CITY OF
Burlington
SKAGIT COUNTY, WASHINGTON INCORPORATED 1902

November 1, 2006

Colonel Michael McCormick, District Engineer
U.S. Army Corps of Engineers, Seattle District
4735 E. Marginal Way South
Seattle, WA 98124-2255

Dear Colonel McCormick,

Thank you for attending the get-acquainted meeting held at Dike and Drainage District 12 in Burlington October 16th. We have enjoyed and continue to value our relationship with the professional men and women of the Seattle District. Further, we greatly appreciate the cooperation, leadership and commitment your field staff has demonstrated again and again, under bleak and difficult flood fight conditions, during our times of greatest need. For that we have been and continue to be grateful.

As you are aware, Skagit County, in cooperation with the Seattle District through the General Investigation (GI) process, developed substantial technical information regarding the Skagit River basin's hydrology and the river's hydraulic characteristics, pursuant to the Skagit GI study. In addition, the County independently developed additional technical and historical information relevant to the Skagit River pursuant to its involvement with the Baker Hydroelectric Project relicensing effort, and its collaboration with Larry Kunzler, a citizen historian who has conducted extensive research of the Skagit River and its flooding characteristics. During this time, I, as the Skagit County Public Works Director / County Engineer, was involved in reviewing all of this work. After hearing the concerns you expressed regarding the County's hydrology and hydraulic modeling, I want to clearly state for the record that, as the Public Works Director / City Engineer for the City of Burlington, I disagree with the Corps over the very important issue of what constitutes a 100-year flood event for the Skagit River. In order to explain this position, I would like to respond to two letters your predecessor sent to FEMA last year (attachments 1 and 2).

In the November 22, 2005 letter, Colonel Lewis, in response to a letter I had sent to FEMA on September 26, 2005, expressed a high level of confidence in the Corps-generated hydrology and hydraulic modeling. Unlike Colonel Lewis, I am not convinced. As a licensed professional engineer responsible for providing sound engineering information to our City Executive and Legislative branches, it is my professional opinion that the County's hydrology and hydraulics (H&H) study is based on technically defensible data subjected to best available scientific methods and techniques, incorporates sound engineering judgment, and merits FEMA's full consideration.

What follows is my response to Col Lewis' letters. It outlines where we differ on the H&H matter with regard to both factual information and process:

900 E. Fairhaven Ave., Burlington, WA 98233 • Phone (360) 755-0531 • Fax (360) 755-9565 • cityhall@ci.burlington.wa.us

- The Independent Technical Review of the County's Hydrology and Hydraulic Model by the Hydrologic Engineering Center (HEC) in Davis, California. Because HEC Davis is a division of the Corps of Engineers, and because the County asked one division of the Corps to review the work of another division of the Corps, it was essential in my view that HEC Davis and the Seattle District strictly follow Corps policy guidance to ensure a truly independent review. I was disappointed to see that this was not done. The process to communicate information (technical approach, thought processes, scoping, ideas, judgments) was not neutral. After an initial face to face meeting with HEC Davis staff and Seattle District staff, Skagit County's consultant was not given direct access to the HEC Davis engineers, but was instead required to formally submit information through the Seattle District, while Seattle District staff continued to have direct informal and unfettered access without the presence of the County's technical consultant. In effect, the Seattle District acted as team "lead" for the review of its own work product, which is not consistent with Corps policy guidance. Further, this effort was not completed. It is unclear whether the review staff at HEC ever saw the County consultant's final round of comments / concerns or had an opportunity to respond to them. Even when the County's consultant went to the additional effort of preparing and submitting a specific report to recast these concerns in the Corps' preferred "backcheck" format, the County never received a formal response confirming that these comments had been addressed. This incomplete process left me with the clear sense that the County's position was not being given equitable consideration. I concluded that the technical review was not independent and the Corps does not have a mechanism to respond in an independent way to the technical concerns the County's consultant raised.

- The Corps' feasibility study process versus the FEMA flood insurance study process. The County-produced hydrology complies with FEMA National Flood Insurance Program criteria. I agree that when designing flood protection features, a higher level of conservatism is appropriate. However, the Corps has compounded its conservative approach at nearly every stage of its technical work which has resulted, in my view, a hydraulic model which overstates the 100-year flood. I am concerned that the Corps hydrology, if used in FEMA's model to set the base flood elevation, will unnecessarily trigger unattainable flood control standards, effectively precluding on-the-ground basin-wide flood protection due to the expense and social acceptance. This is not an acceptable outcome if the basis for this result stems from an incorrect analysis.

- Stewart estimates of peak flood flows of unrecorded historic floods. Further investigation of the supporting documentation of the United States Geological Survey for historical floods of 1897, 1909, 1917 and 1921 performed by Larry Kunzler and analyzed by the County consultant reveals serious inconsistencies in the data, and differences within and between published records of the events. Stewart finalized his original work in 1918. In this report, he estimated the historic floods to be much smaller, based upon an analysis of major tributary contributions (see 1918 report, appendix J transcribed by L. Kunzler at attachment 3). The estimates eventually published in Water Supply Paper (WSP) 1527 by G. L. Bodhaine, after Stewart passed away, were much higher and cannot be reproduced using modern state-of-the-art hydraulic modeling methods. The methodology Stewart intended to use to estimate the flows of these historic events, the slope-area method, has an underlying assumption that the flood water's cross-sectional area and velocity remain the same over the reach being analyzed. Stewart (see Letter to F.M. Veatch, District Engineer, USGS, Tacoma, WA from

Stewart, June 1, 1950, at attachment 4) cautioned the use of this method and suggested to others (who continued to finish his work) the need to verify that velocities did not vary between sections and the amount of surging did not significantly affect the High Water Mark (HWM) readings. This is factually not true in the reach from Concrete to below the Dalles bridge, where Stewart based his analysis, and the USGS conducted its N-verification study in 2004. The slope area method cannot be relied upon to estimate the 1921 flood flow at the Concrete (Dalles) reach because velocities are very high (about 12 fps or higher with significant amount of surging) and vary from section to section. The USGS N-verification study clearly documents that this is happening in the study reach downstream of the Dalles, where the USGS-surveyed HWMs varied by 12 feet in the furthest upriver cross section, and by 2-7 feet in the "calmer" downstream cross sections (see attachment 5). This indicates the slope area method should not be used for this reach – but the USGS used this method anyway, and concluded, based upon this misapplication, that the WSP 1527 historic peak flood estimates should not be revised.

- Input data for Skagit Hydrology. The County consultant's engineering approach and methodology to determine the correct Skagit River hydrology is virtually the same as the Corps. The difference in results comes primarily from the data. In my view, all of the continuous reading data from the Concrete gage station (83 years) should be used, not just the 58 years used in the Corps' analysis. While I understand the Corps' concern about lack of information about dam regulation in the discarded data years, I believe a more comprehensive review of the historical record would enable reasonable engineering judgment to be applied to each peak flow data point, and would also bring back into the analysis, the critically important 24-hour (1-day average flow) information. The Corps uses 58 years of gage data, and the unmodified Stewart flow estimates of the historical events. The use of this data in this way is internally inconsistent, because Stewart stated that none of the historic floods spilled into the overflow channel to the north and east of the current Dalles bridge. If the discharge of these floods exceeded 200,000 cfs, then the water would, in fact, begin to flow into the overflow channel. So the County's consultant used the estimated high water marks, but modified the flow estimates to be consistent with the stage information. This approach is based upon sound engineering judgment which addresses these inconsistencies in a reasonable way. The Corps hydrology does not address this issue at all, which is not a reasonable engineering approach from my perspective.

- Michael Baker Corporation review for FEMA. A bullet in the information paper attached to Col Lewis' Nov 22, 2005 letter indicates FEMA's contracted technical consultant, Michael Baker Corporation, reviewed the County's technical work, apparently prior to the date of that letter. I have not seen this study, and would like to get a copy to review.

Subsequent to Col Lewis' letter, FEMA Region 10 staff agreed to task Wilbert Thomas, a Senior Technical Consultant for the Michael Baker Corporation and retired USGS employee, to review the hydraulic models and comment on the differences. Mr. Thomas' review was very limited in scope and in addition, he did not address the most substantive foundational issue of whether the historic unrecorded data points were accurate. Further, although the County was led to believe that Mr. Thomas was an independent expert and not connected to the Skagit flood study, I recently learned that Mr. Thomas was, in fact, in frequent contact with the Seattle District in a long-established role as FEMA's technical reviewer of the Seattle District's Skagit flood mapping work product. Mr. Thomas was asked to judge the adequacy of the Corps' hydraulic model and provide an independent review of

work that he had already accepted as the "customer" for the Corps work product – a work product that he had already reviewed and accepted through every intermediate step of the way. This relationship unfortunately casts a shadow over the "independence" of the review. About this time, the County contracted with Ray Jaren, a retired Corps manager from the Portland Division office, for advice. Ray recommended the County retain a consultant to specifically look at the historic unrecorded flood estimates. The County has since retained Northwest Hydraulic Consultants to look into this issue. Again, unfortunately from my perspective, this consultant is having difficulty balancing the request of the County to pursue objective information regarding these historic flood estimates, while simultaneously attempting not to risk future business with FEMA, USGS, or the Corps of Engineers – all entities that are primary customers of NHC and have either refused to address the County's concerns, or have gone on record in support of the Corps hydrology prior to a reasoned review of all of the opposing arguments.

In addition, Mr. Kunzler's research has uncovered the possibility, as a result of a direct interview of Mr. Fred Slipper (see attachment 6) that at least one house in Hamilton, the Smith house, constructed in 1908, was never flooded above the floor boards until the flood of 1995 (to just above the floor boards), and then possibly again in 2003. The current homeowner at this location has already agreed to allow a forensic investigation to acquire objective information about whether the house flooded in 1909, 1917, or 1921 and if so, how badly. The significance of this is that the flood of 1995 had a discharge at Concrete of about 160,000 cfs upstream of Hamilton; the flood of 2003, 166,000. The historic unrecorded flood estimates for Concrete in 1909, 1917, and 1921 were 260,000 cfs, 220,000 cfs, and 240,000 cfs respectively. If the Hamilton data verifies that the house was not, in fact, flooded prior to 1995, then this information would provide objective data which would point to the likelihood the historic flood estimates were closer to those in Stewart's original report of 1918, based upon his high water mark investigation and actual gage readings at the time.

In a letter dated October 26th, 2006, Matthew C. Larsen, Chief Scientist for Hydrology, USGS responded to a request to review Mr. Kunzler's Whitepaper. In his conclusion, Mr. Larsen stated that the stage of the 1921 unrecorded flood event is "precisely known." But the written record is not precise and further, the methods of the time could not have produced flood stage estimates accurate to within one tenth of a foot. In addition, not considered by Mr. Larsen is another Stewart notation of the time that none of the historic flood events of 1897, 1909, 1917, and 1921 left the channel upstream of the Dalles. Hydraulic modeling completed by the County's consultant indicate that flood water would leave the main channel and begin filling the remnant overflow channel to the north of the main channel, when Skagit flood flows reach about 200,000 cfs just upstream of the Dalles. Mr. Larsen also did not address the issue of hydraulic drop from the location of the old gage to the new gage, 200 feet further downstream. The County's hydraulic modeling at that location shows a two-foot drop for the four historical floods estimated by USGS; the USGS assumes no drop. Mr. Larsen further does not address the issue of the significant differences in discharge estimates for the coincident flows at Concrete and Sedro-Woolley for the four historic unrecorded events. The discharge estimates at Concrete for these floods averages over 22% higher than the estimates at Sedro-Woolley. The County's and the Corps' hydraulic modeling of the reach between these points shows this difference should be closer to neutral or a few percentage points higher at Sedro-Woolley. These coincident flow numbers do not make sense and have not been reconciled by the Corps. Mr. Larsen's analysis of Mr. Kunzler's Whitepaper acknowledges a considerable range of possibility for the USGS' current view of the 1921 discharge (plus or minus 36,000 cfs). He then states it would be improper to use a lesser value even though it may lie within the error range. I would submit that the evidence outlined above provides a solid basis to conclude the figure should be moved toward the lower range, while there is no

evidence to conclude the discharge estimate should be moved toward the higher range. Therefore, the judgment to not modify the discharge estimate is overly conservative and subsequently compounded, since all of the other historic peak flood discharge estimates are tied to the 1921 flood event. It is in this way, that the hydrology becomes overly conservative, a step at a time.

Beyond the issue of the hydrology and the hydraulic models, I continue to be concerned about the Corps process (General Investigation) for developing a flood project for the Skagit Valley. That is because the process: 1) has generated overstated hydrology that, if used as the basis for analyzing potential flood control measures, will effectively preclude reasonably affordable flood solutions, and 2) has already effectively precluded a critically important upstream measure (additional Baker Hydroelectric Project flood storage) due to costly-to-construct standards for Lower Baker dam. This GI process appears from my perspective to have little flexibility and is, in effect, a "poison pill" for accomplishing any future Skagit flood project. We continue to hear from the Seattle District, FEMA, Skagit County, and our Congressional Delegation that we must support the GI process; however, I cannot see how this is helping to put flood control measures on the ground. I am hopeful your staff can provide a clear road map describing how the GI process will, in fact, help complete a region-wide flood control project, or even a single component.

A final point: Col Lewis' letter infers that the County hydrology will endanger citizens. Recently, a letter from FEMA (attachment 7) is more direct, stating that FEMA "cannot support a proposal that prioritizes affordable flood control structures over potential citizen safety." I must take issue with this statement, and point out that this conjecture is premature, as FEMA has provided no information for review that would explain how its Corps-generated hydrology would form the basis for increasing citizen safety, while the County consultant's hydrology would form the basis for decreasing citizen safety. In my view, promulgating hydrology based upon incorrect information will result in overstating the 100-year flood event for the Skagit River. This will effectively preclude on-the-ground flood control by making it too expensive to implement. I am concerned about this potential outcome, especially because, from my perspective, the Corps overestimates the 100-year flood event because its hydrologic analysis does not adequately address the historical record. Again from my perspective, compelling information the County and the Cities continue to bring forward is not being considered in a rigorous and independent manner. This continues to be the primary issue and must be addressed.

We acknowledge and appreciate the strong and important relationship between the City of Burlington and the Corps that has existed for decades, especially with levee maintenance and flood fighting. The City, acting in the best interests of the entire community, would like to keep an open dialogue with the Corps on all matters of mutual concern and we will work hard to maintain the good relationship built over the years.

Sincerely,

Chal A. Martin, P.E.
Public Works Director / City Engineer

Attachments:

1. Col Lewis Ltr of November 22, 2005 to Mr. Joseph Weber, w/ atch
2. Col Lewis Ltr of April 26, 2006 to Senator Maria Cantwell, w/ atch

3. Summary table of Stewart 1918 peak flow estimates, Skagit River at Concrete
4. Letter to F.M. Veatch, District Engineer, USGS, Tacoma, WA from Stewart, June 1, 1950
5. USGS High Water Marks Profile Plot downstream of the Dalles, near Concrete
6. Declaration of Mr. Fred W. Slipper, April 29, 2006
7. FEMA Region X Ltr of October 16, 1006 to the Skagit River Impact Partnership

c: Carl Cook, FEMA Region X
Chuck Steele, Washington Department of Ecology
Skagit River Impact Partnership Members
City of Burlington Council and Executive
Office of Senator Patty Murray, Attn: Christy Gullion
Office of Senator Maria Cantwell, Attn: Sally Hinz
Office of Congressman Rick Larsen, Attn: Kristen LeMieux

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-2255

REPLY TO ATTENTION OF
Planning Branch

November 22, 2005

11/28
C: Skagit River Impact Partnership members
Senior Staff
Chuck Steele

Mr. Joseph Weber
Federal Emergency Management Agency
Region X, Mitigation Division
130 228th Street SW
Bothell, Washington 98021-9796

Dear Mr. Weber:

This letter is in response to the letter written by Chal Martin of Skagit County to Federal Emergency Management Agency (FEMA) dated September 26, 2005 requesting that FEMA consider the hydrology analysis presented by Skagit County's consultant (enclosed). I wish to reconfirm to FEMA that we are committed to developing a flood plain map for the Skagit River basin that accurately represents the flooding risks to citizens in the valley. We understand that this information is critical to insure the safety of existing and future businesses, homes, and farms.

It is because of the importance of this mission that the U.S. Army Corps of Engineers, Seattle District (Corps) has worked with Skagit County and their consultants for over 4 years to develop sound hydrologic and hydraulic models for the congressionally directed Skagit River General Investigation (GI) study. As part of that process, we provided our Skagit River hydrologic/hydraulic models for independent technical review by the Hydrologic Engineering Center in Davis, California. Our models passed their rigorous review with flying colors. The Skagit River flood insurance study hydrologic and hydraulic analyses are based on those same sound technical analyses prepared for our GI study. Please see enclosed Information Paper for more details.

I can appreciate that the citizens of the Skagit River basin would desire that flooding locations and depths not significantly increase with the FEMA remapping effort. However, the Corps has the responsibility to apply the best available scientific information to let residents know what their estimated risks are, so they may adequately protect their lives and property. As we share FEMA's interest in having the most accurate information possible, we will continue to work with your staff to address legitimate technical concerns during the remapping process.

If you have any questions or comments, please contact Ted Perkins, Skagit Flood Insurance Study Lead, at (206) 764-6927 or ted.e.perkins@usace.army.mil.

Sincerely,

Debra M. Lewis
Colonel, Corps of Engineers
District Engineer

Enclosures

Atch 1

US Army Corps of Engineers

INFORMATION PAPER
Skagit River Flood Insurance Study Issues
Skagit River, WA

CENWS-PM-PL
31 October 2005

Goal: FEMA has contracted with Seattle District to produce hydraulic input for the new Flood Insurance Rate Maps (FIRMs) for the Skagit River that accurately depict the valley's flood risks based on best available scientific methods and techniques. The hydraulic analysis will address FEMA requirements, and incorporate some of the hydrology and hydraulics effort developed for the Skagit River Flood Damage Reduction Study.

Issue: Skagit County has serious flooding problems. Preliminary results from the Corps new modeling efforts show that the new FIRMs may have water surface elevations for the 100-year event that are as much as 8 or 9 feet higher in some locations than the previous study completed in 1984. This could significantly restrict development in the lower Skagit River valley. Skagit County has written a letter to FEMA stating that they do not accept our hydrology and are requesting that FEMA instead use hydrology developed by Skagit County's engineering consultants.

Background.

- FEMA is the lead on the Skagit River Flood Insurance Study (FIS). We will follow the guidelines set by them to complete the study appropriately.
- The hydrology and hydraulics for the FIS are built on our work for the Skagit River Flood Damage Reduction Study.
- We do not know what Skagit County's specific concerns are yet for the FIS.
- Skagit County has challenged the hydrology and hydraulics effort for the separate Flood Damage Reduction Study for 4 years despite many technical reviews and attempts to address their concerns.
- The majority of Skagit County's past arguments relate to their analysis that effectively reduces the size of the 100-year flood event estimated by the Corps.
- An understated floodplain encourages additional development in dangerous locations, promotes development in locations that block flow from moving efficiently downstream, and would lead to inadequate flood solutions.

1. **Flood Insurance Study Hydrology**
   - Hydrology for current Flood Insurance Study is within 3% of the hydrology developed for the 1984 study.
   - The Corps' hydrology for the Flood Damage Reduction Study has been technically reviewed by the Corps' Hydrologic Engineering Center, USGS, Michael Baker Corporation for FEMA, and Tetra Tech for Puget Sound Energy.
   - The hydrologic methodology for the Flood Damage Reduction Study and the Flood Insurance Study are the same except for one statistical adjustment that FEMA does not make.
   - Past arguments from Skagit County on hydrology have focused on removing or altering historical flows developed by USGS. USGS has repeatedly looked into these arguments and continues to stand behind their original data.
   - Skagit County consultant's work for their hydrologic modeling effort was found to not be adequate for modeling hypothetical events such as the 100-year event by the Corps' Hydrologic Engineering Center.

Atch 1

2. **Flood Insurance Study Hydraulics**
   - The 1984 Flood Insurance Study did not have sophisticated hydraulic models to accurately depict the lower Skagit Valley floodplain and relied on many simplistic assumptions.
   - With the huge increase in computer power over the past two decades, more sophisticated models have been developed that can more accurately simulate complex floodplains like the lower Skagit Valley.
   - The improvements in the hydraulic modeling are causing the differences in water surface elevations between the 1984 study and the current study.
   - The Flood Insurance Study floodplain model is derived from the models built for the Flood Damage Reduction Study. The Flood Insurance Study model is more complex but is calibrated to the Flood Damage Reduction Study to ensure they perform similarly.
   - The Corps' Flood Damage Reduction Study hydraulics was technically reviewed by the Corps' Hydrologic Engineering Center, WEST Consultants, and Tetra Tech for Puget Sound Energy.
   - Michael Baker Corporation for FEMA will review the Flood Insurance Study model when we complete our runs with the model and give them the results.
   - The Corps has worked with Skagit County for over 4 years on our hydrologic and hydraulic modeling. We are not aware of anything Skagit County or their consultant has that would be an improvement over the current Flood Insurance Study hydraulic modeling efforts.

3. Seattle District Recommendation: The Corps will continue to work with FEMA to address legitimate technical concerns during the remapping process in order to insure that the final product is as accurate as possible, incorporating the best scientific information available.

Atch 1

SKAGIT COUNTY
PUBLIC WORKS DEPARTMENT
1800 Continental Place, Mount Vernon, WA 98273-5625
(360) 336-9400 FAX (360) 336-9478

September 26, 2005

Joseph Weber
FEMA Region X
130 — 228th Street S.W.
Bothell, WA 98021-9796

Dear Mr. Weber:

I am writing this letter to request FEMA not rely solely on Corps of Engineers-produced hydrology for its Skagit Revised Flood Insurance Study. As the Skagit County Engineer, Public Works Director, and technical advisor to the Board of Skagit County Commissioners for flood issues, I want you to know I have not accepted the Corps' hydrology for any use other than for the limited administrative purpose of closing out the current phase of the Skagit River Flood Feasibility Study General Investigation Project Management Plan.

While I support FEMA's work to update Skagit River flood maps, I am concerned maps produced using only Corps hydrology may be not be accurate. Over the past three years, the level of our technical understanding of the river has increased substantially. The technical information we have developed is compelling and relevant to your study.

Therefore, as FEMA moves forward to develop the revised flood maps, I respectfully request FEMA consider the County's analysis. I believe the Skagit River community will be best served by FEMA carefully considering all available and relevant information before setting flood elevations which may not be revised again for 30 years. To this end, we are finalizing documentation of the County's hydrology and hydraulics study which will include a thorough review of areas of disagreement with the Corps-produced hydrology. We hope you will give this information your full consideration.

Sincerely,

Chal A. Martin, P.E.
Director / County Engineer

CAM/jjg
cc. Colonel Debra Lewis, Commander, Seattle District Corps of Engineers
Chuck Steele, Washington State Department of Ecology
Skagit River Impact Partnership

Atch 1

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-2255

REPLY TO ATTENTION OF

Planning Branch

APR 26 2006

Honorable Maria Cantwell
United States Senate
ATTN: Mr. Jay Pearson
Jackson Federal Building
915 2nd Ave., Suite 3206
Seattle, WA 98174

Dear Senator Cantwell:

This is in response to your letter dated April 6, 2006, requesting a response to Mr. Richard Pease's letter of March 30, 2006 concerning potential revisions to the Skagit River Basin's designated flood plain. The Federal Emergency Management Agency (FEMA) contracted with the Seattle District, U.S. Army Corps of Engineers (Corps) to conduct a flood insurance study (FIS) of the Skagit River Basin from Sedro Woolley downstream to Puget Sound. This new FIS will update the 100-year recurrence-interval flood plain originally defined in the 1984 Skagit River FIS.

The intent of this study is to better define flood-prone areas and update the flood insurance rate map and to insure that citizens are fully aware of potential flood hazards. Because the Corps takes this effort seriously, we have devoted considerable effort to insure that we have used the best available methods and data. The hydrology and hydraulics models used by the Corps for this FIS incorporate new data and modeling techniques not available in 1984. These models have been technically reviewed by a number of highly qualified agencies and consultants including the Hydrologic Engineering Center (HEC) and the United States Geological Survey (USGS). HEC found that the Corps' models conformed to standard engineering principles and standards. When the new flood plain maps are released this fall, we are confident that they will provide the best available definition of flood risks in the lower Skagit River Basin.

The Corps has considered Skagit County's hydrologic and hydraulic analyses and found them to be unacceptable for use in the FIS. At Skagit County's request, the Corps funded HEC to review the hydrologic and hydraulic models developed by their consultant, Pacific International Engineering. HEC determined that the submittal by the County's consultant was inadequate. Skagit County and their consultant have also questioned the USGS flood peak data from the early 1900s. At the request of Skagit County, the USGS reviewed their data points and provided a report stating they continue to stand behind their data. At the request of the Skagit County officials, FEMA tasked technically qualified engineers from the Michael Baker, Jr. Corporation to review both the Corps hydrology and the hydrology provided by the County as

Atch 2

part of the remapping effort for the Skagit Basin. Based on the results of the review, FEMA determined that they would proceed with the remapping effort using the Corps hydrology.

Based on the results of these many intensive reviews, FEMA has directed the Corps continue our mapping process for the Skagit River Basin using our hydrology and hydraulic model. We are working as quickly as possible to complete our part in the mapping effort so the public can review the resulting 100-year (1% recurrence interval) flood plain. A copy of this letter is being sent to the individuals on the enclosed listing. If you have any further questions on this matter, please contract Ms. Linda Smith, Project Manager, at (206) 764-6721 or linda.s.smith@usace.army.mil.

Sincerely,

Debra M. Lewis
Colonel, Corps of Engineers
District Commander

Enclosure

Atch 2

Copy Furnished:

Honorable Patty Murray
2988 Jackson Federal Building
915 Second Avenue
Seattle, WA 98174

Honorable Rick Larsen
2930 Wetmore Avenue, Ste 9E
Everett, WA 98201

Mr. Carl Cook, Jr.
Director, Mitigation Division
FEMA Region 10
130 228th Street SW
Bothell, WA 98021

Mr. Ken Dahlstedt
Skagit County Commissioner
County Administration Building
700 S 2nd St, Rm 202
Mount Vernon, WA 98273

Mr. Dave Brookings
Skagit County
1800 Continental Pl
Mount Vernon, WA 98273-5625

Atch 2

COMMITTEES:
COMMERCE, SCIENCE, AND TRANSPORTATION
ENERGY AND NATURAL RESOURCES
INDIAN AFFAIRS
SMALL BUSINESS

United States Senate

WASHINGTON, DC 20510–4705

April 6, 2006

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 2

To Torey Nelson	From Linda Smith
Dept./Agency Skagit County	Phone #
Fax # 360-336-9478	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Col. Debra Lewis
District Engineer
Department of Defense
U.S. Army Corps of Engineers
4735 East Marginal Way South P.O. Box 3755
Seattle, Washington 98134

RE: Richard Pease
4092 San Juan Blvd
Anacortes, Washington 98221

Dear Col. Lewis,

My constituent, Richard Pease, has contacted my office for assistance with an issue within your jurisdiction. The following document(s) provide an explanation of my constituent's concern or request. I would appreciate your prompt attention to this matter, and I look forward to your response.

Please direct your response to Jay Pearson in my Seattle District Office at Jackson Federal Building, 915 2nd Avenue, Suite 3206 Seattle, Washington, 98174. Jay Pearson can be reached via: phone: 206-220-6400, fax: 206-220-6404, or email: jay_pearson@cantwell.senate.gov.

If I can provide any additional information, please do not hesitate to contact my office. Thank you for your assistance in this matter.

Sincerely,

Maria Cantwell
United States Senator

MC: jp

RECEIVED
4 2006
SKAGIT COUNTY
PUBLIC WORKS ADMIN.

PLEASE REPLY TO:

☐ 2930 WETMORE AVENUE
SUITE 8B
EVERETT, WA 98201
(425) 303-0114
FAX (425) 303-8381

☐ 925 JADWIN AVENUE
SUITE 204/204A
RICHLAND, WA 99352
(509) 946-8108
FAX (509) 946-8377

☐ JACKSON FEDERAL BUILDING
915 2ND AVENUE, SUITE 3206
SEATTLE, WA 98174-1003
(206) 220-6400
TOLL FREE 1-888-648-7225
FAX (206) 220-6404

☐ U.S. FEDERAL COURTHOUSE
WEST 920 RIVERSIDE, SUITE 697
SPOKANE, WA 99201
(509) 353-2507
FAX (509) 353-2547

☐ 950 PACIFIC AVENUE
SUITE 615
TACOMA, WA 98402
(253) 572-3091
FAX (253) 572-3979

☐ MARSHALL HOUSE
1313 OFFICERS' ROW
FIRST FLOOR
VANCOUVER, WA 98661
(360) 696-7838
FAX (360) 696-7844

WEB: http://cantwell.senate.gov
PRINTED ON RECYCLED PAPER

Attch 2

4092 San Juan Blvd.
Anacortes, WA 98221

March 30, 2006

Senator Maria Cantwell
915 Second Ave., Suite 3206
Seattle, WA 98174

Dear Senator Cantwell:

I am writing to ask for your help for myself and other fellow citizens who live in and/or own property in the Skagit Valley.

We are located in the flood basin of the Skagit River. For decades we have had an established 100 year flood level height.

Recently, the U.S. Army Corps of Engineers has recommended a 7-8' increase in the 100 year base level and FEMA is set to adopt this recommendation. This change will affect almost all property in the Skagit Valley in a negative way with huge increases in flood insurance, restrictions in permits and improvements of any type.

Skagit County has hired an independent engineering firm to look into this change. That firm and county officials have said the Corps of Engineers data is incorrect. Further, they say there is no reason to increase the flood base by 7-8' over the base we have had for years.

I am asking the following of you: 1.) Please ask the Corps of Engineers to review the data from Skagit County Engineering and to explain their reason to change the flood elevation, and (2.) If the Corps cannot accept the county data, then please ask the independent engineering firm to evaluate the data from both the Corps of Engineers and Skagit County to determine what the actual elevation of the 100 year flood plan should be.

We need to get to the truth of this matter.

Thank you,

Richard Pease

Atch 2

From research conducted by Larry Kunzler. Stewart's 1918 report, Appendix J

Location	Drainage area	1897 Maximum discharge	1909 Maximum discharge	1917 Maximum discharge
	sq. mi.	sec.-ft.	sec.-ft.	sec.-ft.
Skagit River Power Camp	1,090	47,400	63,500	47,400
Cascade R. Power Camp	222	40,000	26,000	52,000
Sauk River at Darrington	293	44,000	40,000	36,000
Suiattle River at mouth	345	55,000	38,000	45,000
Baker R. below Anderson Cr.	184	36,700	46,200	36,700
Total		222,000	214,000	197,000
Skagit R. below Baker River (i.e. The Dalles)		205,000	185,000	175,000
Skagit River nr. Sedro-Woolley	2,930	171,000	169,000	157,000

Source: Stewart July 1918 Skagit River Flood Report - Retyped, Appendix J

Atch 3

WEST VIRGINIA
POWER AND TRANSMISSION COMPANY

14 Wood Street
Pittsburgh 22, Pa.
June 1, 1950

Mr. F. M. Veatch
District Engineer
U. S. Geological Survey
207 Federal Bldg.
Tacoma, Washington

Noted F.M.V

Dear Mr. Veatch:

Noted E.E.B.

In April and May 1946 we had some correspondence regarding the possibility of slope measurements below "The Dalles" on Skagit River near Concrete. I am enclosing copies for your convenience in reviewing.

As indicated by the correspondence, the proposed slope measurements would be made to check (using the gaging station rating) the accuracy of the value of "N" used in my 1923 computations for previous large floods at "The Dalles."

In March 1923, to get flood work started with the West Penn Power Company, I had to leave Tacoma before I had completed the Skagit River Preliminary Flood Report (which contains all of the material previously promised to Skagit County). The most important work not accomplished at that time, due to lack of a gaging station at "The Dalles," was checking the value of "N" used for the slope sections. Probably that work has not yet been done, for I expect in 1948, when there must have been a high summer flood on the Skagit, you probably were swamped with straight stream gaging work all over Washington.

From U.S.G.S. and U.S.W.B. bulletins I would expect for this year a high summer flood on the Skagit, occuring somewhere between June 10th and 20th. Also, I believe the flow will be sufficiently large then for checking the "N" applicable to the large winter floods. Anyway, I believe the coming flood will be about as high as we can expect for a summer flood outside of 1948. Accordingly, I hope it can be used for the advisable work in checking "N."

Atch 4

In the above connection, I telephoned yesterday to Mr. C. G. Paulsen to see what he thought about the problem. He said that the survey was still very much interested in getting out a final Skagit Flood Report and suggested that I write to you and find out what could be done now about checking the "N" used in the 1923 Skagit Report.

After talking with Mr. Paulsen, I came to the conclusion that due to the short time before this summer's flood peak I probably should talk to you over the telephone before writing. However, your Tacoma office advised that you were not expected back until Monday, June 5. I am still trying to get you at Pullman, Washington, but am sending this letter through so it will be on your desk not later than Monday morning.

He reached me Tues. JEW

I am enclosing a memorandum which contains my ideas as to what slope section data should be obtained at this time.

I am also enclosing a copy of Exhibit "B" of my unpublished report. However, it is my only complete copy and I would appreciate it if you would kindly return it at once; i.e., if you have a copy, or as soon as convenient if you do not have a copy.

Cordially yours,

James E. Stewart

James E. Stewart
Vice President

Encl.
CC to Messrs: C. G. Paulsen
Wm. S. Eisenlohr, Jr.

Atch 4

SLOPE SECTIONS "THE DALLES" ON
SKAGIT RIVER NEAR CONCRETE

In choosing a slope section, the most important feature is the selection of one where the stream is neither gaining or losing velocity; i.e., selecting a section where the average velocity at the upper end of it (and throughout) is the same as for the lower end. If this is not done, there is a gain or loss in velocity head which cannot be taken care of in the regular formula. In practice, the ideal cannot be attained, but it should be approached as closely as possible. This can be done only by studying the stream in flood.

To counteract the uncertainties involved in velocity head gain or loss, it is advisable to take several sections and average the results obtained from them. In 1922-1923 cross-sections were taken at 618 -- 2,749 and 4,655 feet downstream from the mouth of "The Dalles." If not too difficult, it is suggested that for this important checkwork five cross-sections be taken, say about 700--1,700--2,700--3,700 and 4,700 feet downstream from the mouth of "The Dalles." These five cross-sections will make four stream sections available. It is important that the first one of these below "The Dalles" be far enough below so that all of the velocity head gained in "The Dalles" is lost; i.e., that the water has at least reached its maximum level resulting from the loss in velocity head.

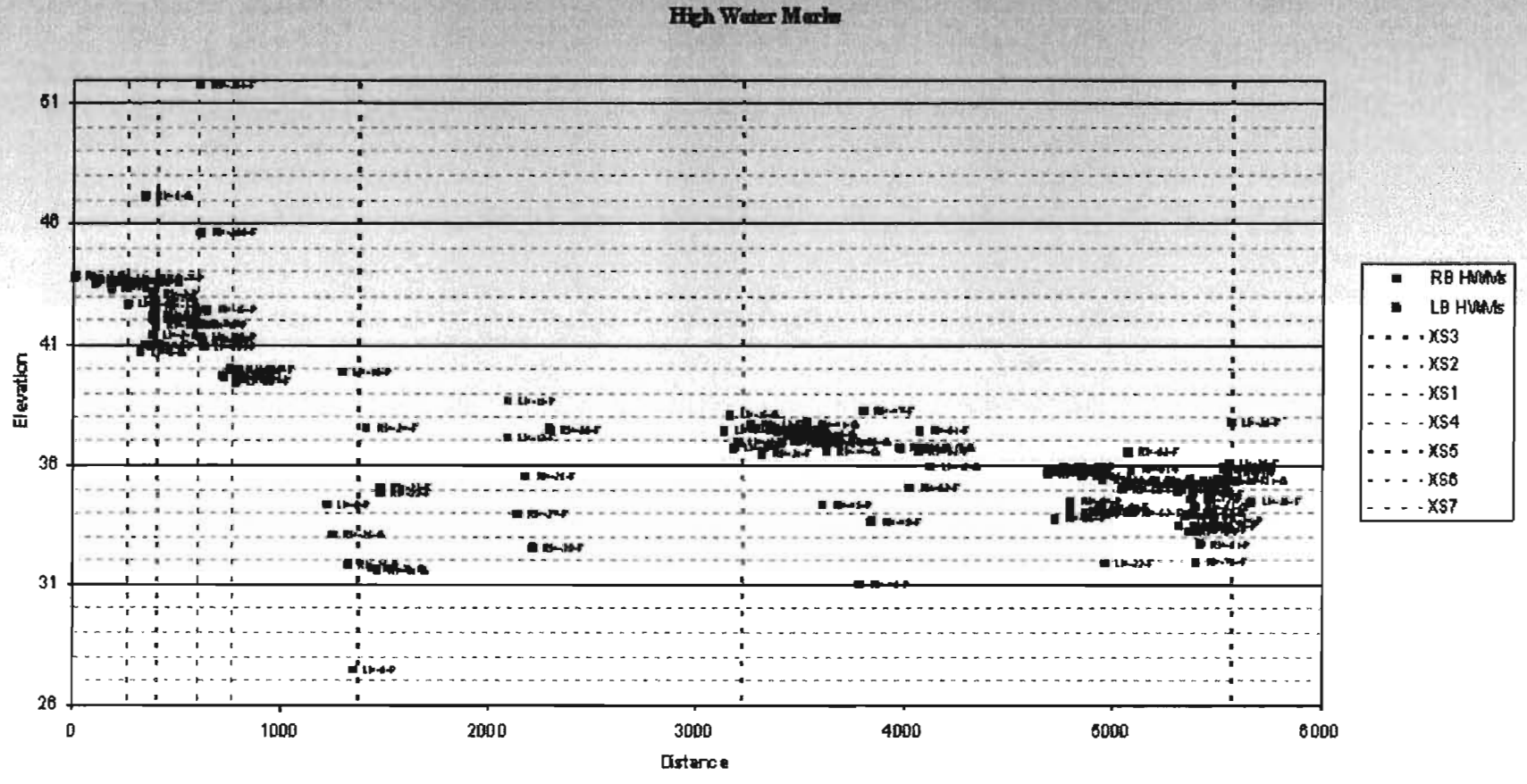
Another feature of some importance, although how much is uncertain, is the amount of surging in the stream at the ends of the sections during the crest of the flood. Manifestly the only elevations available, when the flood crest is based on high water marks, is the crest of the surges, whereas what is needed is the mean level of the water at the time of the flood crest. Information as to this feature can be obtained by determining the amount of surging at the cross-sections for a lower flood, and then by means of the relation of the surging at the water stage records for both floods, determine the surging for the higher flood at the cross-sections.

James E. Stewart

JES:jmk

Atch 4

High Water Marks Profile Plot at Concrete USGS Gauge Location



Attch 5

IN RE THE MATTER OF THE HISTORY OF THE SKAGIT RIVER	DECLARATION OF FRED W. SLIPPER

I, Fred W. Slipper, under penalty of perjury under the laws of the State of Washington, declare as follows:

1. I was born on May 14, 1917 in my mother and fathers house in Hamilton, Washington. A picture of the house is shown below as it appears today.

2. The house was originally built in 1887 and moved to this location, 584 Maple Street, in 1902. At this location it only had floodwater in it during the December 1921 flood. At no time previous nor subsequent to that date did it have floodwaters in it until the November, 1990 floods.

3. The reason I remember this is because my mother and father had just installed hardwood floors the year before and they were very worried that the 2 inches of floodwater were going to hurt the floors. Because the floodwater was only in the house for a little over an hour or two, the hardwood floors were not damaged. They talked about this from time to time during my childhood.

4. Before 1990 the first floor of the living quarters sat approximately 2 to 3 feet off the ground. The house was raised after the second November 1990 flood when it again had floodwater inside, this time I am told it had 16 inches of water in it.

5. For over 9 years I worked as a weekly columnist for the local Courier Times. On January 7, 1981 I reminisced about my boyhood days in Hamilton and wrote about the infamous December 1921 flood. A copy of that article is attached hereto as Exhibit A.

6. There were a handful of other homes in Hamilton that never had water in them during any flood event until the decade of the 1990's. One of them was called "The Smith House" which is situated at the east end of town at 307 Maple Street. The Smith House was built in 1908 as determined by Skagit County Tax Assessor Records.

Fred W. Slipper

April 29, 2006 Sedro-Woolley, Washington
Date and Place of Execution

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

October 16, 2006

Certified Mail
Return Receipt Requested

Skagit River Impact Partnership
Attn: Honorable Bud Norris
Mayor of Mount Vernon
P.O. Box 809
Mount Vernon, Washington 98273

Dear Mayor Norris:

This letter is intended for the Skagit River Impact Partnership (SRIP) organization. I have addressed it to you as the spokesperson. Please share it with other members of the organization at your convenience.

During our last meeting on September 14, 2006, Pacific International Engineers (PIE) provided a brief overview of a new hydrologic proposal whereby all four controversial floods of record would be removed from calculations of the one percent flood. While I support SRIP's ongoing efforts to reduce flooding in Skagit County, I strongly encourage the organization to work with the US Army Corp of Engineers (USACOE) on potential flood control solutions.

After further consideration, it is my decision that the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) will not provide additional analysis on the possible outcomes that Mr. Hosey's scenario could yield. It is this agency's responsibility to accurately map the flood risk and provide maps for insurance rating purposes. The PIE proposal encourages FEMA to ignore historic information documented by the US Geological Survey, used by the USACOE in their ongoing general investigation and corroborated in other basin flood insurance studies. I cannot support a proposal that prioritizes affordable flood control structures over potential citizen safety.

This is FEMA's position for the purposes of our ongoing study. As I have mentioned in several letters and at our meeting, this position does not preclude any community or citizen from performing their own technical analysis and submitting it to FEMA during the statutory appeal period or as a Letter of Map Revision at any time.

Atch 7

If you have any questions about my position, please contact me at (425) 487-4687, or Ryan Ike of my staff. He can be reached at the above address, or by calling (425) 487-4767.

Sincerely,

Carl L. Cook, Jr., Director
Mitigation Division

cc: Colonel Michael McCormick, Seattle District US Army Corp of Engineers
Office of Senator Murray, Attn: Ardis Dumett, Seattle
Office of Senator Cantwell, Attn: Jay Pearson, Seattle
Office of Congressman Rick Larsen, Attn: Jill McKinney, Everett
Chuck Steele, Department of Ecology, Bellevue

Atch 7