planning Commission, 1990.
- Stormwater Management, Illinois Department of Transportation, Division of Water Resources, 1982.
- CRS Credit for Higher Regulatory Standards, National Flood Insurance Program/Community Rating System, 1999.
- CRS Credit for Stormwater Management, National Flood Insurance Program/Community Rating System, 1999.

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