

**TOWN OF OLD ORCHARD BEACH
TOWN COUNCIL WORKSHOP
TUESDAY, MARCH 3, 2009 - Following Council meeting 7:00 P.M.
TOWN HALL CHAMBERS**

A Town Council Workshop of the Old Orchard Beach Town Council was held on Tuesday, March 3, 2009 in the Town Hall Chamber. The Chair opened the meeting at 7:30 p.m.

Present:

**Chair Sharri MacDonald
Vice Chair Robin Dayton
Councilor Laura Bolduc
Councilor Mike Tousignant
Councilor Shawn O'Neill
Town Manager Steve Gunty
Assistant Town Manager V. Louise Reid**

This is an informal Council workshop for an initial look (for three new Councilors and two veterans) at flooding solutions in the Walnut street area. The Planner, Gary Lamb, and the Public Works Director, Mary Ann Conroy were the key department heads involved in this discussion and presentation. Jim MacBroom, engineer from Milone & MacBroom was also in attendance as was a representative from Wright Pierce. Brief introductions were made and then oral comments on the overall area from Walnut Street to Route 9 and the four drainage controls in that area with emphasis that three of them are not in Old Orchard Beach as well as details about the Bayley Dam structural changes made to date as reflected in the September 8, 2008 report. Discussion continued in detail about the Old Orchard Beach structures we can work with more cheaply...those being the Ballpark detention pond, School St Extension detention pond, Paradise Park Campground Pond, and the non-functional dam structure just upstream of Cascade Road. They also delved into modifications and rough costs to make these structures more user friendly and easy to modify.

Discussion by Council and Attendees

Several individual spoke as well as Council members including Jack Sarno, Ronald Fluet, Allen Hahn, John Bird and a detailed report by Public Works Director Mary Ann Conroy, Planner, Gary Lamb and James MacBroom of Malone & MacBroom.

Gary Lamb

- Introduce Jim MacBroom, engineer from Milone and MacBroom who did 2007 study;
- Overview OOB into Scarborough;
- Take out Ex. Summary and open last page 11" x 17" map...same as posters;
- Malone & MacBroom (MM) report identified four structures that affect drainage and flooding;

- Walnut St culvert, Bayley Dam, RR culvert, Route 9 culvert;
- Walnut St flooding affected by above but also tidal regime, precipitation patterns, land use and storm water practices uphill in watershed.

History....How did we get to this point?

- Problems started approx 150 years ago;
- Classic sand beach/barrier dune system in front of all salt marsh;
- Natural outlet to sea in Surfside area was closed at least in part because of Rail Road (RR) bed construction 1860-1870;
- Either RR construction closed it off or sand accretion or combination thereof;
- Jones Creek hand dug from town line over to Route 9 to let out storm water;
- Inland Fisheries & Wildlife (IFW) introduced beaver in marsh to attempt to create stable water levels in upper marsh for waterfowl production;
- Bayley Dam constructed 1988 to more consistently create stable levels;
- Soils tells us much re: drainage potential...Sebago Peat soils, an old dump, and fill dominate the Walnut bowl area;
- Sebago peat is soil that acts like a sponge...it holds a lot of water (v. poor drainage);
- Peat soil behind present Tidewater Loft condos, thru Davenport condos and makes up much of marsh two miles to route 9.

Present Drainage

- OOB has three separate outfall pipes into ocean....Mullen, Brown and Fourth Streets;
- 18-24" diameter...completely clogged with sand in 200__ and Public Works needed to hire divers to clear these pipes;
- Walnut St bowl also receives water from 4900' of storm drain piping and 47 catch basins...none of this is presently directed into any ocean outfall...it all goes into the marsh and under route 9;
- To show how poorly drained this marsh is, Patriots Day April 2007 storm dumped an additional foot in the marsh...and levels stayed above normal for over a week.

Bayley Dam

- Bayley Dam – created 1988 for waterfowl production, primarily stable water levels for brood rearing April thru June;
- September 8, 2008 IFW report...look at front page picture..then pictures starting on page3...describe fish ladder and spillway and boards;
- After January 2008 public meeting here, IFW said they would explore alternatives;
- IFW and Bayley family were willing to make changes...and they did;
- Taken out all four boards (40" height) from spillway and lowered gravel spillway by 1.5 feet;
- Milone and MacBroom report stated Bailey Dam holds back up to 1.3 feet of water..now gone with recent changes;
- Primary dam function is still water level stability...but at lower levels.

Solutions - get out Executive Summary, page ES-7,...table ES-4 Summary of Alternatives

- Review structural changes and costs #1-4;
- Numbers 1 thru 4 total \$6.23 million.

Mary Ann Conroy

- Spoke about four drainage structures from Ballpark to Walnut Street...Ballpark detention pond, School St extension detention pond, old Cascade Road non-functioning small dam on left before Radleys Plaza, and Paradise Park Campground pond. All these locations need additional structural work so as to slow storm water flow;
- Would like to investigate taking Cascade Road flow and re-piping directly to marsh...whereas is now goes into the Walnut Street/Milliken St flooded area;
- Mullen street outfall pipe into ocean is the closest of three OOB ocean outfall pipes;
- Just design costs for storm water pumping station would be \$50-100K;
- Councilor Tousignant asked question of how much water these four improved structures could hold back?
- Mary Ann Conroy answered very generally....don't know but suspects that if Walnut and Milliken flood six time per year, these four improved structures could lessen (but might not eliminate) four of these flooding events.

Jim MacBroom

- Hydraulic engineer for 35 years and teaches at Yale University;
- Stated problems that exist are coastal and freshwater flooding, frequency and duration of flooding issues, high ground water table;
- JM described his water monitoring chart at length;
- Route 9 tide gate has been broken since 1980's;
- Councilor Bolduc asked the question re: cost to clean channel?....guess of \$50 to 100 dollars per linear foot to enlarge channel after 6-12 months to obtain Army Corps of Engineers, DEP and possibly other permits;
- Councilor Dayton asked question re: MM study alternatives that called for Route 9 and railroad changes being most important for large scale solutions. JM responded if town goal is to help with minor flooding issues, then start with improving the four structures as described by Public Works Director...if town goal is to mitigate large scale flooding, then start at Route 9 and then railroad;
- Councilor Dayton stated her dissatisfaction with town staff in having done nothing re: Scarborough and other solutions since MM report came out.
- Councilor Tousignant questioned impact of sea level rise over next 50 years;
- Councilor Dayton questioned public benefit of dam
- Councilor Tousignant asked if we are wasting money trying to fix storm water problems rather than spend those dollars buying regularly flooded properties and removing the structures?

Jack Sarno

- Jack reviewed many occurrences of information he has requested over the years and the responses or lack thereof he has received. He stated removing the Bayley Dam would be an asset to Tidewater Loft condos. He stated the dam impedes water flow, does not have 1988 or 1996 permits, does not have a proper

environmental impact statement or study, holds back 3.3 million gallons of water;

- He also stated Old Orchard Beach should rebuild the Surfside natural outlet to the sea, enlarge/dredge Jones Creek from Bayley Dam to Walnut Street to remove clogging vegetation and increase water flow towards Route 9;
- He stated he sent e-mails to Town Council, Town Manager James Thomas, Representative George Hogan, Senator Barry Hobbins on August 29, 2008 and received no replies;
- He asked that Walnut street culvert be replaced with a large box culvert; that Little River stream channel from Cascade to Walnut be reconstructed/repared since the channel is no longer defined; that small dam uphill of Cascade Road be repaired; that Paradise Park and/or Dunegrass construct a new detention pond;
- He mentioned March 20, 2007 Town Council meeting Agenda Item #1097 at which the Town Council approved the Wright Pierce engineering work.

Alan Hahn

Spoke passionately saying the Town Council did nothing over these past six years...and Jack Sarno should be allowed to continue to state his points and ask his questions.

Jack Sarno

- Jack read recent letter from Mary Ann and reiterated his request for where is the remaining \$21,000 of the Wright Pierce work. Is the report done? If no, why not?
- Jack's comments continued re: West Grand Avenue project work and bonding of same;

Jack Sarno detailed many of the issues he has related to the Council on other occasions regarding the conditions of flooding in the area of his condo. He has represented the Move the Dam Committee. He gave a history about the area in which he lives. This is a coastal beach community and is prone to flooding from both precipitation events and tidal surges. The eastern section of Town is located on a barrier sand beach. Houses, condominiums, motels and restaurants line East Grand Avenue. In recent years flooding has become an increasing concern for residents particularly those living in the low lying area between Foote and Walnut Streets. This includes single family houses, condominium complexes such as Tidewater Loft on Milliken Street, Davenport Condo on Walnut Street, and businesses located on Milliken Street. Street flooding is reported to occur frequently and many property owners have also reported an increase in saturation levels in lawn area that were once dry. The area in question is densely developed as are some portions of the contributing watershed area. Outlying areas of the watershed have experiences less historic development, but development pressure is increasing in these outlying areas. Despite the fact that the flood prone areas are located at the north end of Old Orchard these problems are inextricably linked to the hydraulics of the marshal area between Walnut Street and Route 9. To develop a comprehensive evaluation of the flooding problems the dynamics of this system must be understood. Jack Sarno spoke passionately about his disappointment that the Council has not moved forward over the past five years in which he has been providing them with facts and information. He was upset because in some instances phone calls and e-mails to Councilors

were never addressed. He has appealed unrelentlessly for the 32 homeowners in the association. In June of 2006 Jack Sarno took a petition signed by residents to the town hall calling on the Council to take action to prevent additional flooding on Walnut Street which is also an evacuation route. There are clogged culverts under Walnut Street and drains filled almost to the grates on the surface of Milliken Street. Water in a retention pond backs up into the basements of the homes. He pointed again to the dam constructed in 1988 by Fred Bayley and Ducks Unlimited.

Jack Sarno: He requested through Freedom of Information the evaluation of storm water management alternatives on Milliken and Walnut Street, approved by the Town Council on March 20, 2007, Article Number 1097 on the agenda. He asked if the Engineering Study got completed and if so he asked for an update. The Assistant Town Manager and Public Works Director did respond but he had concerns with the answers that were presented. Referring to Item Number 1097 on the March 20, 2007 agenda – Discussion with Action: Accept the Proposal for the Evaluation of Storm water Management Alternatives on Milliken and Walnut Street submitted by Wright-Pierce Engineers in the amount of \$22,000 from Account Number 10013/30100 – Undesignated Fund Balance, leaving a balance of \$4,143,404.05. He asked if the project was completed and the answer was that it was not and that currently there was a balance of approximately \$260 left in the account and approximately \$5,666 left in the Little River account. He asked if he could read a copy of the report and since the report has not been completed that would be impossible. Wright Pierce was, however, asked to provide their comments to the overview and have done so. He asked why the report was not completed and was told the scope of the study has evolved over the course of time and the primary objective of the effort was to identify solutions that would aid in mitigating flooding conditions specifically in the vicinity of Milliken and Walnut Streets and to provide a basis for Council to support and fund them. He mentioned that the Public Works director stated in her letter that “In November, 2007, the Council chose to support the improvements to the West Grand area for the first Bond Package. Mr. Sarno then asked the Chair if there was documentation to verify this statement and would like access to read Minutes of what meeting this was approved and showed support. He stated he did not recall this issue and would appreciate an update. He referred to an Overall Project/Issues Update provided by the Town Manager and stated that has there been any effort to put forth this project into the Federal Stimulus Package and have we submitted a request for financial aid to resolve the flooding. He pointed out that we have five years of documented history here so why is it not being followed up? He asked when the School Street Pond HydroCAD Analysis, Project 10995A, dated December 18, 2008 was approved by Council and what as the cost of the study? Mr. Sarno also provided many other comments this evening including his opinion on the removal of the dam. He indicates that the sole purpose of the dam was to increase the water table in the upper water shed to create a freshwater impoundment for nesting and brood-rearing habitat for water fowl and other species of wildlife. It was also designed to include a fish way for alewife. The dam was constructed in 1988 with cooperation of Ducks Unlimited, Department of Inland Fisheries and Wildlife and a private citizen of Scarborough. This structure was created to stabilize water levels on approximately 450 acres in the upper watershed. The State of Maine purchased 130 acres of property known as Kite Track in Old Orchard Beach as a wildlife management area to create this 450 acre watershed. In 1996 the dam was reconstructed/repared due to major flooding. Jack Sarno said that the dam impedes water; there were no construction permits in 1988 or 1996. He indicated that no consideration or thought was given on what the impact would be over the years because of failure to do an impact study. In a letter from Milone & MacBroom it states approximately 3.39 million gallons of water would potentially be allowed

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to flow out of effected area. He recommended the rebuilding of the outfall at the Surfside location or an area capable of handing a new outfall. His justification for such comments is based on the fact that there is no need to remove the dam; no need to deal with Scarborough and no need to hassle government politics. The dredging f the waterways from the dam to Walnut Street would remove unwanted growth; increase water flow from the dam to Walnut Street; and prevent backup which floods Walnut Street and surrounding areas. He also suggested that a box type culvert be constructed on Walnut Street which would increase the folume of water which will flow out of the Jones Creek watershed, Also felt that reconstruction or repair of Jones Creek water flow from Cascade Road to Walnut Street would avoid the damage experienced during the storm of 1996 which caused major damage to the concrete dam structure located off Cascade Road and never was repaired as well and caused major damage to the outlet under Cascade Road. A new box culvert was installed. The force of water washed away most of the original creek flow. Not it is just acres of saturation that finds it way out to the Walnut Street Culvert. He recommended rebuilding the old concrete dam located off Cascade Road as this used to be a retaining pond of some sort and the structure was retaining up to four feet of water but how large an area was being impeded we do not know. Construct a new retention pond on the property owned by Paradise Park Camp Ground and Dunegrass. An enormous volume of water flows through that area and is impacting Milliken Pond. Upgrade the School Street and the Ball Park retention ponds. Replace, repair or upgrade the Milliken Street Storm drain system. This will allow the parking lot run off to drain from the street and the water from Bradbury Street storm drain to move as well as the sump pump at Tidewater Loft condominium to be capable to pump into the Milliken Street storm drains and allow Wind Sail Motel to be able to run his business without concern if his customers' vehicles will be damaged from the flooding and other structural damage.

Both Ronald Fluet and Allen Hahn lauded Mr. Sarno's presentation and supported him in his findings. John Bird also provided input on possible considerations in solving this situation.

During the discussions Councilor Robin Dayton discounted the statement made by so many that the dam was the problem of the backup into the Little River and instructed staff not to state that any longer or to designate "In my opinion." James MacBroom spent a great deal of time reviewing maps and also his report to the Council. As an engineer and a hydrologist he had accumulated field data, history of the land area and an evaluation of the 350 acre watershed, known more generally as the Jones Creek – Little River Watershed and often referred to as the Scarborough Marsh. During his presentation he discussed the need for a thorough understanding of the physical characteristics of the watershed, such as slope, soils, vegetation, and development and movement of fresh water from the upland areas and the seasonal tide waters. Councilors encouraged the staff to engage conversations and discussions with Scarborough, the Maine Department of Environmental Protection, Inland Fisheries and Wildlife, the Army Corps of Engineers and even with the institution of the stimulus plan agencies from which some help might be secured for funding. Discussions for the needs for permits and for instructions from Council as to how to proceed is the next step. It was obvious that the residents in this area were pushing for the Town to support the financial responsibility for whatever it takes to correct the problems. Jack Sarno reiterated in his comments that flooding in the area shouldn't be fixed just for the immediate neighborhood but for the safety of everyone since this is a

major official evacuation route away from the shore. Also discussion among many was the estimated cost of the channel reshaping, what would be required to do this and a time frame. The question of whether this entire project, since a great deal of money has been spent on reports and surveys and studies – could this be “shovel ready” for the stimulus package. James MacBroom said, “No” Some of the suggestion pushed by Jack Sarno included removal of the dam; 3.3 million gallons of water – where does this come from?; new outfall; dredge channels (Walnut to the dam); reconstruct the dam near Foote Street; reconstruct Milliken Pond Dam; reconstruct School Street Pond/Ballpark; modify capacity of the detention ponds; Ballpark, School Street, Milliken Pond, Paradise Park; modify design and capacity of dam near the Foote/Cascade; study the possibility of diverting storm water down Portland Avenue past Walnut Street outlet near Beaver Creek; the Lower Little River; raise Walnut Street; replace culverts; research and reshape marsh downstream on Walnut Street; Storm water Pump Station/berm.

Other Comments

Councilor Dayton commented on stimulus package and why were aspects of flooding solutions not included in stimulus package submission from OOB?

Councilor Tousignant asked if the Bayley Dam is holding back 3 million gallons of water?

Jim MacBroom answered more generally and said the Bayley Dam is not a factor in major flooding events because the entire dam structure is sometimes under water

John Bird commented on Walnut Street area, Bayley Dam and Mill Brook Pond

Councilor Tousignant stated all solutions would cost 10 million dollars. Town Council needs to set some priorities...and needs more data before staff goes in pursuit of permits.

Chair MacDonald recommended that the Town Manager should talk with Scarborough and investigate state funding.

Jim MacBroom mentioned NOAA and NRCS as possible funding/information sources to contact. He also commented on pros and cons to reconstructing the Surfside connection from the marsh to the sea...and how the northerly sand movement might be a problem in keeping any new outlet clear of sand.

Below are reports provided to the Council prior to this meeting for historical background:

MILLIKEN AREA FLOOD MITIGATION

Background

- Flooding in low lying areas along Walnut St. and Milliken Avenue.
- Flooding caused by freshwater runoff and backwater from the marsh.
- Four factors contribute to flooding problems:
 - 1) Sea Level Rise
 - 2) Increasing Precipitation Trends
 - 3) Hydraulic Modification of the Marsh
 - 4) Land Development that Reduces Infiltration

Solution Alternatives (Little River/Jones Creek Study)

- **Alt. 1: Add tide gate at Route 9 culvert**
- **Alt. 2: Modify Route 9 culvert**
- **Alt. 3: Modify Route 9 culvert and provide high flow bypass at railroad culvert**
- **Alt. 4: Modify Route 9 culvert, railroad bypass, and replace Walnut Street culverts**
- **Alt. 5: Restore historic outlet of Little River to Saco Bay**
- **Alt. 6: Modify tributary drainage systems (Discussed Further Below)**
- **Alt. 7: Modify Jones Creek channel**
- **Alt. 8: Remove Bayley Campground Dam**

Modify Tributary Drain Systems (Alternative 6)

- **Opportunities to increase detention time and volume using existing watershed features.**
 - **Milliken Pond (Located in Paradise Park)**
 - **School St. Pond (Located along School St. Extension)**
 - **Ballpark Pond (Located near abandoned Minor League Ballpark)**
 - **Abandoned Foote Street dam structure (Foote Street near Portland Avenue)**
- **Milliken Pond**
 - **One outlet structure - Stacked timber boards forming weir followed by two 24-inch culverts.**
 - **Suggested Modification - New weir board to replace existing prior to storm.**
 - **Establish a Storm water Management Procedure with pond owner**
 - **Remove top weir board prior to storm to lower water surface elevation.**
 - **Place modified weir board at beginning of storm to detain storm water.**
 - **Switch weir boards to restore water surface elevation after storm.**
- **School St. Pond**
 - **Three outlet structures**
 - **Concrete manhole structure with a culvert (Low-level outlet)**
 - **18-inch diameter HDPE culvert (Mid-level outlet)**
 - **Concrete overflow spillway not at low point (Overflow Structure)**
 - **Suggested Modifications (Low-level outlet)**
 - **Remove manhole, leaving only the outlet pipe (lower WSE by 2 feet).**
 - **Place orifice plate on inlet of the culvert to aid in detention of storm water.**
 - **Suggested Modifications (Overflow Structure)**
 - **Loam and seed School St. Extension berm to prevent further erosion.**
- **Ballpark Pond**
 - **One outlet structure - Metal stand pipe structure with 24-inch CMP outlet culvert**
 - **Suggested Modification**
 - **Modify or replace outlet structure to allow pond to detain water more effectively.**
- **Foote Street Dam Structure**
 - **Existing dam embankment has been breached. Flows no longer travel over dam spillway.**

Suggested Modifications

- **Restore breached embankment and dam weir to store water during storm.**
- **Further analysis of inundated area required along with input from DEP and FEMA.**
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- **Modifications will not be a cure-all for Milliken Area Flooding.**
- **Will require a combination approach to achieve desired flood mitigation result.**

As pointed out, this study of alternatives was approved by Town Council on March 20, 2007. This request was put in prior to the final recommendations from the Milone and MacBroom Study and the decision to move forward on a specific Bond Package. The study was not completed and there is approximately \$7,000 left in this account. There was no formal report. The study has changed somewhat over the course of time. The main objective was to work towards solutions that would assist Milliken and Walnut Street specifically and that the Council is likely to support and fund.

The following is documentation provided to the Council in their packet and not part of the Minutes but historical>

Public Works is submitting a proposal for engineering services to evaluate alternatives for management of storm water contributing to flooding in the areas of Milliken and Walnut Streets. As the Town has recently completed rehabilitation of storm water outfalls in the area of Brown and Mullen Streets, it appears that there is an opportunity to redirect a component of storm water that presently contributes to flooding in the Milliken/Walnut Street area. Prior to embarking on construction of piping improvements to this end, it is appropriate to review the range of options for achieving this goal. It is understood that the Town wishes to initiate construction of the improvements within the next year, hence we will work together with Public Works to identify a suitable scope and budget for the construction.

Information provided by the Public Works Director indicates that at that time, Public Works had just finished cleaning the existing outfall pipes – namely the one closest to Walnut Street exiting into the ocean via Mullen Street. In our follow up of this storm water project, we concluded that the pipes would work better (i.e.: need less flushing/cleaning, currently budgeted at \$30-40,000 per year) if more storm water were directed towards the outfall lines. We then explored building a storm water pump station to outlet the run-off water from Milliken Street and the lower end of Walnut Street. It was important in this preliminary design to separate the Little River Flow from the street run-off flow. An earthen berm was suggested for the culvert area crossing Walnut Street, separating the stream flow from the open ditch on the lower Walnut area. The cost and size of the design of a new storm water pump station depends on minimizing the water that is being pumped. A rough estimate of \$1 - 1.5 million was looked at as a stand-alone storm water project. At the same time, Wastewater and Planning was looking at upgrades to the existing Pump Station at Milliken Street. This sewer project included upgraded sewer lines for Walnut/Portland Avenue and removing the pump station at Portland Ave/Ross Road intersection due to an possible development project on Portland Avenue (whereas the

developer may have been responsible for a share of the upgrade costs). A rough estimate of \$2 -2.5 million was looked at for a stand-alone sewer project. The development project did not come to fruition nor was Milliken Street Pump Station the top priority for the Wastewater Department – West Grand Pump Station ranked first (which was later chosen for the first Infrastructure Improvement Bond Package). On October 15, 2007, the preliminary results of the Milone and MacBroom study were unveiled to the Town Council. Specifically, raising Walnut Street elevation and upgrading the culverts crossing Walnut Street. A rough estimate of \$915,000 (2007) was looked at for a road/culvert stand-alone project. The above described details were discussed among staff to attempt a coordinated, reduced cost project scope that the council could support. If all three infrastructure projects were built in a coordinated effort, the best overall outcome could be achieved for the betterment of all the surrounding areas. In November, 2007, the council chose to support the improvements to the West Grand area for the first Bond Package. By looking at the dates, you can see that the recommendations for the Little River Area had just become available (final report is November 20, 2008) with no time to include them in the bond prep package. In my opinion, the East Grand/Little River area is the top priority for the next Bond Package (if so desired, by the current/future town councilors). In 2008, the study funds were then redirected to actually design some smaller, upstream improvements that could be supported financially and assist in the overall goal of flood mitigation for the Walnut/Milliken Street area. Over this past year, this account funded the study/design for the Upper Little River Project scope as defined in the Milone and MacBroom study as Alt. 6 in their Summary of Alternatives. (and located within our own community). This work included close coordination with a private property owner, for Jim Halle, owner of Paradise Park, where two upstream retention areas are located. This project is being presented to council for the FY10 Capital Budget (\$80,000 est.) along with design dollars in my operating budget (\$15,000 est.) for the Middle Little River preliminary design, which includes diverting storm water down Portland Avenue directly to the marsh and the raising of Walnut Street/Culvert project. We also worked with the Bayley family on modifications to the Bayley Dam. As you can see, this study has been a work in progress and still has funds remaining. We did not have a public meeting for the stakeholders, as several meetings were held at that time for the Little River Study. This past year was mainly focused on preparations for the bond projects and other funded capital projects. We did not need these funds to create another formal study report; what we wanted were do-able, smaller scale projects that the council could possibly support. We can still wrap this study up with a public meeting and overview report of the large coordinated project (Lower Little River/possible future bond) and the series of smaller projects (Upper/Middle Little River/possible annual capital funding). I hesitate to complete this step without clarity on councils support for future funding. I apologize for the lack of formal reporting on this study, as you can see it has been evolving and shifting over time – never loosing site of the ultimate goal to help in some way to relieve the flooding problems on Milliken and Walnut Street neighborhoods. The November 20, 2007 Milone MacBroom engineering report identifies four water level controls or restrictions that contribute to the problem including the Walnut Street Culvert, the Bayley Dam, the railroad culvert, and Route 9 culvert. The September 8, 2008 Inland Fish and Wildlife (IFW) memo also showed work done to date at the Bayley dam site. According to the report the Bayley Dam has little or no affect during flood situations as the water goes over and around the structure. Some want the Bayley Dam removed in hopes of dropping the groundwater table and reducing the frequency and depth of condo dirt crawlspace flooding. Removing the dam might help this situation somewhat but probably not entirely. If all parties agree to remove the dam that is fine.

However, a State-owned dam on private property in another Town does not put the Old Orchard Beach Town Council in a favorable bargaining position for removal. During 2008, it was suggested to the IFW that they drop the water level above the dam by pulling some or all of the boards out of the dam spillway, lowering the gravel side spillway by a foot or more and monitor the situation for a year. They have done this as shown in their September 8, 2008 report. The concern regarding Tidewater Loft condo crawlspace were issues. It was suggested that condo owners should also research other solutions on their own to alleviate the problems. A poured concrete dust cap floor, sump holes with sump pumps and long drain lines should be considered as well. Even if a Bayley Dam solution reduces the condo flooding, it probably will not eliminate it.

Historically – the Town did issue a building permit for Tidewater Loft condos in the late 1980s but the Town did not pick the site or choose how to construct the foundations. That responsibility was borne by the developer and now the Condo Association. Residents should assume some responsibility for long term on site solutions that they should pay for to protect their investment.

There have been ongoing meetings with Fred and Tom Bayley and at least three visits have been made. The IFW personnel and the Bayley's have made substantial changes as reflected in the September 8th report. In addition to the engineering remedies outlined by Milone and MacBroom next steps could include any or all of the following:

- Initiate discussions with Scarborough staff or Town Council regarding drainage improvements.
- Discussions with railroad about feasibility and cost of railroad bed culvert replacement considering daily Downeaster and freight train schedules.
- Discussions with the Department of Transportation about new drainage structures under Route 9. One option is install a tide gate in the existing culvert site and the other modification is to construct another much larger culvert at a new site 100 yards east.

It should be noted that Wright Pierce also made some recommendations including:

- Meet with the Pond's property owner and determine who has maintenance responsibility on the pond,
- Clear the pond outlets of any debris that can obstruct flow exiting the pond.
- Verify and obtain any additional information
- Determine if the pond water surface elevation can be legally lowered.
- **Outlet Modification 3:** Remove the four foot diameter outlet structure, and add an eight inch diameter orifice plate to the remaining fifteen inch culvert pipe.
- Stabilize the School Street sanitary sewer berm and loam and seed the entire embankment to prevent any future erosion from pond overflows. (Based on the hydraulic model, any storm exceeding the five year, twenty-four hour event will overflow the concrete emergency spillway structure and spill over the berm.

- Continue to clean and maintain outlets.

The report from the State of Maine Inland Fisheries and Wildlife was also referenced in the discussions including the work and observations they have had of the Bailey dam and the Little River. A history of the Bailey dam and comments by residents who live in the area of the flooding were provided. The Bailey dam has been implicated as one potential contributing factor in the flooding observed upstream of the dam. The Maine Department of Inland Fisheries & Wildlife has an interest to manage this wetland at a water level conducive to the nesting, feeding and staging habitat requirements of migratory waterfowl and wading birds. The wetland also provides spawning habitat for anadromous alewives. This wetland is utilized by the public for the purposes of hunting, canoeing and wildlife observation. At the same time, the Department has an interest to work collectively with the public and municipalities neighboring the Scarborough Wildlife Management Area. The concerns are recognized and additional efforts have been made to determine what, if any, causal relationship exists between the Bailey Dam and elevated water levels in the vicinity of Walnut Street. The following modifications were made to the dam site including removal of all four splashboards of the dam. These boards are 10 inches in height by 3 feet in length. They also lowered the elevation of the emergency spillway by 1.5 feet. It was pointed out that without on-site data loggers; it is difficult to get water depth measurements precise enough for direct comparison of conditions before and after alternations. This is because tide heights vary throughout the month and/or significant rain events can impact tidal flow. Despite this variable, it has been observed that removal of 40 inches of splashboard, combined with the lowering of the spillway by 1.5 feet may translate into a 4-5 inch reduction in depth at the Walnut Street culvert. Thus, reduction of 10 inches at the dam contributes to a one inch reduction at Walnut Street. Though not quantified, it has also been observed that the high water levels frequently observe on Mill Brook at the Ross Road culvert has subsided over the last couple of months. The road at this point is very low relative to the wetland and the culverts are not large enough to handle the volume of water upstream. Another important observation that was made is the volume of water in Jones Creek, downstream of the Bailey Dam, during a dozen visits between the railroad culvert and the Bailey Dam, water levels remained fairly consistent. It was difficult to tell at what point in the tide cycle it was. Upon getting downstream and crossing Route 9 and the site of the defunct tide gate, it was quickly apparent where the tides were. This supports the conclusion frequently brought up in the Milone and MacBroom Report that inadequate sized culverts at the railroad track and Route 9/Depot Street, do not permit sufficient draining of this wetland. Being a "tail water" controlled system, before the wetland can fully drain, a fresh tidal cycle is bringing water back upstream. According to precipitation data available from NOAA, annual precipitation in Portland in 2005 established a new record. Data for 2007 indicates precipitation was just slightly above the long-term average of 45.83 inches. This is especially significant in that the soils dominant in the Walnut Street area is very poorly drained Sebago peat. The high percentage of organic matter in this soil absorbs water, yet unlike more mineral soils, does not allow it to drain. According to the USDA, Natural Resource Conservation Service, this soil is rated at the extreme low point on the scale for suitability for dwellings. Thus, years with the high precipitation in this area could result in elevated water retention for longer periods compared to areas with more favorable soil. Sea level rise is a documented occurrence in many parts of the world including the northeast coastline. Records indicate there has been a six inch rise in sea level elevation in our area over the last century.

Modeling predicts this rate will accelerate over the next century by four times. This is also a significant factor when considering the relative lack of slope along Jones Creek/Little River. Removal of vegetation from the defined drainage channels between the marsh and Walnut Street in the vicinity of Davenport Condominiums and Ross Road should be considered a priority. This was done in 1999 using a piece of equipment owned by the Army Corps of Engineers. This equipment functions as a wetland bushhog by removing dense aquatic vegetation and restore channel flow. Use of this equipment in 1999 contributed to a five inch water depth reduction at Walnut Street culvert. Having recently paddled navigable waters within this wetland it is quite apparent that drainage is impaired by this vegetation. In turn, as more vegetation accumulates, flow velocity is further reduced allowing even more organics to accumulate. At the present time, this piece of equipment is not fit for service. From both the ground and the observation of aerial photographs, it is apparent that portions of that area south of Walnut Street are, or formerly were, wetland. This, combined with the soil type and low gradient make it difficult to arrive an effective long-term solution. Based on observation at Bailey Dam and the surrounding wetland extending from the ocean to Walnut Street it appears, that despite the modifications outlined above, they were not a significant contributing factor in the retention of water in the vicinity of Walnut Street. The Maine Department of Inland Fisheries has stated that the removal of the structure, as stated in Alternative 8 of the Milone & MacBroom Report, will ameliorate flooding problems in the subject area. It appears as though modifications to the dam has coincided with slightly reduced water levels at the Walnut Street and Ross Road culverts, but this may be due to lower precipitation. This conclusion is consistent with that provided by Regional Wildlife Biologist, Phil Bozenhard, in 2004. To arrive at a more detailed, quantitative conclusion will require a comprehensive hydraulic study. The current water level in the marsh is still at an adequate level for wildlife habitat considerations. Both nesting and early fall staging us by Black Ducks and Canada Geese is observed. The clearing of the drainage channels both downstream of Walnut Street, parallel to Walnut Street, and downstream of Ross Road, should be scheduled as soon as possible as equipment is available. The possibility of modifying the dam to accommodate a wider splashboard and/or evaluate the potential for reducing the length of the earthen berm at the dam site is another consideration. This would have to be done in consultation with Mr. Bailey and Ducks Unlimited. This wetland has such a history of modification the opinion here is that natural hydrology is not feasible. The natural outlet through Surfside is obvious from looking both east and west from the railroad line. It is equally apparent through observation of an aerial photo. Since the time this outlet was closed by either geology or the railroad, Little River has become a fresh water wetland. The new outlet via Jones Creek downstream to the ocean doesn't work quite as well. In lieu of this the best strategy is to increase the cross sectional area of the culverts at the railroad and Route 9. Recognizing that this option may be cost prohibitive at this point, a coordinate effort to further research the option of a self-regulating tide gate at the Route 9 outlet is the best option. The Town of Wells and other communities in the Northeast are using this structure to address similar issues with some success.

Chair MacDonald thanked everyone for attending and for the input of information that has been helpful in providing additional information.

Councilor Dayton motioned and Councilor O'Neill seconded to adjourn the meeting at 10:17 p.m.

Respectfully Submitted,

**V. Louise Reid
Town Council Secretary**

I, V. Louise Reid, Secretary to the Town Council of Old Orchard Beach, Maine, do hereby certify that the foregoing document consisting of fourteen pages (14) is a true copy of the original Minutes of the Town Council Workshop of March 3, 2009.

V. Louise Reid