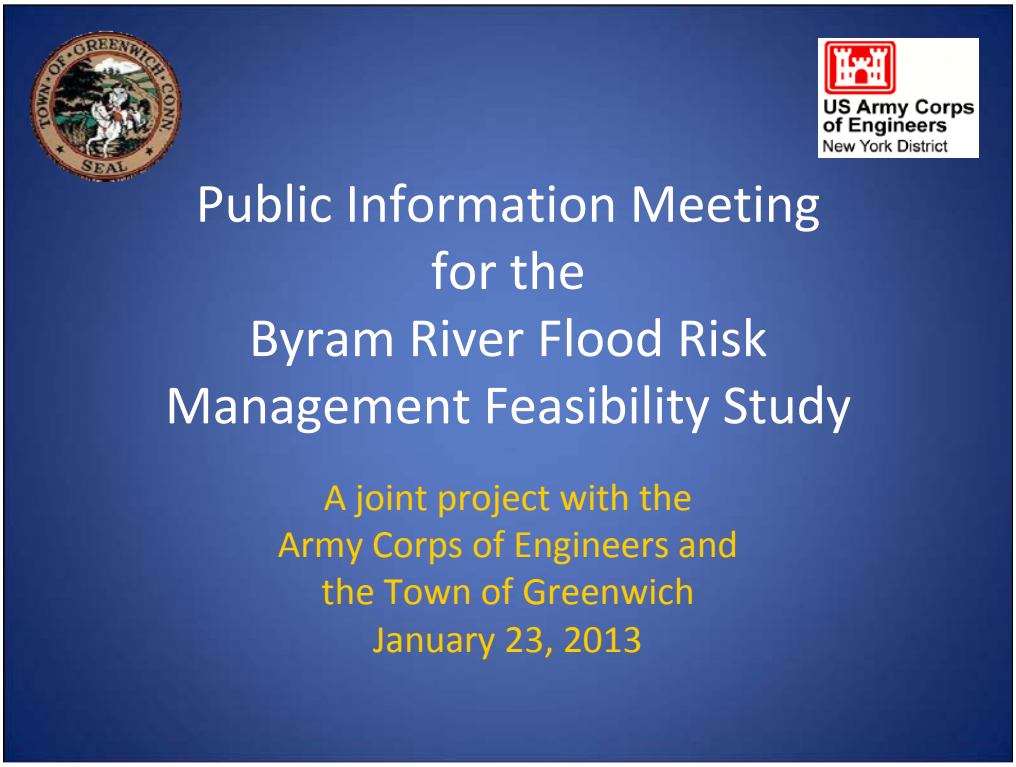
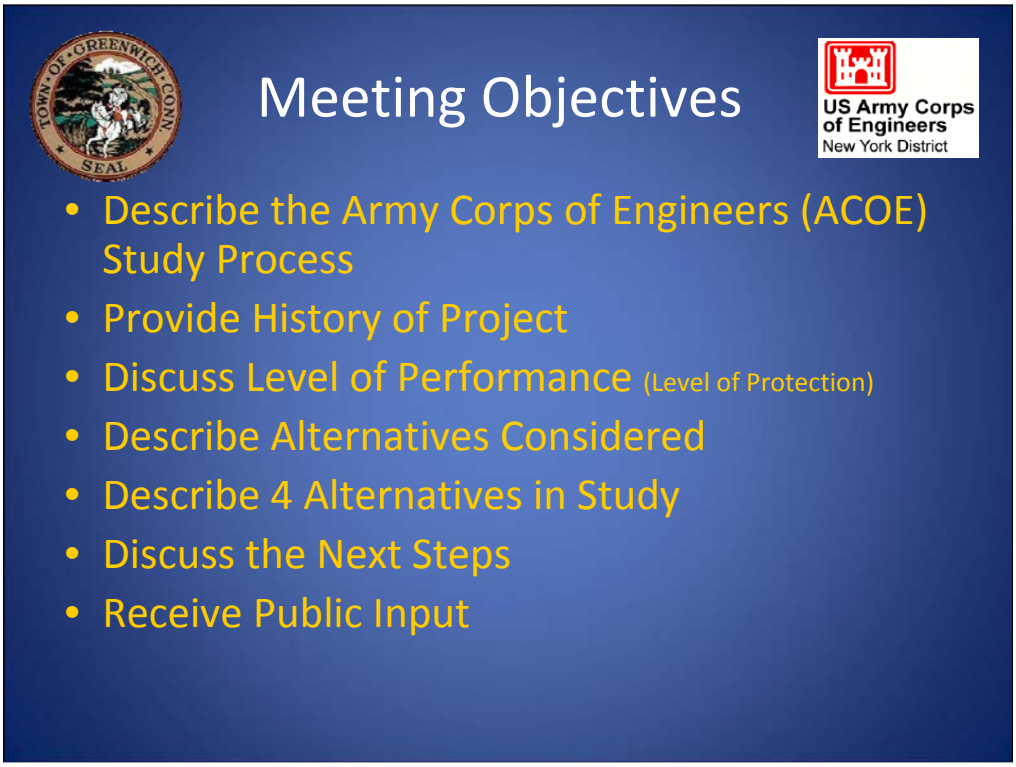
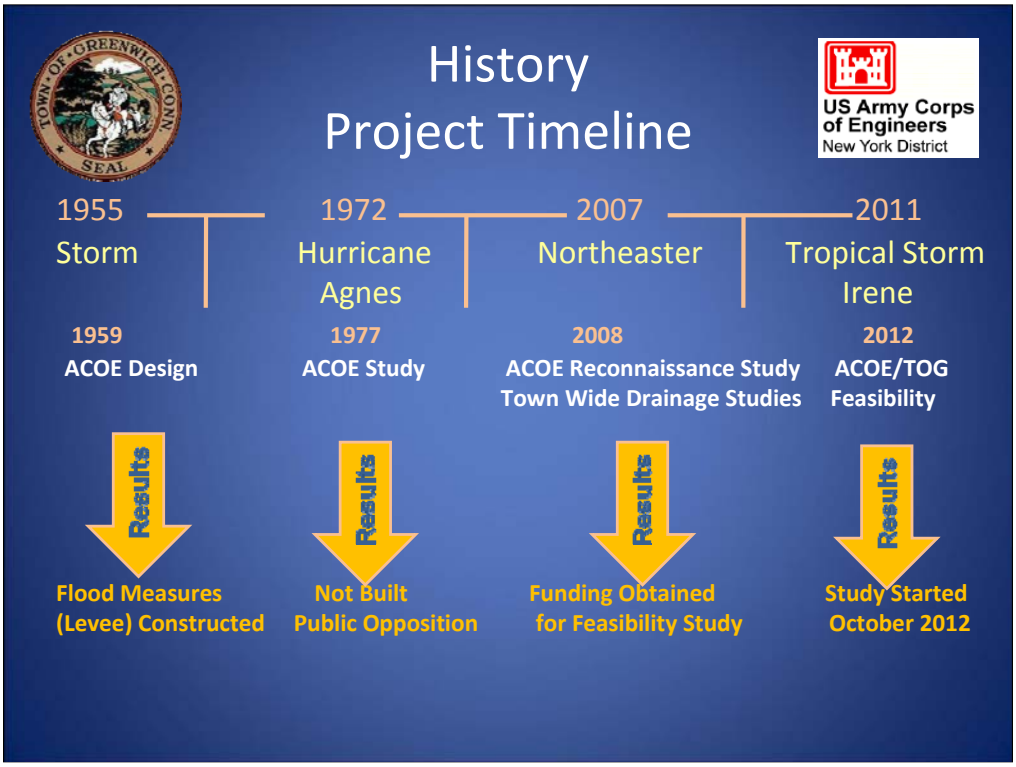


This presentation was prepared for the first public information meeting to describe the Byram River Flood Risk Management Feasibility Study. This project is a joint effort of the Army Corps of Engineers (Corps) and The Town of Greenwich. The area under study runs from the Bailiwick Bridge south to Route 1, with particular focus in the Pemberwick neighborhood.

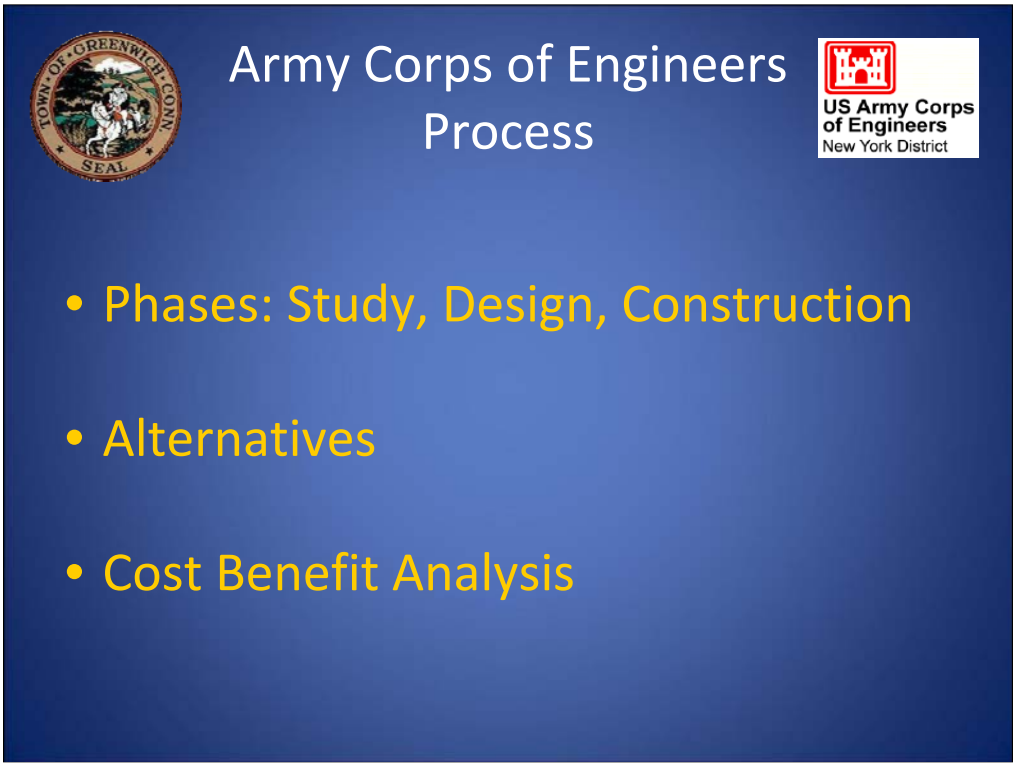


The presentation is designed to achieve the objectives listed in the slide: to familiarize residents with the Corps study process as well as providing information that will help study area residents provide the project team with helpful input for use in the study.

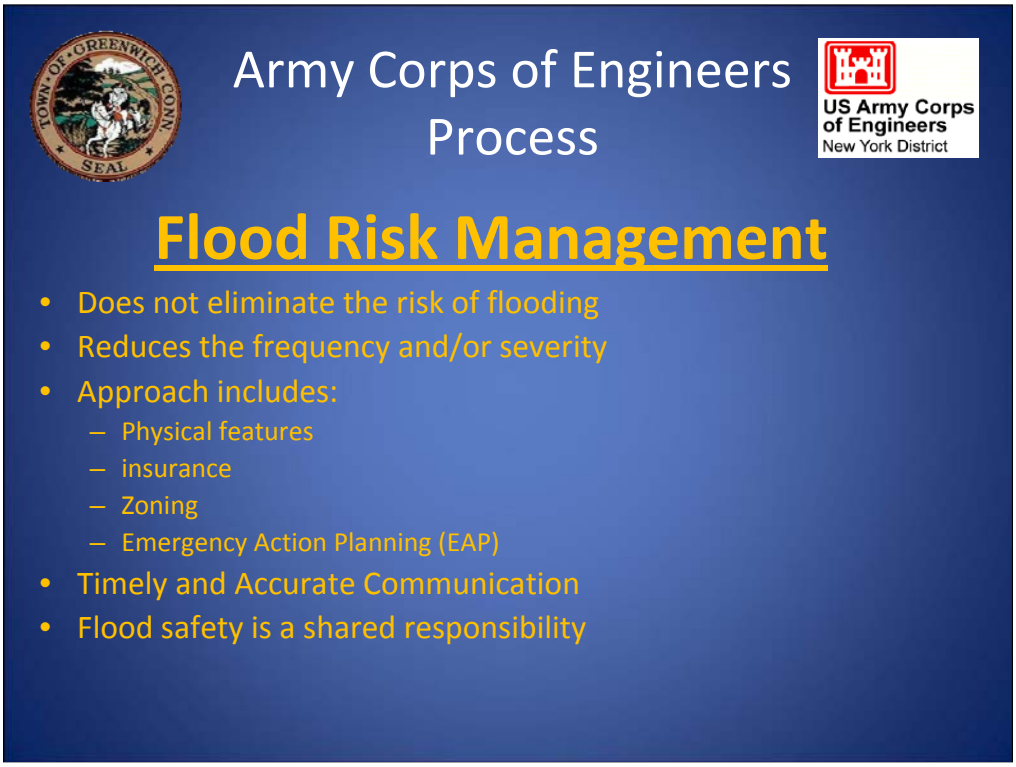


This slide lists several major storm events that have occurred over the past 60 years which have affected the Byram River watershed. During that time, several studies have been completed by the Town of Greenwich and the Corps. Work in the 1950s resulted in constructed measures – the levee from Comly Avenue to Halock Drive. In the 1970s, public opposition to the Corps' recommended improvements resulted in no change to the Pemberwick neighborhood. In 2007, the Corps was authorized to study flooding in Westchester County and along the Byram River, which resulted in this feasbility study becoming possible.

The current study was signed in October of 2012 and work was started. The study is estimated to cost approximately $3 million dollars to complete and is to be completed within 3 years, subject to the availability of funding.



The Corps follows a specific process to complete its studies, from design to construction, which is described in the presentation. In addition, the Corps approach to flood risk management and cost-benefit analysis will be presented. It is important to remember that the Corps must conduct its work in accordance with federal regulations as well as its own internal policies and procedures. These are designed to make sure that federal dollars are being used on projects that meet the standards set by Congress for the long term interests of the nation.



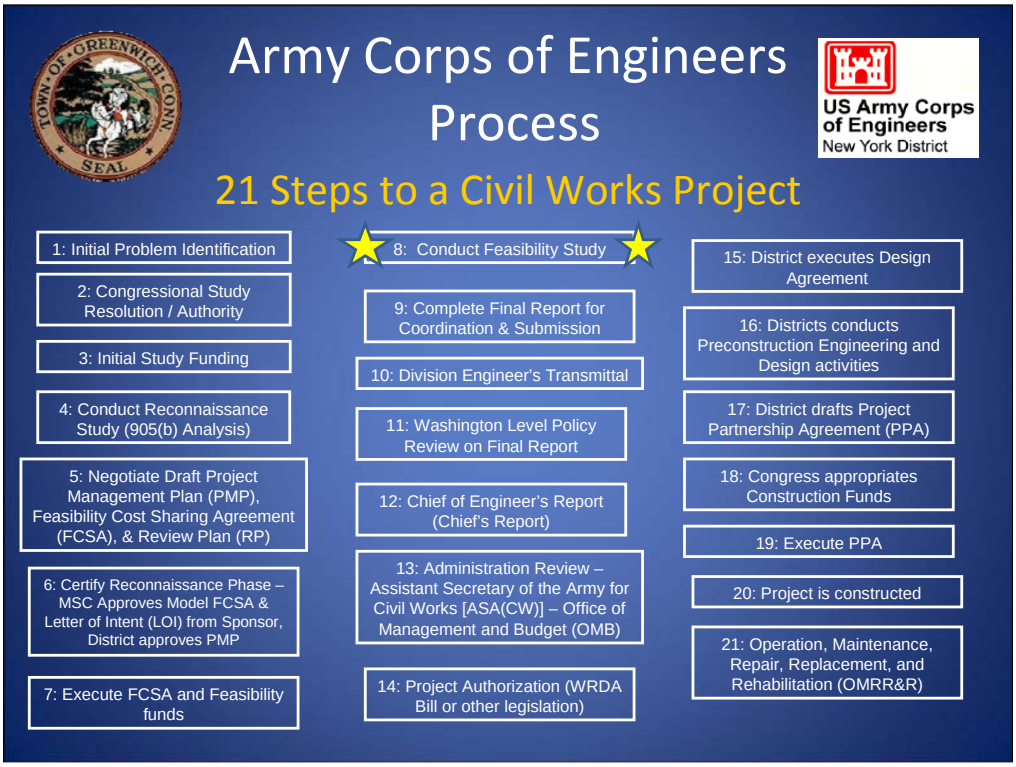
It is important to recognize that no flood risk management project can eliminate the risk of flooding. Given a long enough period of time, all projects will experience an event that is larger than that for which they were designed.

Flood risk management projects can only reduce the frequency and/or severity of flooding and provide additional time to respond.

Physical features are only a single component of a flood risk management approach. Insurance, zoning regulations, and Emergency Action Plans (EAP) are some other important aspects of flood risk management.

Communication of accurate and timely information about the risk of living in a flood prone area is critical and best implemented at the local level.

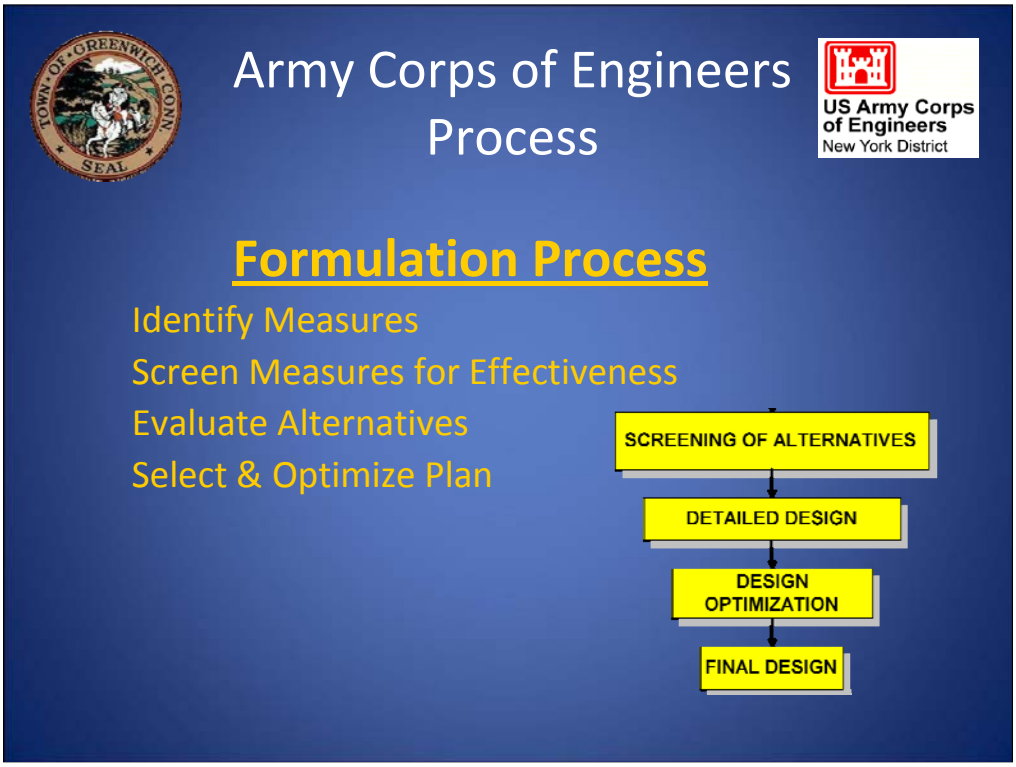
Flood safety is a shared responsibility and a collaborative approach is required to effectively manage the risk of flooding and to save lives. Parties involved may include the Corps, FEMA, state, county, local government., emergency personnel, and the residents themselves.



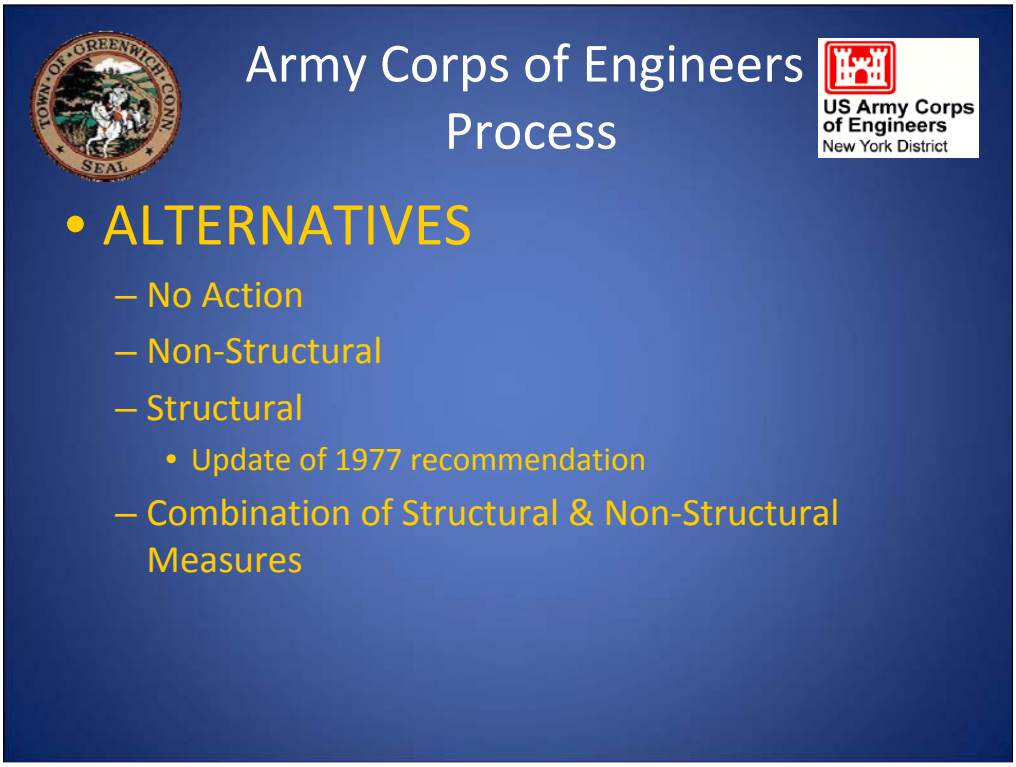
This slide shows the 21 step process of a typical Army Corps Civil Works project, from study to design to construction. Please note that these boxes do not accurately reflect the amount of time associated with each step; they only lay out the sequence of steps to be navigated. Being at Step 8 out of 21 ("Conduct feasibility study") does not mean that we are 1/3 of the way toward project completion; the only thing we can say for certain is that there are 14 steps remaining.

Under the new Civil Works Transformation Initiative, the Army Corps is mandated to complete its feasibility studies (that is, steps 8 and 9 on the slide) in 3 years within a budget of $3 million. So in an ideal situation, the Byram River study, which began in late 2012, should be complete by late 2015.

However, our progress is dependent upon the flow of funding. Generally, the Corps receives an increment of funding each fiscal year, rather than all of its Federal funding upfront. The study team does its best with the available resources, but a study that receives smaller increments of funding than it needs for each year will take longer to complete. Study progress is also affected by required Corps reviews. Each District within the Corps is required to send out its products for Agency Technical Review, which means that it goes out to a District in another part of the county for review. These reviews generally take 2 months, but are not within direct control of the Corps' project team. If a project triggers certain criteria for cost, size, or complexity, it may require Independent External Peer Review. That review goes outside the Corps and may take up to six months to complete, and is not included in the 3 year study target timeframe.



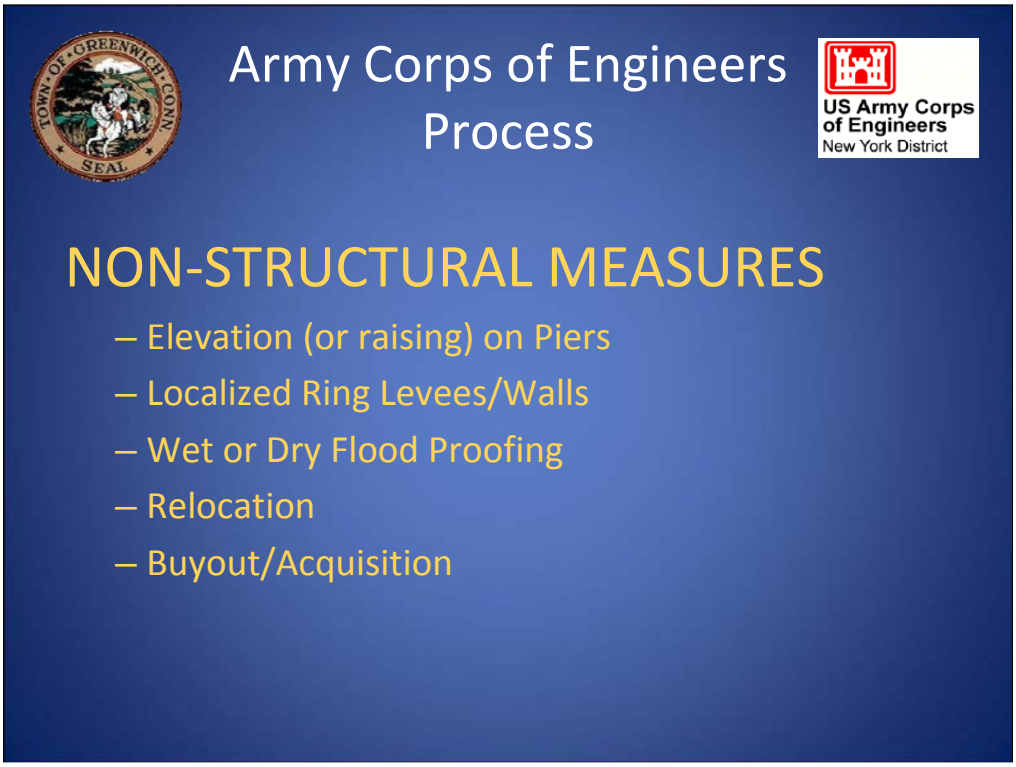
During the study formulation process, features and measures to address the problem are proposed. These proposals undergo initial screening to assess effectiveness. Measures which would not be effective due to site constraints, scale concerns, and/or implementability issues are not carried forward. The goal is to develop a group of measures which may feasibly provide flood risk management that merit further study to determine if they are cost effective.



Given the information already available from prior studies, and in order to stay within the $3 million study budget, 4 possible flood control alternatives will be examined. By regulation, our study must include a "No Action" alternative and a non-structural alternative. In addition, the study team has determined that the structural alternative will be based on the 1977 study's most cost effective solution. This will be modified based on current conditions in the study area today. The fourth alternative will be a combination of structural & non-structural measures, to be determined using neighborhood input regarding the locally preferred solution. Each of these alternatives will be reviewed in more detail in the following slides.

The "No Action" alternative is also known as the Corps "Without Project Future Condition." After an inventory of existing conditions and identification of the problem, the next step is to identify what will happen over the next 50 years if the Federal government does not address the problem. The project economist will calculate the expected damages, based on the structure inventory that was conducted Fall 2012. It is important to note that other levels of government, such as the Town, may act, and their long term plans for the area are incorporated into the Without Project Condition. The area would remain as it is currently, and flood control measures would consist of current measures, i.e. evacuations, sandbagging, and repairing damage through the current flood insurance program. Additionally, the Town would continue to require parcels being redeveloped to comply with the current FEMA and Town requirements elevating proposed structures above base flood elevations.

The No Action/Without Project Condition is important because it functions as the baseline against which the other study alternatives (structural, non-structural, combination) are compared. It is chosen as the study recommendation when there is a lack of economic justification for the project. In other words, if the benefits from the project are exceeded by the cost (i.e. the benefit to cost ratio is less than 1), or when there is a lack of local interest or support for the plan that is recommended based on Federal guidelines, the No Action Alternative is selected.



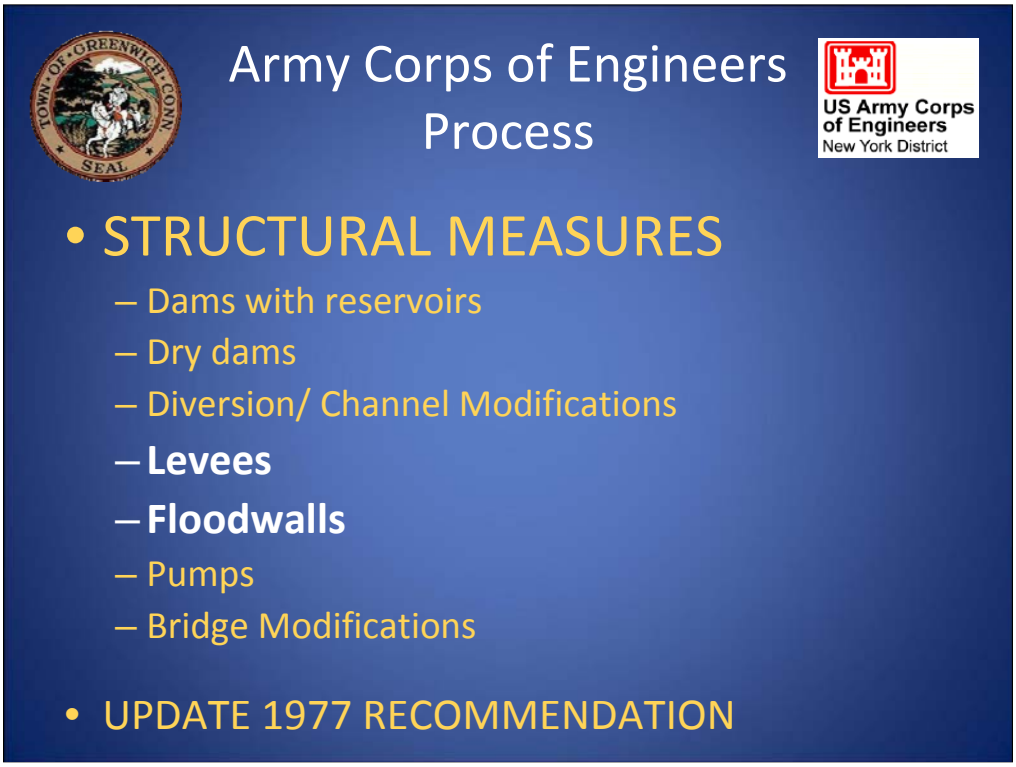
Non-structural measures reduce flood damages without significantly altering the nature or extent of the flooding. In summary, a purely non-structural plan means that no changes are made to the river itself. There may be considerable alterations to the affected houses and other structures, including flood proofing, elevating the houses or building berms or walls around houses. Other non-structural measures include relocations or buyouts of affected parcels.

The website includes a link to a Corps video that presents non structural measures graphically, as well as outlining the economic analysis the Corps uses. The short version is a 5 minute presentation of floodproofing. The long version includes the economic piece noted above, and is approximately 12 minutes in length. These can be found at:

http://www.greenwichct.org/Government/Departments/Public_Works/Engineering_Division/Stormwater_Information/Byram_River_Feasibility_Study_Info/

These photos illustrate elevated homes, including examples on Hollow Wood Lane in Pemberwick. These are one example of what the Corps calls non-structural solutions.

Here are some visual examples of floodproofing. The example on the left includes a waterproof membrane behind the brick wall and the modifications on the right make changes to the entry of a property. When walls are floodproofed, windows, doors, and other openings must also be addressed.



Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. They can include dams with reservoirs, dry dams, channelization, levees, walls, diversion channels, pumps, and bridge modifications. Within the Byram River, levees and floodwalls were the focus of the 1977 feasibility report, as they were determined to be effective potential solutions for flood control. In the current study, the project will start with a review of the features of the 1977 plan, and update the costs to current price levels to serve as point of comparison for any structural plan that would be developed today.

While all measures will be reviewed, the main characteristics of levees and floodwalls (which are the most feasible structural measures for this study) will be discussed in the following slides.

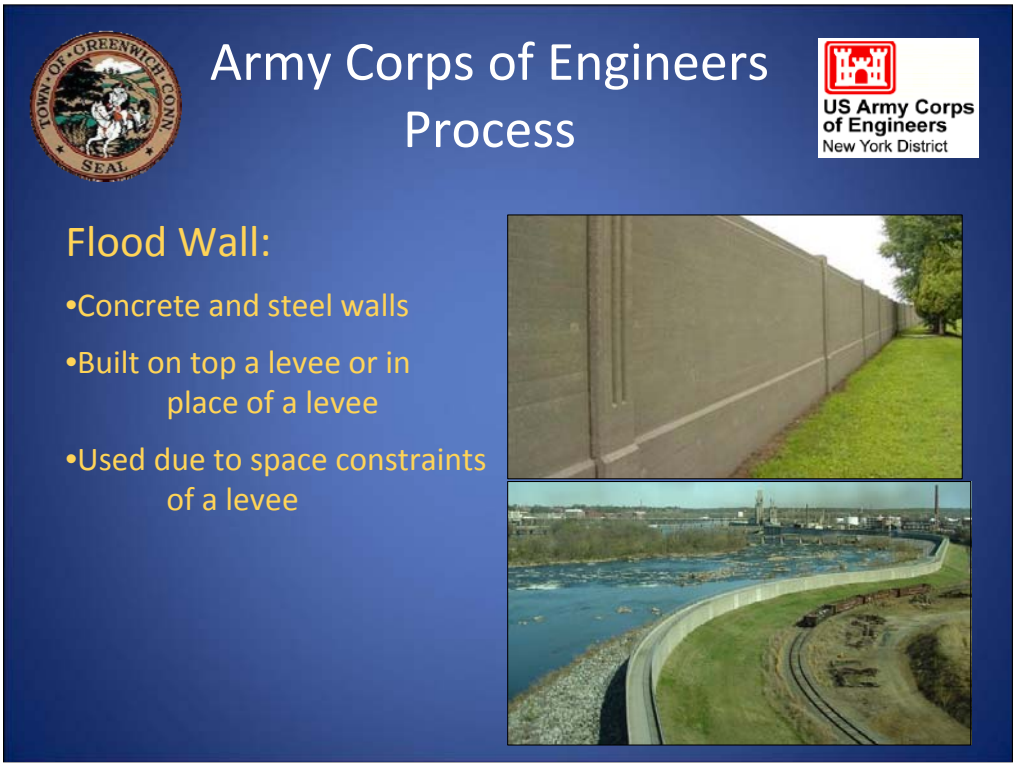
Army Corps of Engineers Process

US Army Corps of Engineers
New York District

Levee:

- Earthen structure
- Triangular Cross Section
- Base width = 10x height
- Can have alternative use

A levee is an earthen structure made of clay or other structural fill material. Examined in cross section, it is a triangle with the top leveled off. The base is commonly 10 times as wide as the height. It can be designed to support pedestrians or even cars.

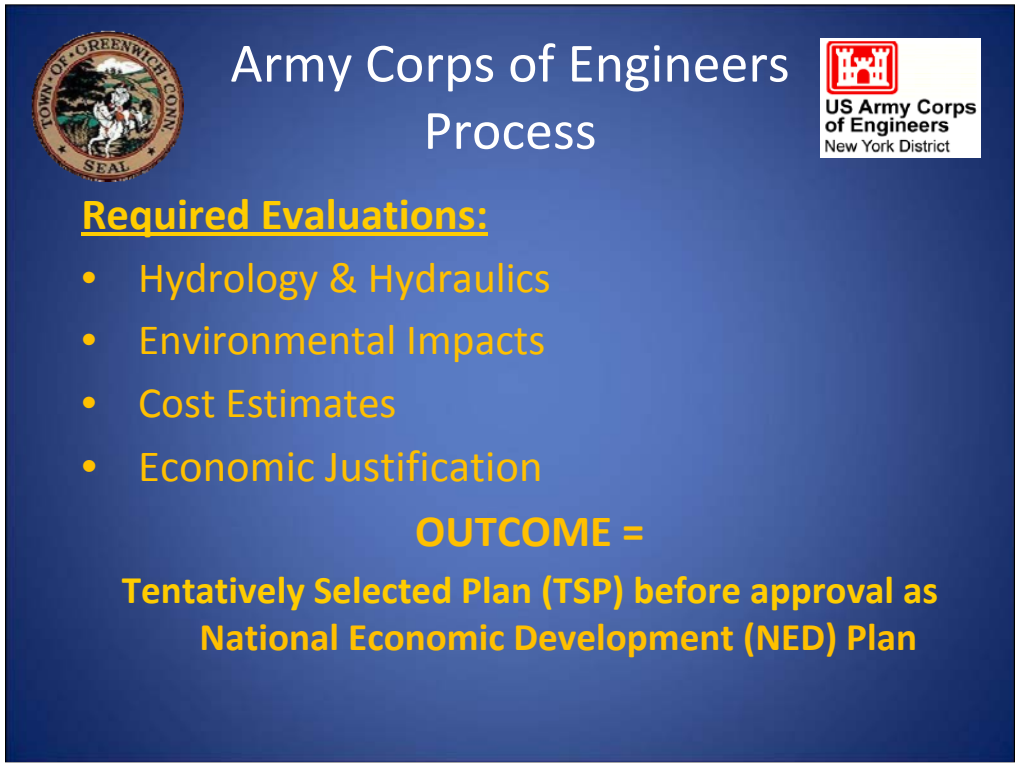


A flood wall is built with concrete and/or steel. It is can be built either on top of a levee or in place of a levee. Generally, it is built where there is not enough space for the levee's broad base. One critical difference between levees and floodwalls is that a levee can still provide some flood control function if some erosion or water overtopping occurs, but floodwall failures can be catastrophic.

The third alternative in this study will include some combination of structural measures, mostly likely levees, floodwalls, and/or channelization, but ideally with more aesthetic appeal than the 1977 plan. Physical constraints within the Byram River study area drive the focus on levees and floodwalls. This is further discussed later in this presentation.

The fourth alternative in this study is a combination of structural and non-structural measures. While the actual components are still under consideration, an example could be levees and elevation of some homes. At this early stage in the study process, the specific details associated with this alternative have not been formulated. This allows the Town and the Corps to explore several possible combinations.

Fundamentally, during the alternatives analysis, each option's performance is compared against the "No Action" alternative. "No Action" is the same as the "Without Project" condition. In addition, performance is measured at different flood stages (e.g. 50 year, 100 year, or other selected storm conditions) to determine the optimal cost benefit for an alternative.



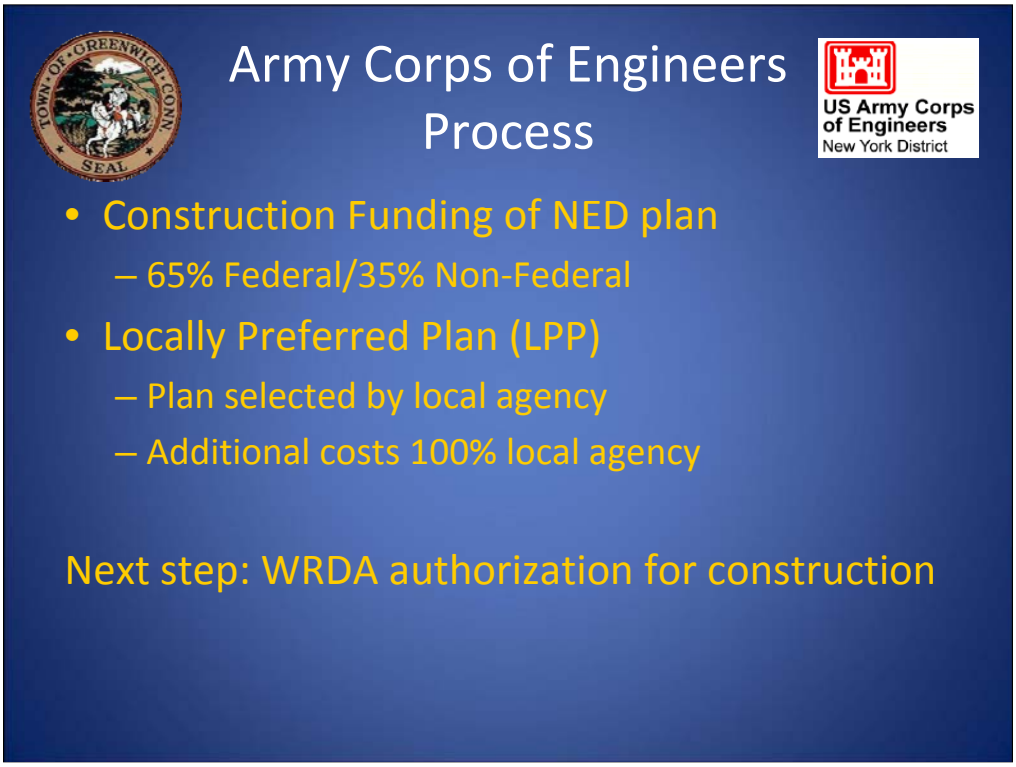
Four key evaluations must be completed for each alternative: Hydrology and Hydraulics, Environmental impacts, Cost Estimates and the Economic Justification for the plan selection. No alternative analysis is complete until these evaluations are conducted.

Hydrology and Hydraulics, or H&H: This task evaluates where the water will be when a potential solution is implemented. This work includes modeling the project area's existing and improved conditions to generate flows and water surface elevations. Also included is an analysis of risk and uncertainty.

The potential environmental impacts are analyzed by the project biologist for each alternative. These include cultural resources, habitat for fauna and flora, and avoidance of hazardous, toxic, and radioactive waste (HTRW). The environmental analysis also includes social consequences, such as displacement of individuals, business losses or gains, and the addition or loss of recreational features. This is where birdwatchers and other nature lovers can contribute their opinions.

Each alternative has a cost estimate, which forms half of the Benefit to Cost Ratio (BCR). These cost estimates are based on screening level quantities and estimates.

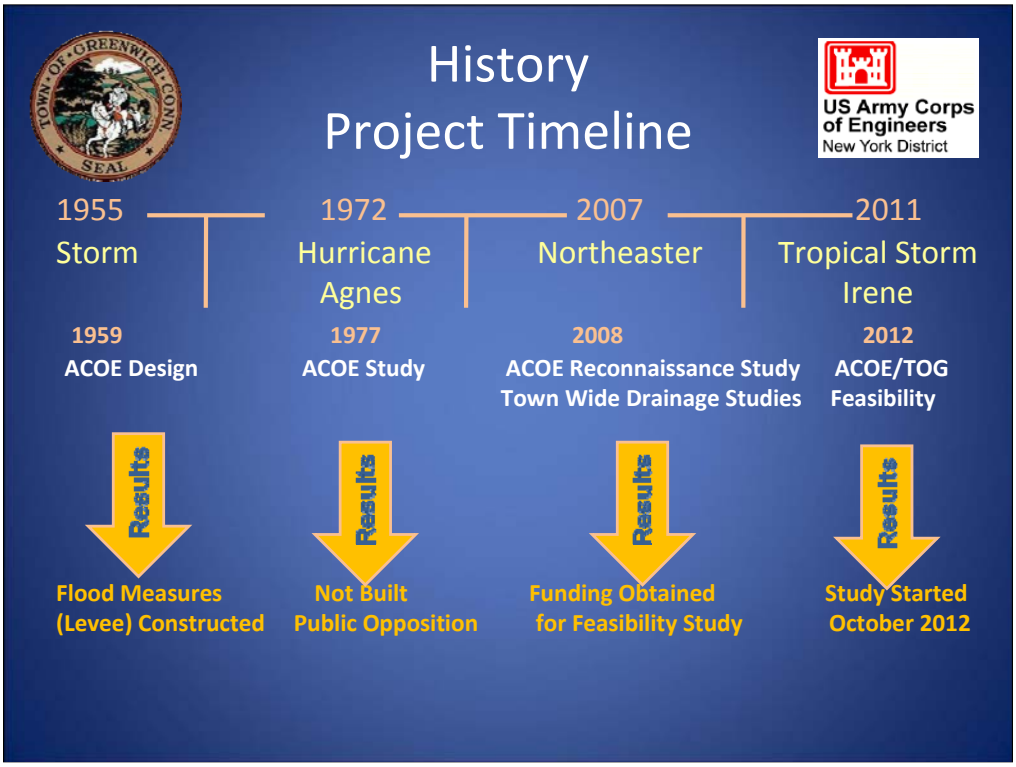
For the economic analysis, the alternatives are compared at similar levels of performance – it would not make sense to compare one plan at a 10 yr level of performance and another plan at a 25 year level of performance. And, as noted earlier, the benefits for each alternative are compared against the baseline of No Action to arrive at the net benefits. The Benefit to Cost Ratio for an alternative must exceed 1 to be economically justified. Of all the alternatives with at least a BCR of 1.1, the one with the highest net benefits is chosen as the National Economic Development (NED) Plan.



Funding for construction of the National Economic Development (NED) plan is 65% Federal, 35% Non-Federal. The Non-Federal partner may enter into funding partnerships with other non-Federal entities for its share.

In some cases, the local partner may feel that the NED plan does not suit its needs best, and may choose a locally preferred plan, with the approval of the Assistant Secretary of the Army. The locally preferred plan is one of the other plans from the study, and may either provide a greater or lesser level of performance. If lesser, it must be demonstrated there is no less costly plan that provides the same level of performance, and that the risks of going to a lesser level are understood. A waiver from the ACOE Headquarters is required. If the locally preferred plan's cost is greater than the NED plan, the entire amount of the cost difference between the two plans is paid by the local partner.

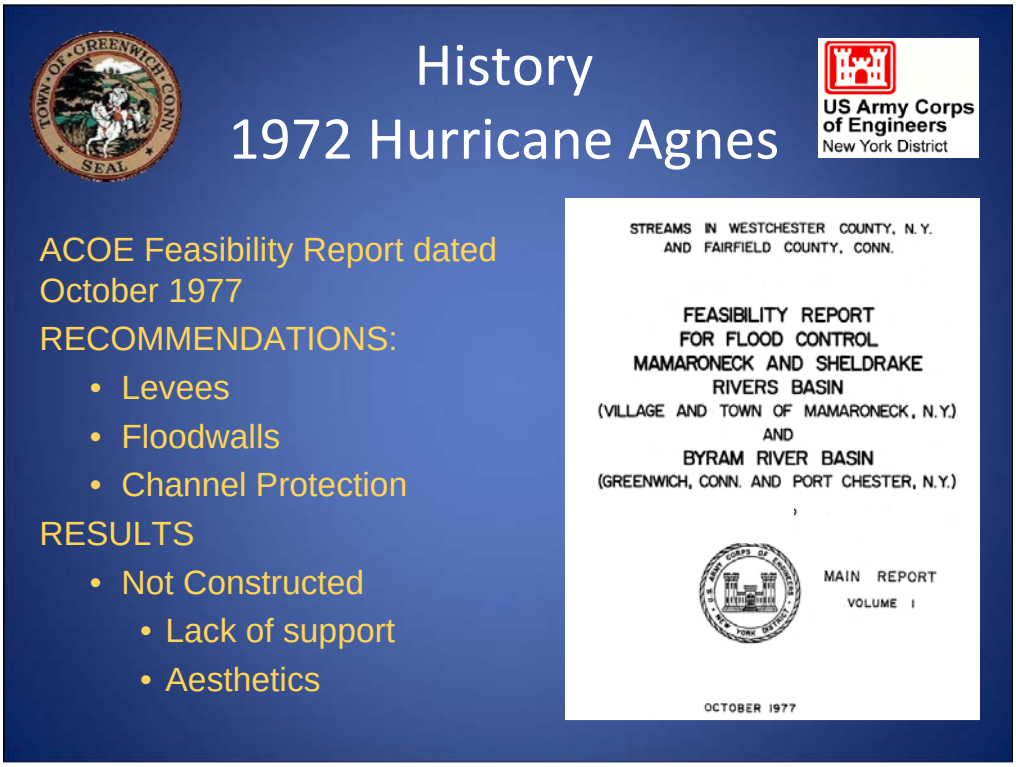
The WRDA (Water Resources Development Act) is a collection of public laws passed by Congress to address water resources. It is the most common legislative vehicle for Corps authority to construct projects. The last WRDA was passed in 2007, and before that in 2000. For a project to go forward, it must be authorized for construction by Congress through this legislative framework.



This slide is repeated here as a reminder of the various storms which have driven study work and, in some cases, resulted in construction or a decision not to proceed. Some storm specifics are presented to review their magnitudes and the effects resulting from them. DPW has created a questionnaire which is available on the Town website to obtain feedback from Pemberwick area residents regarding storm damages and associated water levels, as well as their opinions about the type(s) of flood protection solutions they potentially would like to see in their neighborhood. The information in the following sections is meant to help provide background information for this process.

When we compare impacts to properties based on the data received from our building inspection division, the number of impacted properties within the study area are as follows for each of the following storms: March 2007 – 60, April 2007 – 50, March 2010 – 0, Irene 2011 – 62. The number of impacted parcels indicates that looking only at the rainfall data can be deceiving since the March 2007 storm had only about 2.5 inches of rainfall.

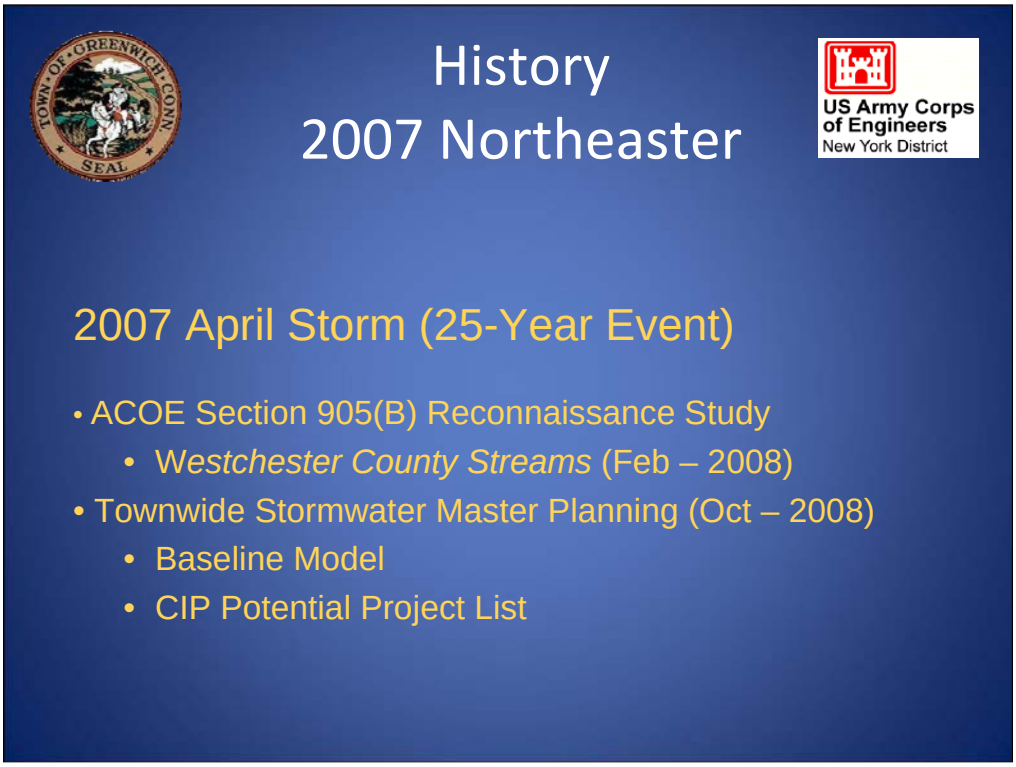
The October 1955 storm hit the area which resulted in the ACOE completing a Design Memorandum in 1959. The recommendations of this study were to modify the channel south of Comly Avenue and construct a levee to protect homes. Only a portion of the work was completed as the levee construction ended near the southern portion of Halock Drive.



Hurricane Agnes hit the area in 1972 and brought to the forefront the need for additional flood protection measures. A Feasibility Report was completed in October of 1977 by the Army Corps of Engineers. This study looked at several alternatives (levees, floodwalls, elevation, relocation, etc.) similar to those discussed earlier in the presentation. The recommended alternative included installing levees and floodwalls to provide protection for the 100 year storm. Due to lack of plan support and the area residents' concern for the aesthetics of the structural improvements, the project was not constructed.

The full report is available for further review on the Town website:

http://www.greenwichct.org/Government/Departments/Public_Works/Engineering_Division/Stormwater_Information/Byram_River_Feasibility_Study_Info/



In April 2007, a Northeaster hit the area. The approximately 6.4" of rainfall was equivalent to a 25 year event, and was exacerbated by antecedent conditions – the ground was saturated from a wet early spring season. Flooding occurred in the study area and prompted the Corps to complete a reconnaissance study. In addition, the Town of Greenwich embarked upon their Townwide Stormwater Master Planning effort. Over several years, DPW has studied all the Town's riverine systems and major coastal drainage networks to evaluate flooding limits. These studies have resulted in the Stormwater Capital Improvement Project list that is found on the Town website. The list was prioritized based on impact to properties, impact to emergency services and the ability to make improvements that would not adversely impact the area, among other factors. Projects deemed critical to public safety were identified. The list represents a range of potential projects, and is not meant to imply that every project on the list will be constructed. It is a guide to areas where improvements may be pursued as areas are redeveloped or further study is needed to determine actual drainage network performance. For example, while a drainage network may be undersized, if it results in minor nuisance yard flooding, it is not of sufficiently high priority to be considered for capital planning. The Byram River study is one of the projects on that list.

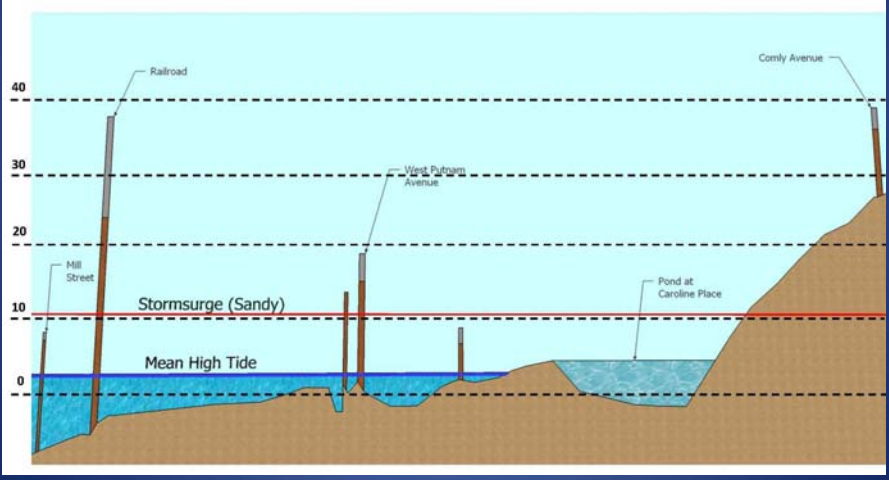
In 2011 and 2012, the Town was hit with 2 hurricane events. 2011's Tropical Storm Irene was primarily a rain event, with less wind damage and a lower storm surge. This storm delivered approximately 6.3 inches of rain in a 24 hour period which is equivalent to a 25 year event. 2012's Storm Sandy was considered a coastal event. This storm had much more wind damage and a significantly higher storm surge. Luckily there was approximately ¾ of an inch of rain over the 24 hour period, which is less than the 1 year rain event.

It should be noted that the Pemberwick area on the Byram River is tidally influenced as there were times during Hurricane Sandy that the river appeared to be flowing uphill. Given the storm surge, water flowing down the river was unable to flow freely downstream under such conditions. The Town was fortunate that the rainfall from Sandy was minimal and therefore minimized the impact to the study area and other riverine neighborhoods subject to flooding under such conditions.

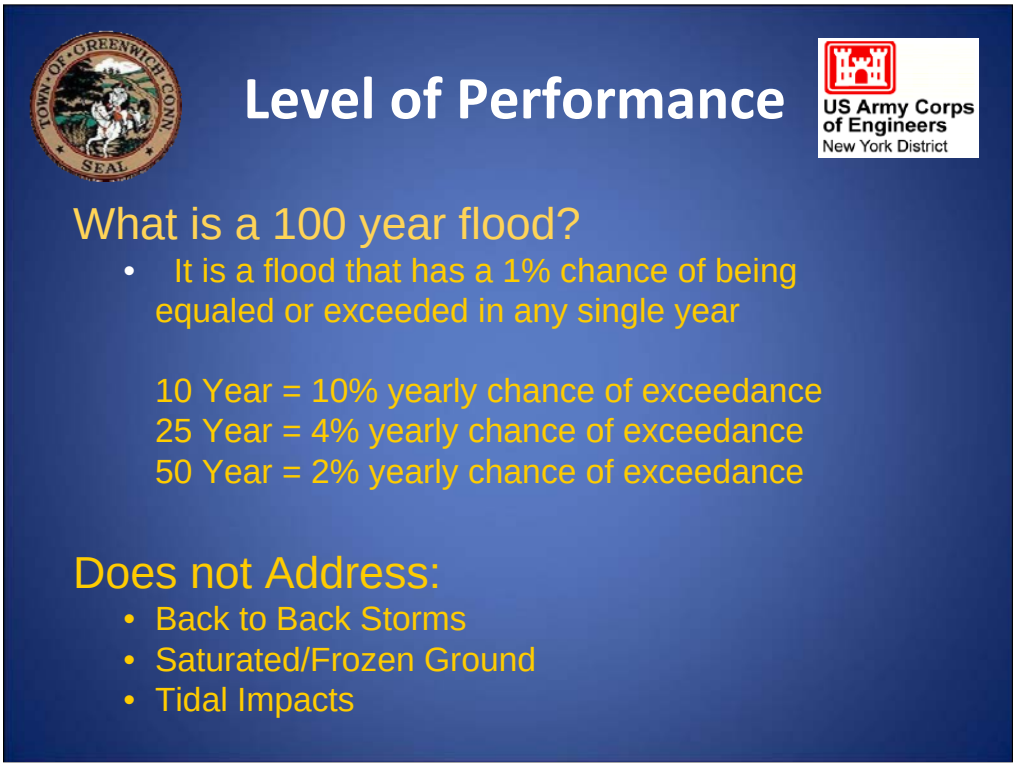
ALTERNATIVES CONSIDERED

US Army Corps of Engineers
New York District

TIDAL IMPACTS TO DRAINAGE AREA



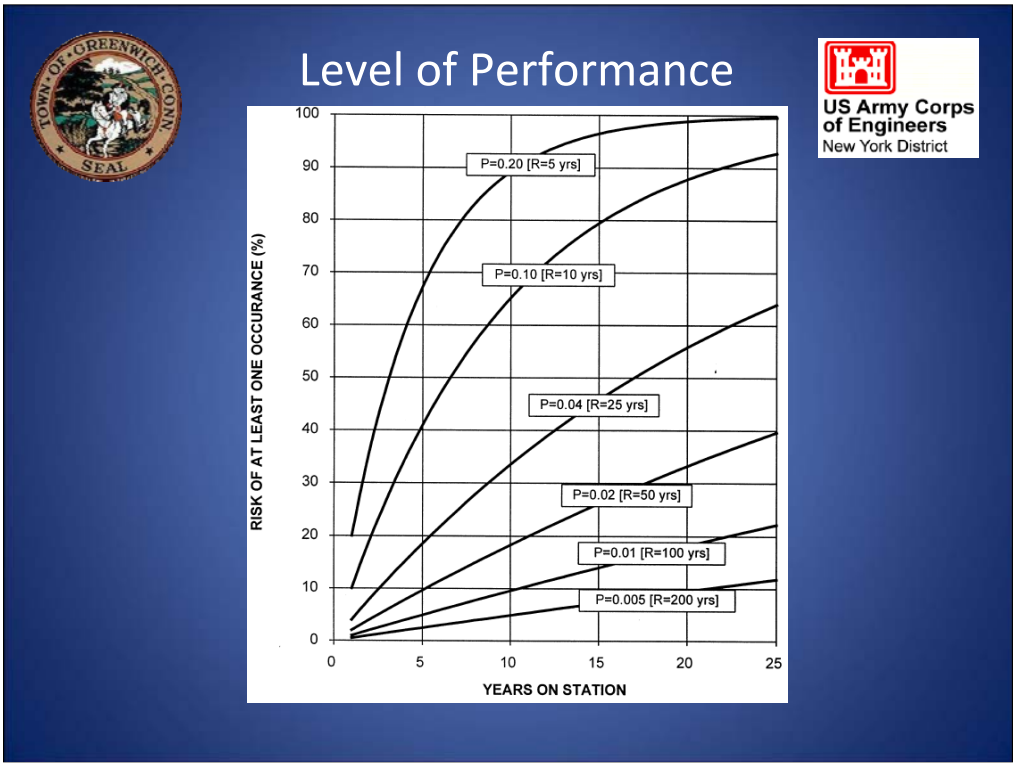
This figure shows how the tide impacts the Byram River's Pemberwick area and how during a storm such as Sandy, no matter how deeply the river is dredged, the tidal influence in this area would displace all the dredged area. In other words, the water flowing down the river runs into the surge, and the water surface rises, causing flooding. Dredging would not lower the water surface elevation and relieve flooding potential in this situation.



A 100 year storm is a storm that has a 1% chance of being equaled or exceeded in any single year. It does not mean the storm that only happens every 100 years. The chart on the following slide further illustrates the likelihood of various storms. These storm designations are based on statistical analyses of rainfall data collected over many years across a region (for example, the Town uses a dataset based on New England rainfall data for its drainage manual).

Storm event terminology does not take into account many antecedent conditions, such as the impact of two storms occurring back to back, ground saturation, storage areas available capacity, frozen ground and the inability to infiltrate, or potential tidal impacts caused by storm surge. In other words, several inches of rain falling upon saturated ground when water levels are already high may have a much more deleterious effect as compared to the same amount of rain falling after several dry months when water levels are low.

As noted earlier in this presentation, even with flood protection measures in place, an area may still experience flooding under certain storm conditions. As a result, the Corps has recognized the need to change its terminology from “level of protection” to “level of performance” when referring to a given structural or non-structural alternative. The term “level of protection” provides an unjustified comfort level, implying that no flooding will occur at or below the design conditions.

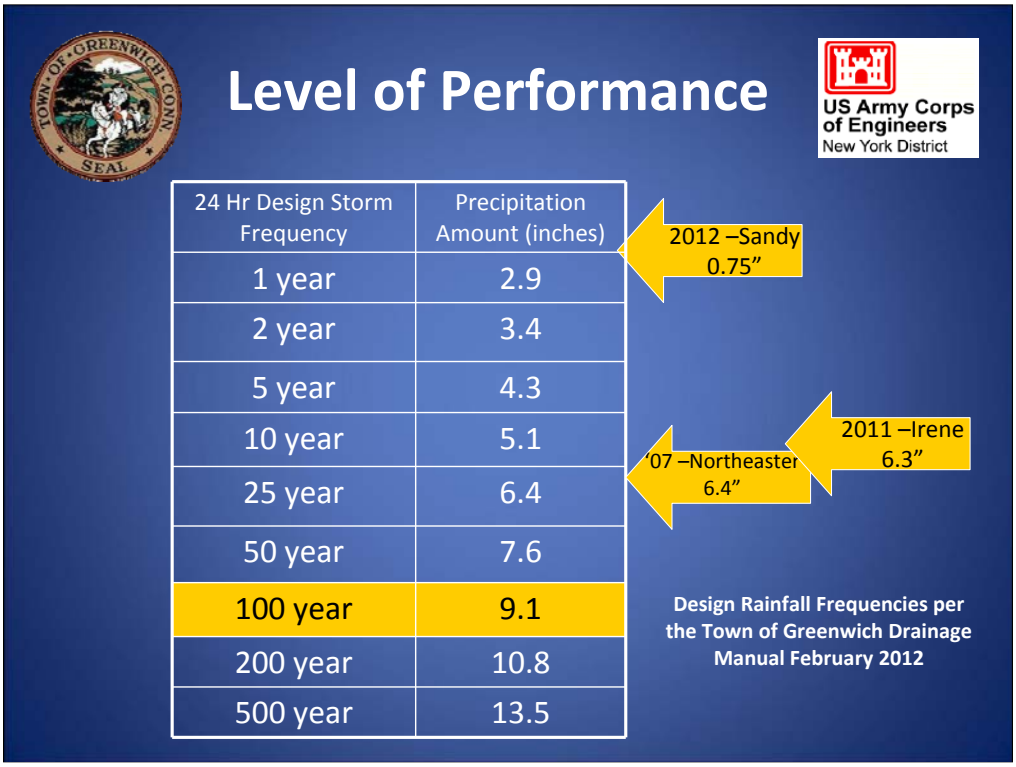


This chart shows the encounter probability of various storm events – in other words, as noted on the Y-axis, the risk of a storm of a given size occurring at least once in the number of years selected on the X-axis.

For instance, the risk of at least one 25 year event occurring within the next 10 years is approximately 35%. The risk of at least one 50 year event occurring in the next 25 years is approximately 40%.

Although this chart only goes to 25 years, utilizing the formulas from the chart, the risk of at least one 100 year event occurring within the life of a 30 year mortgage is about 26%.

Another example: The risk of 1 occurrence of the 10 year event in a 10 year period is only about 67%. This emphasizes that a 10 year event is not the storm that WILL occur every 10 years.



This slide shows the rainfall amounts that have been determined as the design frequencies for the Town of Greenwich and are published in DPW’s current version of the Town Drainage Design Manual.

The rainfall quantities from recent storms are shown, illustrating that they have been at or below the 25 year event. It is important to note that a 100 year storm could create significantly more damage to the Pemberwick area neighborhood than has been experienced in the past few major storms.

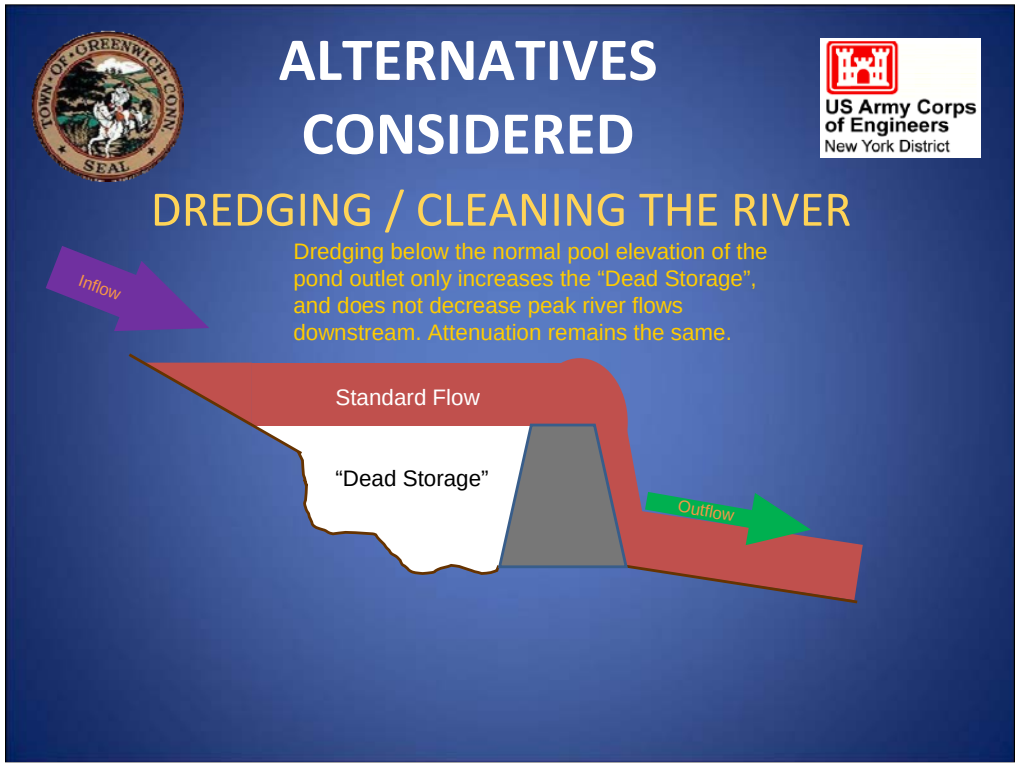
While the Town was working out the study agreement details with the Corps, DPW had already begun studying the Byram River's hydrology and hydraulics, as well as reviewing possible flood control alternatives. Many of these alternatives were reviewed as part of the Corps' 1977 Study as well. That report found certain alternatives to be infeasible due to the lack of benefits or the area of impact making construction infeasible. Two alternatives frequently requested by residents, dredging and storage to hold run-off, were among those considered. These were reviewed and were again determined to be infeasible and thus not included in the current feasibility study. These will be expanded on further in upcoming slides.

As previously explained, to fit within budget and time constraints, the Corps limits the feasibility study to 4 alternatives. The 4 alternatives selected for review include No-Action, Structural, Non-Structural, and a Combination plan or Local Preferred Plan. The feasibility study scope was written accordingly and the entire document can be found on the Town website.

Dredging, by removing silt and debris, may improve an area's appearance by allowing for shoreline protection or landscaping. However, as discussed further in the next slide, dredging the Byram River will not provide storage volume for flood control.

In addition, erosion is a natural process. As material is carried in streamflow down the Byram River, this sediment deposits out in areas where flow is slowed down and material has time to settle. This occurs in the various ponds along its length, including Caroline Pond at the bottom of the Comly to Halock levee area. This is a natural process, and much of the upstream river is still in a very natural condition and does not see the extreme erosion which can be experienced in a more urbanized setting.

Removing sediment can be very expensive as well as disruptive to stream biota (fish, amphibians, plants, other wildlife etc.) and the neighborhood itself. Many times, these sediments can contain various materials that require special remediation. This can be an extremely expensive and difficult endeavor. As the maintenance costs for sediment removal do not yield a positive benefit cost ratio, it is not eligible for Corps funding. The Town would be 100% responsible for the costs. As the current feasibility study is focused on flood protection alternatives, dredging will not be considered further in this project.



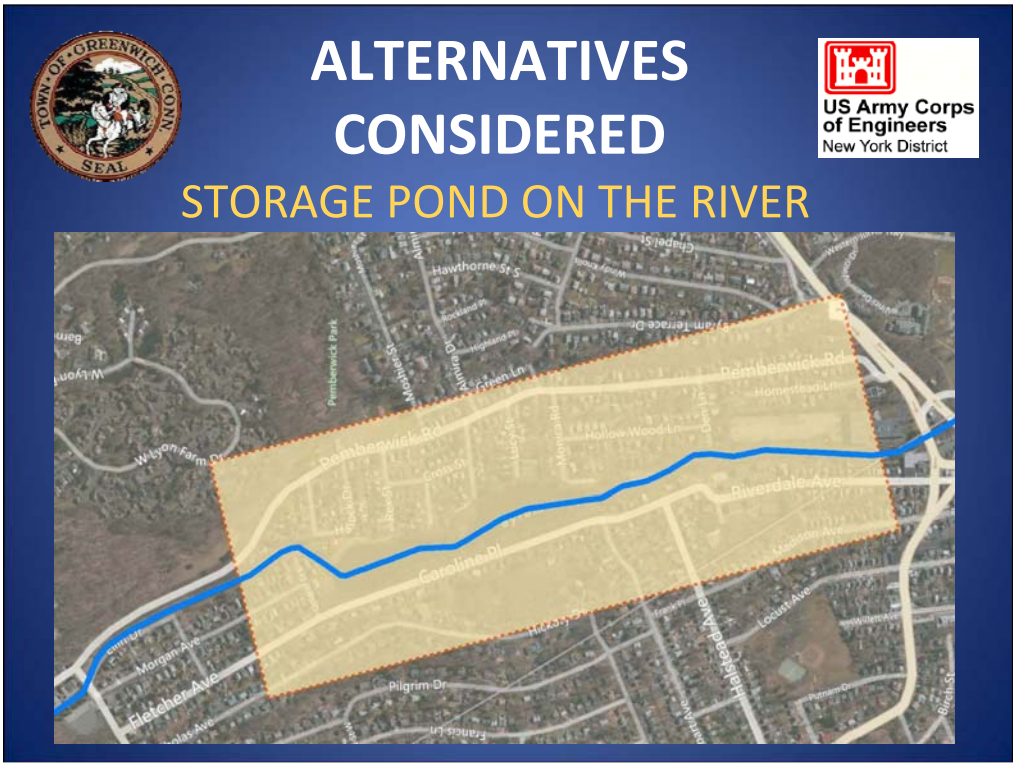
It is a common misconception that dredging will create additional volume to store runoff. This can work when dredging removes material and creates a storage volume that is either empty or where there is room for water to be stored (i.e. for the water surface elevation to rise without flooding outside the storage area) during given flow conditions. However, the topography of the Pemberwick area and its location relative to Long Island Sound do not create these conditions.

This figure illustrates how dredging the Byram River's Caroline Pond area will only have an impact on the dead storage area, and does nothing to alleviate the flooding risk during a storm. It is apparent the flow entering the site is the same as the flow exiting the site.

Another alternative frequently requested is to create an upstream storage pond that would hold all the storm runoff prior to it reaching the project area.

Storage ponds, when feasible, can allow the control of the run-off volume to downstream areas, and they can be utilized as a landscape feature.

The challenges include the pond size required to hold upstream runoff. In this case, an enormous area (1511 AC-FT) is needed. The graphic on the next slide illustrates the enormity of the impact. This is equivalent to a pond 10 feet deep over 150 acres – approx. ¼ square mile. To construct this area, several parcels would need to be purchased, south of the confluence of the Byram River and its east branch, and north of the Pemberwick neighborhood. As this area is developed, the cost of purchasing the properties and relocating the displaced property owners is extremely high. The large land area purchased would then require clearing and redevelopment into a storage pond area with the necessary gates and other devices to control flow in and out of the area. Maintenance of such ponds can be significant and is ongoing. During back to back storms, there is not adequate time to remove the water from a pond to allow new water to be stored. Downstream flooding may result.



This figure shows the area required to store the runoff volume from the entire drainage area upstream of the Comly Ave. Bridge. It is shown in this neighborhood to provide a sense of scale to those familiar with the area. When completing this calculation, the equivalent of a 10 year storm was allowed to continue to flow out of the storage area, which is still a significant amount of flow. The shaded area shows the ground area needed to create a storage pond that would hold 10 feet of water. This area is approximately from Route 1 to Comly Ave and Nicholas Ave to Pemberwick Road.

A few other comparisons of the amount of water to be stored include:

1. 492 million gallons of water or about ½ Billion gallons of storage is needed. The Town's Grass Island Wastewater Treatment Plant processes approximately 7-8 million gallons per day by comparison.

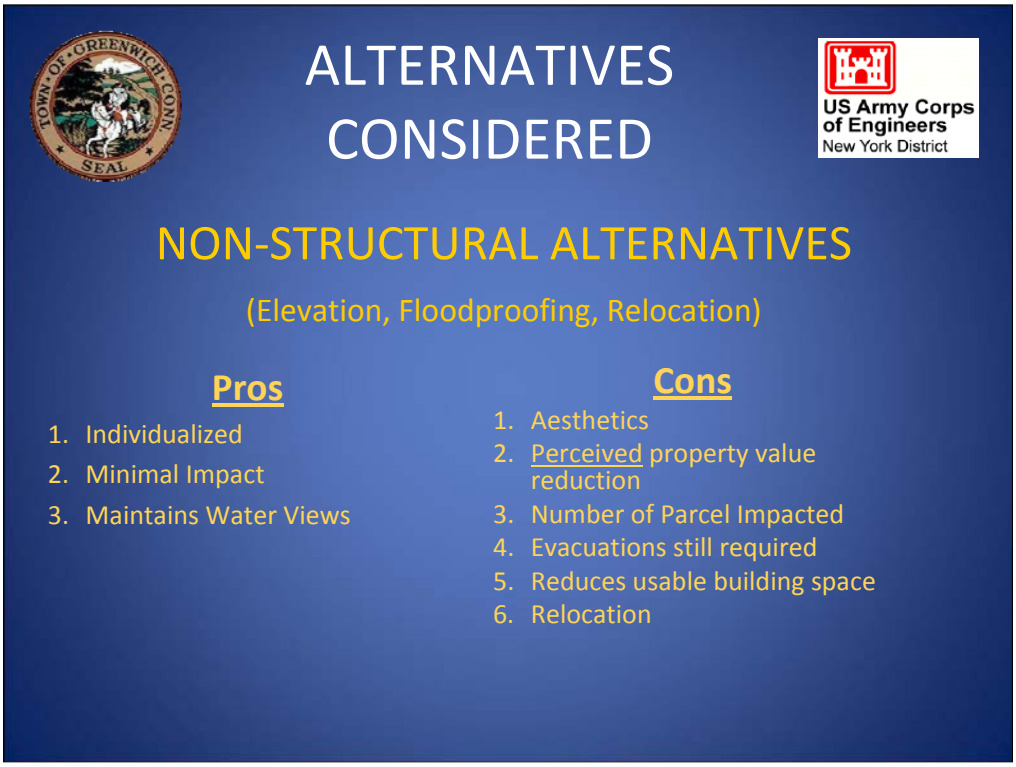
2. Putnam Lake – The reservoir south of the Merritt Parkway adjacent to Butternut Hollow Road would need to be filled with water 29 feet deep in that land area.

3. Yankee Stadium – The entire stadium would be filled to the roof, which is 200 feet high.

The next section of the presentation will expand on the four alternatives that will be analyzed as part of the feasibility study. While these have been mentioned before, the information in this portion of the presentation is meant to help residents as they consider their locally preferred solution by providing observations specifically in relation to the study area.

The "No Action" alternative is the option of no proposed improvements being completed. The benefits of this alternative include no initial cost impact, no construction impacts, and no required displacement of residents or businesses. The challenges include that there is no change in performance (i.e. no new flood protection). Property damages will still occur until owners take corrective action. The frequency of flood risk management remains high which means the need for sandbagging, evacuations, etc. Additionally, the ability for emergency services to access certain areas remains impossible during certain events – this emphasizes the need for timely evacuation.

Although no work would be completed by the Town or the Corps, property owners are still making changes as they redevelop parcels by elevating homes, closing low openings such as underground garages or relocating their mechanical equipment such as boilers, furnaces, electrical panels, etc. above the flood elevation. For instance, since the 1977 study was completed, approximately 50 parcel owners have constructed new structures that are in conformance with the new FEMA regulations.



This slide describes the pros and cons of non-structural alternatives. A reminder, non-structural measures include elevation, floodproofing, and relocation.

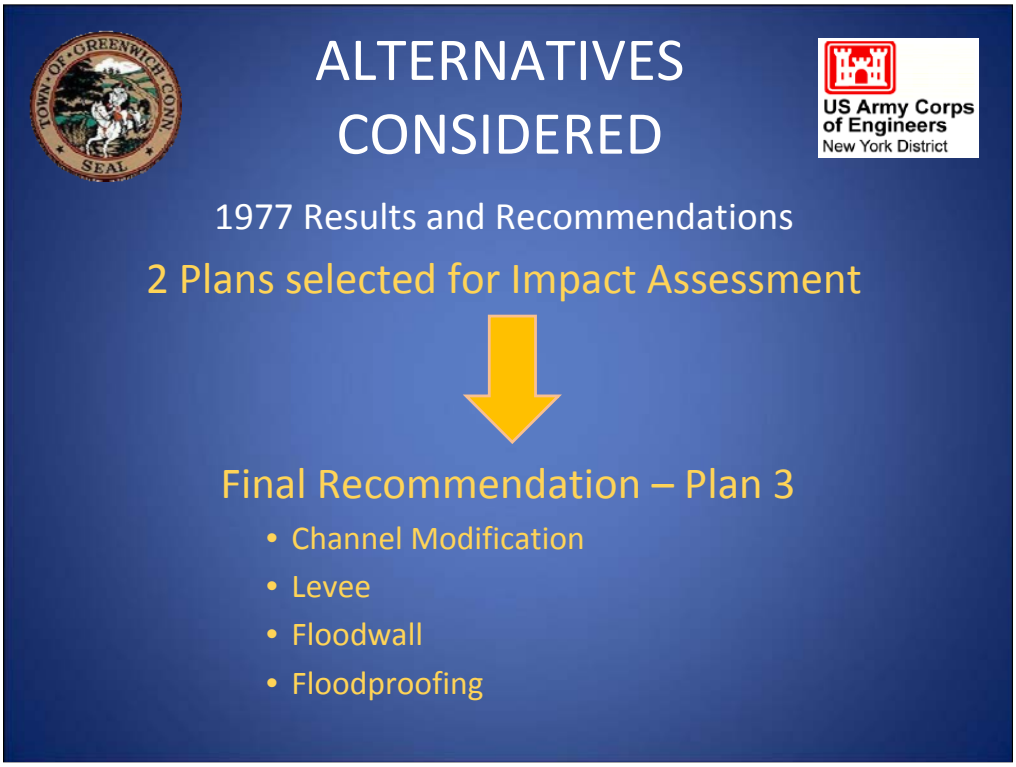
The positives of this alternative include the ability to be done over a longer period of time, by each individual property owner. The overall impact to the area is minimal because it addresses each parcel or a small group of parcels. Floodproofing can be done with minimal impact to the structural integrity of the building in many cases. No physical structures are constructed such as flood walls or levees that would impact the water views of the parcels.

Aesthetics of the area can be a concern, as some believe that placing properties on stilts is less attractive than properties built on grade. There is a perception that property values will decrease when a property has been elevated. However, by reducing the likelihood of flooding, one might increase one's property value. The number of parcels impacted is large, and solutions are parcel specific. When parcels are elevated, evacuations are still necessary as emergency services will not be able to access these parcels during a flood event. The usable space in basements or crawl spaces may be reduced or eliminated because of the need for closures which restrict accessibility. However, if a building is being elevated, it may be possible to add an additional story to the home. In some cases buyout and relocation is most cost effective, but it is difficult and disruptive for those who have made their homes in a neighborhood. It can result in an opportunity for a park or other recreational area within a given neighborhood as a result.

The structural alternatives most likely to be used in this area consist of channel modifications, levees and floodwalls. The positives of these structures are they create a permanent barrier to reduce the risk of flooding as opposed to a temporary measure. The number of impacted parcels is significantly lower as it generally is only those parcels along the waterway which may need to be removed for construction. The need for occasional flood fighting including sandbagging and evacuations can be greatly reduced.

However, in the event that a storm event is exceeded and structures are overtopped or fail, no protection remains in place for those parcels in the floodplain. Associated with that is that once the water overtops the flood structure, it is now trapped in the area with very little way to get out. Similarly, the standard runoff from the protected area needs to have a way to get to the watercourse. This requires pumps, pipes with backflow prevention and/or storage areas. The aesthetics concern many as a levee or a floodwall are physical structures that take space, are visible, and prevent views of the watercourse itself. The appearance of these can be designed to be more attractive; however, many times this is a cost that is placed on the local entity. As with the non-structural alternatives, the perceived property values can be less if a parcel is near a levee but may also be increased if the flood risk has been lowered. Finally there is a maintenance cost associated with the structures themselves and the required stormwater pumping facilities that would need to be worked into future budgets.

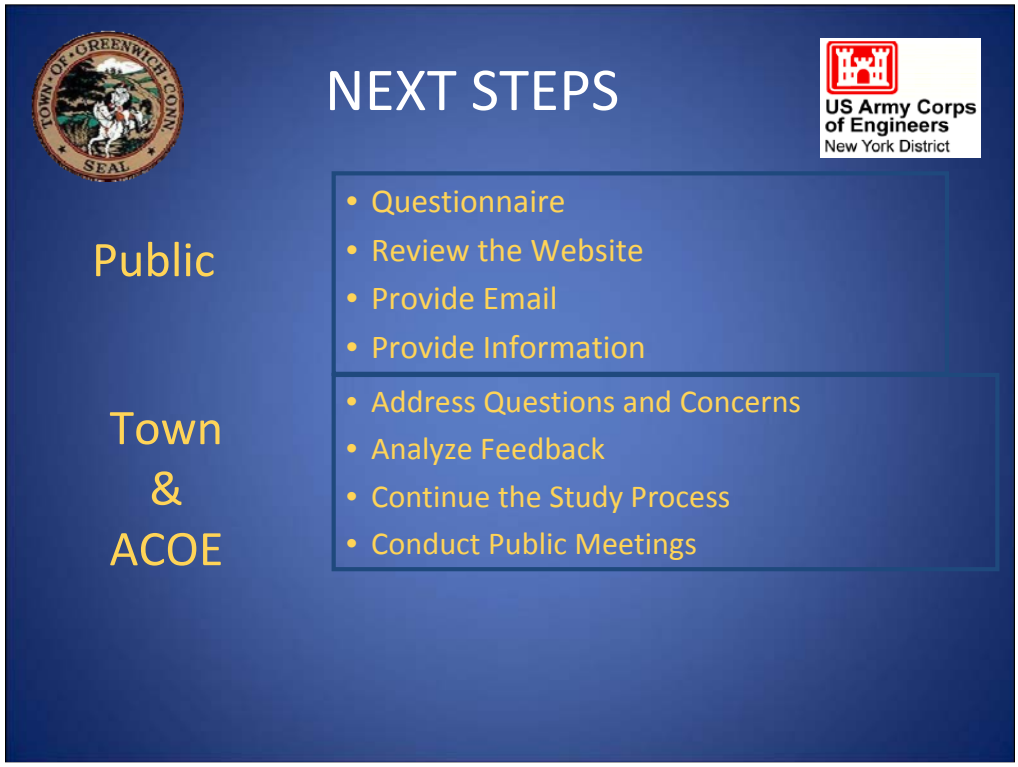
This figure shows how a typical cross section at Lucy Street would look if constructed. A potential levee structure is shown at the far right of the figure. The water line on this graphic shows how high the water level is predicted to reach in a 100 year event. The height of the levee structure illustrates that which might be needed to perform in such conditions. As previously described, this structure could reduce the flooding risk but now the challenge of getting the runoff water from the roads and into the waterway must be addressed.



The 1977 recommended alternative will be explored and brought up to date. As part of the 1977 Study, four different plans were analyzed. Two of the plans were then selected for impact assessments. These two plans included a mixture of structural and non-structural improvements including levees, floodwalls, flood proofing and channel modifications. The selected alternative included a modified 40 foot channel (2,400 LF), levees (3,400 LF), floodwalls (1,100 LF), and flood proofing of one industrial structure.

This graphic shows the 1977 proposed improvement locations, overlaying those buildings in place today. This is shown to give residents some idea of the extent of what a potential structural solution would entail and how it would alter the current look and feel of the neighborhood. Another alternative previously discussed in this presentation is expected to be a combination of structural and non-structural measures. The actual balance of components is sill under consideration at this time, and several possible solutions will be explored in order to select the most cost effective and feasible combination.

As noted, much information in this presentation, including the above, is to help residents as they fill out the questionnaire for this study. Residents should consider the pros and cons of the various options discussed as they select the solution they most prefer for the neighborhood.



This concludes the description of the study and the alternatives. The next steps in the study include the following:

1. The Town has created a questionnaire that is available on the website. This questionnaire is to determine the interest in the project, the opinions of the impacted residents and to help guide the direction of the study. Every resident in the area is requested to complete this questionnaire.

2. Continue to check the Town of Greenwich Website for updates on the study and review the information that has been posted to the site. This is available in the Public Works section of the site. This presentation and the display boards will be posted to the site as well so those that were not able to attend are able to review the information.

3. If you have specific question or concerns please write or email us – the following slide contains the project contacts information.

4. DPW is always looking for data, photos or other information that will increase the accuracy of the study. DPW is currently looking for specific photos or documented levels of flooding from the 2007 & 2011 storms.

The Town and Corps will continue to address the questions and concerns that arise. We will review the feedback we receive from the questionnaire, we will continue to work on the technical aspects of the study and we will hold meetings to keep the residents informed of the project and the steps underway.

Thank you for taking the time to review this presentation and contact us as noted above with any questions or concerns.