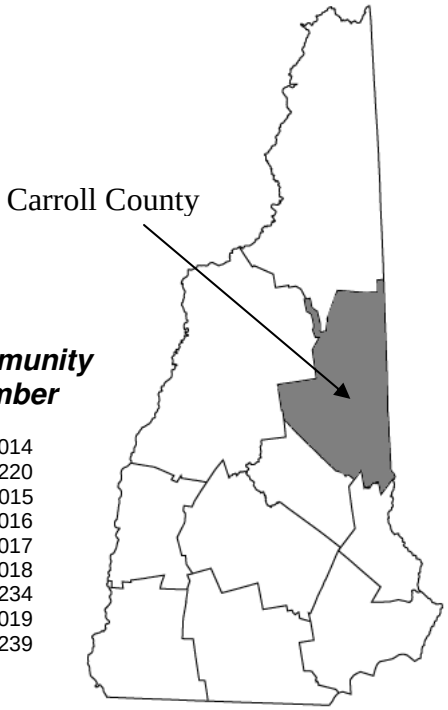
FLOOD INSURANCE STUDY

VOLUME 1 OF 2

CARROLL COUNTY, NEW HAMPSHIRE

(ALL JURISDICTIONS)



Community Name	*Community Number*	*Community Name*	*Community Number*
ALBANY, TOWN OF	330174	JACKSON, TOWN OF	330014
BARTLETT, TOWN OF	330010	MADISON, TOWN OF	330220
BROOKFIELD, TOWN OF	330179	MOULTONBOROUGH, TOWN OF	330015
CHATHAM, TOWN OF	330181	OSSIPEE, TOWN OF	330016
CONWAY, TOWN OF	330011	SANDWICH, TOWN OF	330017
EATON, TOWN OF	330204	TAMWORTH, TOWN OF	330018
EFFINGHAM, TOWN OF	330012	TUFTONBORO, TOWN OF	330234
FREEDOM, TOWN OF	330013	WAKEFIELD, TOWN OF	330019
*HALE'S LOCATION, TOWN OF	330246	WOLFEBORO, TOWN OF	330239
HART'S LOCATION, TOWN OF	330213		

*No Special Flood Hazard Areas Identified

Revised Preliminary:
November 23, 2011

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
33003CV001A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone(s)	New Zone
Al through A30	AE
B	X
C	X

Initial Countywide FIS Effective Date: To Be Determined

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FLOOD INSURANCE STUDY
CARROLL COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Carroll County, including the Towns of Albany, Bartlett, Brookfield, Chatham, Conway, Eaton, Effingham, Freedom, Hale's Location, Hart's Location, Jackson, Madison, Moultonborough, Ossipee, Sandwich, Tamworth, Tuftonboro, Wakefield and Wolfeboro (referred to collectively herein as Carroll County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the Town of Hale's Location has no mapped Special Flood Hazard Areas (SFHAs).

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

The Digital Flood Insurance Rate Map (DFIRM) and FIS report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Precountywide Analyses

Information on the authority and acknowledgements for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below:

Bartlett, Town of:	The hydrologic and hydraulic analyses for Bartlett Brook, East Branch Saco River, Ellis River, Rocky Branch, and Saco River, for the March 1, 1984, FIS report (Reference 1) were performed by Hamilton Engineering Associates, Inc., for FEMA, under Contract No. H-3990. The work was completed in September 1977.
Conway, Town of:	The hydrologic and hydraulic analyses for Saco River and Swift River, for the October 1978 FIS report were performed by Hamilton Engineering Associates, Inc., for the Federal Insurance Administration (FIA), under Contract No. H-3990. The work was completed in July 1977 (Reference 2). The hydrologic and hydraulic analyses for Kearsarge Brook and Pequawket Pond, for the June 3, 2002, FIS report (Reference 3) were performed by the U.S. Geological Survey (USGS), for FEMA, under Interagency Agreement No. EMW-98-1A-0175. The work was completed in August 1999.
Freedom, Town of:	The hydrologic and hydraulic analyses for West Branch for the July 3, 1995, FIS report (Reference 4) were performed by Roald Haestad, Inc., for FEMA, under Contract No. EMW-90-C-3126. The work was completed in January 1993.
Jackson, Town of:	The hydrologic and hydraulic analyses for East Branch Saco River, Ellis River, Marsh Brook, and Wildcat Brook, for the January, 1979, FIS report (Reference 5) were performed by Hamilton Engineering Associates, Inc., for the FIA, under Contract No. H-3990. The work was completed in September 1977.

Ossipee, Town of:	The hydrologic and hydraulic analyses for Bearcamp River, Lovell River, Ossipee Lake, and West Branch for the June 17, 1991, FIS report (Reference 6) were performed by the U.S. Army Corps of Engineers (USACE), New England Division, for FEMA, under Interagency Agreement No. EMW-84-E-1506, Project Order No. 1, Amendment No. 26. The work was completed in April 1988. The hydrologic and hydraulic analyses for the July 3, 1995, revised FIS report (Reference 7) were prepared by Roald Haestad, Inc., for FEMA, under Contract No. EMW-90-C-3126. The work was completed in January 1993. The hydraulic analysis of the Lovell River was modified for FEMA by Dewberry and Davis. The work was completed in November 1993.
Tamworth, Town of:	The hydrologic and hydraulic analyses for Bearcamp River for the July 16, 1991, FIS report (Reference 8) were performed by the Soil Conservation Service (SCS), now the Natural Resources Conservation Service (NRCS), for FEMA, under Interagency Agreement No. EMW-88-E-2736, Project Order No. 2. The work was completed in September 1989.
Tuftonboro, Town of:	The hydrologic and hydraulic analyses for Lake Winnipesaukee and Moultonborough Bay for the May 4, 1989, FIS report (Reference 9) were performed by the SCS, for FEMA, under Interagency Agreement No. EMW-86-E-2225, Project Order No. 1. The work was completed in January 1987.
Wakefield, Town of:	The hydrologic and hydraulic analyses for Branch River, Province Lake, Belleau Lake, and Great East Lake for the June 17, 1991, FIS report (Reference 10) were performed by USGS, for FEMA, under Interagency Agreement No. EMW-85-E-1823, Project Order No. 20. The work was completed in January 1990. The hydrologic and hydraulic analyses for Stump Pond were performed by the SCS during the

Wakefield, Town of (Continued):	preparation of the FIS for the Town of Newfield, Maine (Reference 11). The hydrologic and hydraulic analyses for Belleau Lake for the July 17, 2006, FIS report (Reference 12) were performed by the USGS, for FEMA, under Interagency Agreement No. EMW-2002-IA-0115, Project Order No. 1. The work was completed in September 2003.
Wolfeboro, Town of:	The hydrologic and hydraulic analyses for Lake Winnipesaukee, Lake Wentworth-Crescent Lake, and Rust Pond for the May 17, 1989, FIS report (Reference 13) were performed by the SCS, for FEMA, under Interagency Agreement No. EMW-86-E-2225, Project Order No. 1. The work was completed in March 1987.

The Towns of Albany, Brookfield, Chatham, Eaton, Effingham, Hale's Location, Hart's Location, Madison, Moultonborough, and Sandwich have no previously printed FIS reports.

This Countywide FIS Report

The redelineation for Moultonborough Bay, Ossipee Lake, Pequawket Pond, and Province Lake were performed by the Strategic Alliance for Risk Reduction (STARR) for FEMA under Contract No. HSFEHQ-09-D-0370. The work was completed in December 2010.

The hydrologic and hydraulic analyses for Bay Tributary 1, Bay Tributary 1.1, Berry Pond/Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook Tributary 1, the Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brook Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1 were performed by STARR for FEMA, under Contract No. HSFEHQ-09-D-0370. The work was completed in February 2011.

The hydrologic and hydraulic analyses for Squam Lake were taken from the FIS for Grafton County, New Hampshire (Reference 14).

Base map information shown on the Flood Insurance Rate Map (FIRM) was provided in digital format by the National Agriculture Imagery Program. This information was photogrammetrically compiled at a scale of 1:12,000, from aerial photography dated 2009. The projection used in the preparation of this map is State Plane New Hampshire, and the horizontal datum used is the North American Datum of 1983 (NAD 83), GRS80 Spheroid.

1.3 Coordination

An initial meeting is held with representatives from FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied or restudied. A final meeting is held with representatives from FEMA, the community, and the study contractor to review the results of the study.

Precountywide Analyses

The initial and final meeting dates for previous FIS reports for Carroll County and its communities are listed in the following table:

Community	FIS Date	Initial Meeting	Final Meeting
Bartlett, Town of	March 1, 1984	March 26, 1976	May 25, 1978
Conway, Town of	October 1978 June 3, 2002	March 25, 1976 September 16, 1998	May 25, 1978 February 14, 2001
Freedom, Town of	July 3, 1995	April 5, 1993*	May 12, 1994
Jackson, Town of	January 1979	March 26, 1976	June 27, 1978
Ossipee, Town of	June 17, 1991 July 3, 1995	August 3, 1983 August 12, 1992	July 27, 1990 May 16, 1994
Tamworth, Town of	July 16, 1991	September 1987	June 21, 1990
Tuftonboro, Town of	May 4, 1989	October 9, 1986	February 8, 1988
Wakefield, Town of	June 17, 1991 July 17, 2006	February 14, 1985 April 18, 2002	July 27, 1990 **
Wolfeboro, Town of	May 17, 1989	October 24, 1986	March 21, 1988

*Community informed by letter
**Data not available

This Countywide FIS Report

The initial meeting was held via conference call on September 1, 2005, with representatives of FEMA, USGS, Watershed Concepts, New Hampshire Office of Emergency Management, and the University of New Hampshire.

The results of the study were reviewed at the final meeting held on _____, and attended by representatives of _____. All issues and/or concerns raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Carroll County, New Hampshire, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction.

The streams and lakes studied by detailed methods for the previous community FISs are listed in Table 1.

Table 1 – Flooding Sources Studied by Detailed Methods

Bartlett Brook	Moultonborough Bay
Bearcamp River	Ossipee Lake
Belleau Lake	Pequawket Pond
Branch River	Province Lake
East Branch Saco River	Rocky Branch
Ellis River	Rust Pond
Great East Lake	Saco River
Kearsarge Brook	Stump Pond
Lake Wentworth-Crescent Lake	Swift River
Lake Winnipesaukee	West Branch
Lovell River	Wildcat Brook
Marsh Brook	

The limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

This Countywide FIS Report

The streams and lakes newly studied by detailed methods for this countywide study are listed in Table 2.

Table 2 – Scope of Revision

Bay Tributary 1	Red Hill River Tributary 1
Bay Tributary 1.1	Red Hill River Tributary 1 Diversion
Berry Pond / Berry Pond Tributary 1	Shannon Brook
	Shannon Brook Tributary 1
Berry Pond Diversion	Squam Lake
Halfway Brook	Weed Brook
Halfway Brook Tributary 1	Weed Brook Diversion
Red Hill River	Weed Brook Tributary 1

Moultonborough Bay, Ossipee Lake, Pequawket Pond, and Province Lake were redelineated for this countywide study using Light Detection and Ranging (LiDAR) data with a 2-foot contour interval derived from the data that was collected by Photo Science, Inc. (Reference 15).

For this countywide FIS, the FIS report and FIRM were converted to countywide format, and the flooding information for the entire county is shown. Also, the vertical datum was converted from the National Geodetic Vertical Datum of 1929 (NGVD) to the North American Vertical Datum of 1988 (NAVD). In addition, the Transverse Mercator, State Plane coordinates, previously referenced to the North American Datum of 1927 (NAD27), are now referenced to the NAD83.

Approximate analyses were used to study those areas having low development potential or minimal flood hazards. The scope and methods of study were proposed to and agreed upon by FEMA and the State of New Hampshire.

The following tabulation presents Letters of Map Change (LOMCs) incorporated into this countywide study:

LOMC	Case Number	Date Issued	Project Identifier
LOMR*	03-01-079P	9/18/2003	Lake Winnipesaukee – Helen Island

*Letter of Map Revision (LOMR)

The following tabulation lists flooding sources that have names in this countywide FIS that differ from those used in the previously printed FIS reports for the communities in which they are located.

Community	Old Name	New Name
Town of Freedom	Broad Bay / Leavitt Bay	Ossipee Lake
Town of Ossipee	Broad Bay / Leavitt Bay	Ossipee Lake

2.2 Community Description

Carroll County is bordered on the northeast by Oxford County, Maine; on the southeast by York County, Maine, on the south by Strafford County, New Hampshire; on the southwest by Belknap County, New Hampshire; on the west by Grafton County, New Hampshire; and on the north by Coos County, New Hampshire. The county seat for Carroll County is the Town of Ossipee. The population in 2010 for Carroll County was 47,818. The land area for Carroll County is approximately 929 square miles (Reference 16).

Temperatures in the county range from an average high of 80 degrees Fahrenheit (°F) to an average low of 53°F in the summer, and from an average high of 28°F to an average low of 5°F in the winter. The average annual precipitation is 51.14 inches, with the maximum average precipitation occurring in the month of August (Reference 17).

2.3 Principal Flood Problems

River stages in the county can rise from normal elevations to flood stages in a short period of time due to the steep slopes. The watershed is mountainous and predominantly forested with very little effective pond or valley storage.

Runoff from four major drainage areas concentrates in the Saco River above the Town of Conway just a few hours after the Swift River peaks at the Town of Conway. The Swift River overtaxes the capacity of the Saco River at the Town of Conway resulting in a lake being created from the lower extent of the Town of Bartlett to the Town of Conway when the main portion of the Saco River peaks. Additionally, repeated flood flows and sediment deposition have resulted in an alluvial flood plain scarred by undersized channels.

In March 1953, the largest flood of record occurred in the Towns of Bartlett, Conway, Freedom, Jackson, Ossipee, and Tamworth. Along the Saco River, runoff caused by spring snowmelt, in addition to heavy rain, resulted in a peak discharge of 43,900 cubic feet per second (cfs) at the USGS gaging station in the Town of Conway on the Saco River.

A USGS gaging station is located at the Ossipee River at the Town of Effingham Falls, which is approximately 0.3 miles downstream of the outlet of Ossipee Lake. It measures flows from a drainage area of 330 square miles, and has been operating since September 1942. The maximum discharge recorded by the gage occurred on March 2, 1953, when the flow reached 11,700 cfs.

During March 1936, two floods occurred which created the second largest flood of record in the Towns of Bartlett, Conway, Freedom, Jackson, and Ossipee. The second of these two floods was larger and produced serious flood conditions. A combination of saturated grounds, warm temperatures, melting snow, full lakes and reservoirs, high river levels caused by the first storm, and heavy rains from the second storm resulted in a peak discharge of 40,600 cfs at the USGS gaging station on the Saco River in Conway.

The March 1936 flood is considered the flood of record for the Town of Wakefield.

During the last four days in June 1973, a strong, moist tropical airflow in association with a stationary frontal system resulted in moderate to heavy shower

activity over much of the Saco River Basin. A peak discharge of 35,000 cfs was recorded at the USGS gaging station on the Saco River in the Town of Conway.

Flooding on Lake Winnipesaukee and Moultonborough Bay in the Towns of Tuftonboro and Wolfeboro is, to a large extent, controlled by Lakeport Dam between Opechee Lake and Paugus Bay. However, despite this control structure, water levels have reached flood stage. Flooding of the lake has been related to sudden spring thaws combined with heavy rains. The effects of autumnal hurricanes are not as great on these waters due to the current regulatory policy at Lakeport, which allows for drawdown of Lake Winnipesaukee and Moultonborough Bay after the recreational season.

The flood of record for the Towns of Tuftonboro and Wolfeboro occurred in 1984.

Other major floods in the county occurred in 1785, 1826, 1869, 1895, 1913, 1927, 1928, 1938, 1951, 1954, 1959, 1968, 1969, 1977, 1987, and 1997.

2.4 Flood Protection Measures

A dike approximately 0.5 miles long, has been built along the southern bank of the Saco River upstream of the River Street bridge, in the Town of Bartlett. Although it provides protection from the 10- and 2-percent-annual-chance floods, the 1- and 0.2-percent-annual-chance floods still inundate the low-lying lands south of the dike.

The Lakeport Dam affects flood control on Lake Winnipesaukee and Moultonborough Bay. This dam, located between Paugus Bay and Opechee Lake, is owned and operated by the Water Resources Division of the State of New Hampshire Departmental Services (DES-WRD) for the purpose of regulating the elevation of Lake Winnipesaukee, Moultonborough Bay, and Paugus Bay.

Significant flood storage is also incidental to the recreation storage found in Lake Wentworth-Cresent Lake and Rust Pond. Both lakes have the capacity to store about 1.7 inches of runoff from their watersheds for every foot of stage above their normal pool. Crescent Lake is drawn down about two feet and Rust Pond about one foot each fall. This allows property owners to work on their docks and beaches as well as giving protection to shore front and downstream properties from floods due to fall rains or spring snowmelt.

Some natural flood water storage would occur where wide floodplains or swamps exist along the studied streams.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Precountywide Analyses

Peak discharges for the Bearcamp River were calculated using empirical regression equations as developed by the USGS for New Hampshire and Maine (Reference 18; Reference 19). Although the river is in New Hampshire, the Maine equations were considered to be equally applicable, and they included an additional parameter accounting for various amounts of storage within drainage basins. Therefore, the adopted discharge-frequency curves were taken as the average of the values calculated using the equations for both states. Discharge-frequency relationship at locations along the river were proportioned by drainage area ratio to the 0.8 exponential power.

The flood discharge-frequency values for the Branch River are based on equations developed from the USGS report entitled, Flood Magnitude and Frequency of New Hampshire Streams (Reference 20). This regional method relates drainage area, area of lakes and ponds, and 24-hour rainfall intensity values to the peak discharge by regression equations. The analyses follow the standard log-Pearson Type III methods as outlined by the Water Resources Council (WRC) (Reference 21).

Discharge data for the Ellis River, Rocky Branch, and Wildcat Brook were determined through transposition of annual peak flow data from nearby gaging station number 643, which is located on the Ellis River near Jackson where yearly maximum discharges are available from 1963 to present. The mean annual flood (MAF) was calculated and ratios to the various flood flows used to determine peak discharges. The ratios were based on data from gage number 375 on the Ammonoosuc River, in the Town of Bethlehem, Grafton County, New Hampshire. A log-Pearson Type III analysis was used to determine the peak flows at the latter gage (Reference 22). A discharge-drainage area ratio formula was used to obtain discharges at various points along the Ellis River, Rocky Branch, and Wildcat Brook. The exponent on the discharge-drainage area ratio for Ellis River and Rocky Branch was 0.75. Discharge data for Bartlett Brook and Marsh Brook was determined in the same manner except that yearly discharges at gage number 644 on Lucy Brook near the Town of North Conway were used to determine the MAF.

Discharge values for Kearsarge Brook were determined based on the regional peak discharge and frequency formulas developed by the USGS (Reference 19).

There are no streamflow gages on the Lovell River. Discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods on the Lovell River were calculated using empirical regression equations as developed by the USGS for the State of New Hampshire.

A discharge-frequency relationship to represent the hydrology of the Saco River was developed by the SCS (Reference 23). The values of the 10-, 2-, 1-, and 0.2-percent-annual-chance floods were found to be in close agreement with those obtained from a log-Pearson Type III distribution of annual peak flows at USGS gaging station number 645 in the Town of Conway. The gage is located on the Saco River approximately 1.8 miles downstream from the confluence with the Swift River. Discharges developed by the SCS were used for the Saco River, Swift River, and the lower portion of the East Branch Saco River. The exponent on the discharge-drainage area ratios used for the Saco River and East Branch Saco River were 0.5 and 0.75, respectively. A discharge-drainage area ratio, with an exponent of 0.75, was used to obtain discharges for the upper portion of the East Branch Saco River (Reference 24).

There are no stream gaging stations on West Branch and the large amount of storage within the watershed precluded the use of regression equations. Therefore, discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods were developed using flow records from a characteristically similar gaged watershed, the Little Androscoggin River, Maine, prorating by drainage area ratio and then routing the flood flows through Silver Lake.

The Little Androscoggin River has a drainage area of 75.8 square miles. A log-Pearson Type III statistical analysis was performed on the 55-year period of

record of annual peak discharge data. The 1-, 3-, and 7-day high flows for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods prorated by drainage area ratio, were used to develop Silver Lake inflow hydrographs. These hydrographs were routed through surcharge storage at Silver Lake, and the peak outflows were used for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood discharges for West Branch.

The inflow 1-percent-annual-chance discharge for Belleau Lake was estimated using regional regression equations for estimating peak flow in New Hampshire (Reference 19). The inflow was then routed through Belleau Lake, taking into account the lake's storage and adjacent wetlands, using Puls Method of flood routing (Reference 25) to determine the 1-percent-annual-chance outflow discharge.

For Ossipee Lake, peak elevations were determined using discharges developed by a log-Pearson Type III analysis of flow data recorded at the Effingham gage; the gage has a 42-year period of record (Reference 21). The peak flow data had a mean log of 3.5576, a standard deviation of 0.1697, and a skew of 0.4. The computed discharges for the selected recurrence intervals and the combined rating curves for the two dams located at the outlet of the lake were used to determine flood elevations at the dams (Reference 26). It has been reported that during high flows there is a 2.1-foot head loss between the dams and the upstream portion of the lake. Therefore, peak elevations at Ossipee Lake were placed 2.1 feet higher than computed elevations at the dams.

Discharge values for Pequawket Pond were obtained from the previous FIS model for the Town of Conway (Reference 2). Peak discharges for Pequawket Pond were based on flood hydrographs synthesized for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods and routed through the reservoir by the SCS using standard storage routing procedures (Reference 2; Reference 23).

Stillwater elevations for Province Lake and Great East Lake were computed by measuring the inflow of water into each lake for a 24-hour period. A standard equation for flows in New Hampshire was then used to compute the stillwater elevations.

Peak elevation-frequency relationships for Lake Wentworth-Crescent Lake and Rust Pond were determined by the SCS TR-20 and TR-48 hydrologic models which subjected the structures to two different types of flood events (Reference 27; Reference 28). The first situation generated floods, due to rainfall alone, with the lakes at normal summer pool level. No openings of gates or removal of stop-logs was assumed. The second situation assumed floods due to runoff from snowmelt/rainfall events occurring when the lakes are drawn down to their winter levels and all gates are open. The higher elevation created by the two tests was chosen for each of the four frequency floods studied.

Peak elevation-frequency relationships for Lake Winnipesaukee/Moultonborough Bay were determined from a log-Pearson Type III analysis of 40 years of stage records obtained from USGS gage No. 01080000, located at Weirs Beach (Reference 21; Reference 29).

The hydrologic analyses for Stump Pond were taken from the FIS for the Town of Newfield, York County, Maine (Reference 11). Peak elevations for Stump Pond were computed by routing flood flows through the pond.

Countywide Analyses

No suitable stream gages were available for the study area, therefore discharge data for Bay Tributary 1, Bay Tributary 1.1, Berry Pond / Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook Tributary 1, Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brook Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1 were determined using rainfall-runoff models. The USACE, Hydraulic Engineering Center (HEC) computer program, HEC-HMS version 3.4 (Reference 30) was used to estimate the peak rate and volume of runoff along the study reaches for the selected recurrence intervals.

The watersheds were divided into sub-basins for the analysis. The sub-basins were delineated using automated routines using Geographic Information System (GIS) software and a 10-meter cell size Digital Elevation Model obtained from the National Elevation Dataset. LiDAR data in the areas contiguous to the studied streams was also incorporated. The sub-basins were manually modified to allow for modeling storage areas. The drainage areas were calculated in square miles.

The watershed containing Bay Tributary 1 and Bay Tributary 1.1 was not sub-divided; a single flow was calculated for this watershed. The watershed includes a number of wetlands which have no distinct riverine flow pattern. Further discussion on this watershed can be found in the hydraulic analysis section.

The input rainfall depths were based on National Weather Service (NWS) Technical Paper No. 40 (Reference 31). The total rainfall depths were distributed following the NRCS Type III distribution. The 10-percent-annual-chance rainfall depth was derived from a partial duration series and the depth was converted to an annual series using the conversion factor provided in NWS Technical Paper No. 40, 0.99 (Reference 31).

The rainfall losses were estimated using the NRCS approach presented in Technical Release 55 (Reference 32). A curve number was determined for each sub-basin based on the soil type, hydrologic soil group, and land use.

Sub-basin response was estimated using the NRCS dimensionless unit hydrograph. The Modified Curve Number Method was used for the computation

of lag time. The lag time calculation relies predominately on the retardance coefficient- a measure of the surface conditions on the rate at which runoff concentrates at a specified location.

Sub-basin reach routings were estimated using the Muskingum-Cunge Method.

Reservoir storage was modeled in the analysis. The storage areas were routed based on stage-discharge relationships and stage-storage relationships.

The model was verified against regional regression equations. The retardance coefficient, initially determined using the soil-cover-complex number method, was adjusted to satisfy the model verification within the confidence limits of the regression equations.

The hydrologic analysis for Squam Lake was taken from the FIS for Grafton County, New Hampshire (Reference 14).

Peak discharge-drainage area relationships for each flooding source studied in detail are presented in Table 3.

Table 3 - Summary of Discharges

		Peak Discharges (cubic feet per second)			
Flooding Source and Location	Drainage Area (square miles)	10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
BARLETT BROOK					
At confluence with Saco River	3.4	730	1,130	1,350	1,860
At Maine Central Railroad	2.4	570	870	1,030	1,420
Approximately 2,950 feet upstream of Foster/Belrose Street	1.9	470	730	850	1,280
BAY TRIBUTARY 1	*	*	*	*	*
BAY TRIBUTARY 1.1	*	*	*	*	*
BEARCAMP RIVER					
At confluence with Ossipee Lake	155.7	11,580	15,940	19,400	29,500
At confluence of Chocorua River	128.8	9,950	13,690	16,670	25,350
Approximately 4,220 feet upstream of Covered Bridge Road	128.0	9,950	13,690	16,670	25,350
Approximately 22,100 feet downstream of State Highway 113/Tamworth Road	123.0	*	*	16,670	*
At South Tamworth	68.0	*	*	14,900	*

*Data Not Available

Table 3 – Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
BEARCAMP RIVER (CONTINUED)					
Approximately 5,800 feet upstream of State Highway 113/Jackman Pond Road	54.0	*	*	12,900	*
BERRY POND / BERRY POND TRIBUTARY 1					
At Berry Pond Outlet	7.86	363	665	800	1,234
At Divergence of Berry Pond Diversion	1.75	83	133	154	213
BERRY POND DIVERSION					
At convergence of Red Hill River	*	372	684	821	1,266
BRANCH RIVER					
At Union Meadows Dam	30.8	*	*	2,175	*
EAST BRANCH SACO RIVER					
Just above confluence with Saco River	40.2	4,985	8,450	10,085	14,800
Just below confluence of Gardiner Brook	34.6	4,455	7,550	9,015	13,220
Just above confluence of Gardiner Brook	32.3	4,235	7,170	8,560	12,560
Approximately 2,650 feet upstream of Town Hall Road	31.6	4,165	7,050	8,420	12,360
ELLIS RIVER					
At confluence with Saco River	57.7	10,380	16,130	19,035	26,175
Just below confluence of Wildcat Brook	52.5	9,670	15,030	17,735	24,385
Just above confluence of Wildcat Brook	29.3	6,245	9,700	11,450	15,745
Just below confluence of Meserve Brook	22.9	5,190	8,070	9,515	13,090
Just above confluence of Miles Brook	17.3	4,210	6,535	7,715	10,610
At State Highway 16	13.9	3,570	5,545	6,545	9,000
HALFWAY BROOK					
At confluence with Moultonborough Bay	3.53	281	498	590	869
At confluence of Halfway Brook Tributary 1	2.39	173	314	375	558
Just upstream of Lee Road	1.83	119	220	264	397
HALFWAY BROOK TRIBUTARY 1					
At confluence with Halfway Brook	0.88	95	162	19	274

*Data Not Available

Table 3 – Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
KEARSARGE BROOK					
At confluence with Saco River	12.57	1,610	3,330	4,290	7,590
At confluence of Artist Brook	8.16	1,210	2,490	3,210	5,680
LOVELL RIVER					
At confluence with Ossipee Lake	17.5	621	630	632	634
Approximately 1,000 feet upstream of State Highway 16 /State Highway 25	*	1,300	2,500	3,200	5,800
MARSH BROOK					
Just above confluence with Wildcat Brook	1.4	385	590	700	965
PEQUAWKET POND					
At Pequawket Dam	27.67	900	1,650	2,040	3,150
RED HILL RIVER					
At confluence with Moultonborough Bay	27.4	1,081	1,864	2,155	3,082
At Lees Pond	25.8	1,453	2,537	2,993	4,405
Just below confluence of Red Hill River Tributary 1	22.2	1,212	2,104	2,482	3,649
Approximately 1,600 feet upstream of School House Road	11.5	585	986	1,153	1,647
RED HILL RIVER TRIBUTARY 1					
At confluence with Red Hill River	1.85	220	408	489	737
RED HILL RIVER TRIBUTARY 1 DIVERSION					
At convergence with Red Hill River	*	7	100	138	242
ROCKY BRANCH					
At confluence with Saco River	22.8	5,170	8,025	9,470	13,020
Approximately 11,650 feet upstream of U.S. Highway 302/Crawford Notch Road	20.6	4,800	7,455	8,800	12,100
SACO RIVER					
Approximately 30,360 feet downstream of U.S. Highway 302	424.4	31,250	48,160	56,350	75,820
Just below confluence of Swift River	384.6	29,750	45,840	53,640	72,180
Just above confluence of Swift River	272.1	25,980	42,610	50,405	70,670
Just below confluence of East Branch Saco River	232.5	24,020	39,390	46,595	65,330

*Data Not Available

Table 3 – Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
SACO RIVER (CONTINUED)					
Just above confluence of East Branch Saco River	192.3	22,220	36,030	43,035	60,050
Just below confluence of Ellis River	191.7	22,180	35,970	42,965	59,950
Just above confluence of Ellis River	134.0	17,620	28,190	33,730	47,320
Just below confluence of Rocky Branch	130.4	17,380	27,810	33,270	46,680
Just above confluence of Rocky Branch	107.6	15,580	25,150	29,750	42,150
Just below confluence of Meadow Brook	100.4	15,420	24,850	29,450	40,850
Just above confluence of Meadow Brook	98.6	15,360	24,800	29,350	40,750
Just below confluence of Razor Brook	92.3	15,240	24,700	29,250	40,650
Just above confluence of Razor Brook	85.1	14,520	23,330	27,730	38,545
Just below confluence of Albany Brook	84.7	14,480	23,270	27,670	38,455
Just above confluence of Albany Brook	78.4	13,890	22,245	26,370	37,240
Approximately 4,500 feet upstream of Maine Central Railroad	76.4	13,710	21,955	26,030	36,760
SHANNON BROOK					
At confluence with Moultonborough Bay	8.70	902	1,601	2,481	2,776
At confluence of Shannon Brook Tributary 1	7.26	751	1,341	1,591	2,340
Approximately 6,500 feet downstream of State Highway 171 / Old Mountain Road	4.36	490	892	1,062	1,573
SHANNON BROOK TRIBUTARY 1					
At confluence with Shannon Brook	0.83	115	196	230	329
SQUAM LAKE	58.2	*	*	302	*
SWIFT RIVER					
At confluence with Saco River	112.5	7,000	12,000	15,000	22,010
Just below Pequawket Pond Outlet	112.3	6,990	11,990	14,990	21,990
Just above Pequawket Pond Outlet	84.7	6,620	11,530	14,040	20,555
Just below confluence of Red Eagle Brook	83.8	6,580	11,470	13,960	20,440

*Data Not Available

Table 3 – Summary of Discharges (*Continued*)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
WEED BROOK					
At confluence with Berry Pond	5.39	439	827	991	1,435
At confluence of Weed Brook Tributary 1	3.93	194	338	399	580
WEED BROOK DIVERSION	*	*	*	*	*
WEED BROOK TRIBUTARY 1					
At confluence with Weed Brook	1.27	282	530	640	968
WEST BRANCH					
At confluence with Ossipee Lake	25.8	590	825	920	1,150
WILDCAT BROOK					
Just above confluence with Ellis River	23.2	5,240	8,140	8,890	13,220
Just above confluence of Great Brook	17.3	4,210	6,530	7,710	10,605
Just above confluence of Marsh Brook	12.1	3,235	5,025	5,940	8,160

*Data Not Available

Stillwater elevations for Carroll County are presented in Table 4.

Table 4 - Summary of Stillwater Elevations

Flooding Source	Water Surface Elevations (Feet NAVD[1]) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
BELLEAU LAKE	*	*	583.5	*
GREAT EAST LAKE	*	*	574.1	*
LAKE WENTWORTH-CRESCENT LAKE	535.3	535.8	536.0	536.5
LAKE WINNIPESAUKEE	505.0	505.5	505.8	506.3
MOULTONBOROUGH BAY	505.0	505.5	505.8	506.3
OSSIPEE LAKE	412.2	413.5	414.0	415.2
PEQUAWKET POND	460.1	462.2	463.7	465.6
PROVINCE LAKE	*	*	480.1	*
RUST POND	579.5	579.8	580.0	580.3
SQUAM LAKE	*	*	564.9	*
STUMP POND	558.2	558.8	559.0	559.6

[1] North American Vertical Datum of 1988
*Data Not Available

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data Table in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Precountywide Analyses

Cross section data for Bartlett Brook, Branch River, the upper portion of East Branch Saco River, Ellis River, Kearsarge Brook, Lovell River, Marsh Brook, Rocky Branch, Swift River, West Branch, and Wildcat Brook were obtained by field surveys. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Cross section data for Bearcamp River, the lower portion of the East Branch Saco River, and Saco River developed by the SCS was used.

The outlet dam of Belleau Lake was field surveyed in order to obtain elevation data and structural geometry. Dam and cross section data were located at intervals above and below the dams in order to compute the significant backwater effects of these structures.

Water-Surface Elevations (WSELs) of floods of the selected recurrence intervals for Bartlett Brook, the upper portion of the East Branch Saco River, Ellis River, Marsh Brook, Rocky Branch, and Wildcat Brook were developed using the HEC-2 computer program (Reference 33).

WSELs of floods of the selected recurrence intervals for the Bearcamp River, from approximately 950 feet upstream of Covered Bridge Road to approximately 5,600 feet upstream of State Highway 131/Tamworth Road, in the Town of Tamworth, were developed using the SCS WSP-2 computer program (Reference 34).

WSELs of floods of the selected recurrence intervals for the Bearcamp River, from the confluence with Ossipee Lake to approximately 950 feet upstream of Covered Bridge Road, Lovell River, Kearsarge Brook, and West Branch were developed using the HEC-2 computer program (Reference 35).

A low ridge follows the south bank of the Lovell River from the abandoned railroad upstream of State Highway 16/State Highway 25 to the confluence with

Ossipee Lake. Downstream of State Highway 16/State Highway 25, the ridge generally follows Lovell Lane and Briggs Road, in the Town of Ossipee. During the 1-percent-annual-chance flood, floodwaters from the Lovell River will rise above the crest of this ridge and flow south and east. The HEC-2 split flow option was used to calculate the discharge that leaves the river and flows over the ridge. Downstream of State Highway 16/State Highway 25, floodwaters will flow over the ridge and drain down a gentle slope towards Ossipee Lake, overtopping Fairway Drive and Weetamoe Road, in the Town of Ossipee. It has been estimated that the flow between the ridge and Ossipee Lake averages two feet in depth. Upstream of State Highway 16/State Highway 25, floodwaters will flow over the ridge into a shallow depression lying between the abandoned railroad and the highway, eventually draining to the east via a 48-inch culvert beneath State Highway 16/State Highway 25. Due to the relatively small discharge into the depression during the 1-percent-annual-chance flood, calculations were not performed to estimate the depth of flooding in the depression.

WSELs of floods of the selected recurrence intervals for the Branch River were computed using the USGS step-backwater computer program, E-431 (Reference 36).

WSELs of floods of the selected recurrence intervals for the lower portion of the East Branch Saco River, Saco River, and Swift River were developed using the SCS WSP-2 computer program (Reference 34). Historic data for the floods of 1936 and 1938 were evaluated to determine flood stages for the Saco River.

WSELs of floods of the selected recurrence intervals for Pequawket Pond were computed through an analysis of the Pequawket Dam using weir and orifice equations.

Starting WSELs for Bartlett Brook, Bearcamp River, East Branch Saco River, Ellis River, Lovell River, Marsh Brook, Rocky Branch, Swift River, West Branch, and Wildcat Brook were determined using the slope-area method.

Starting WSELs for the Branch River were taken from the FIS for the Town of Wakefield (Reference 12).

Starting WSELs for Kearsarge Brook were based on normal depth analysis.

Starting WSELs for the Saco River were calculated using a trial and error method and checked with the values recorded at USGS gage 645.

Countywide Analyses

Cross section data for Bay Tributary 1, Bay Tributary 1.1, Berry Pond / Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook

Tributary 1, Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brook Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1, were placed approximately 500 feet apart along the stream's centerlines. Cross-sections were spaced at closer intervals along the upper reaches of the streams and at locations of sudden changes in stream geometry or direction. The cross sectional geometries were comprised of field collected survey data and the LiDAR data that was collected by Photo Science, Inc. (Reference 15). Surveyed channel sections were obtained at bridge and culvert faces. Additional survey was provided on an "as-needed" basis at bridge approach sections and along stretches of the streams between structures. Surveyed channel sections were transferred upstream and downstream to non-surveyed cross sections and were blended with the LiDAR data to create a consistent channel profile.

WSELs of floods of the selected recurrence intervals for Berry Pond / Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook Tributary 1, Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brook Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1 were developed using the HEC computer program, HEC-RAS version 4.1 (Reference 37).

WSELs of floods of the selected recurrence intervals for Bay Tributary 1 and Bay Tributary 1.1 were developed using a dynamic modeling program, FLO-2D (Reference 38).

Starting WSELs for Berry Pond / Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook Tributary 1, Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brok Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1 were set at normal depth as the starting condition.

Starting WSELs for Bay Tributary 1 and Bay Tributary 1.1 were set with a cell size of 25 feet by 25 feet. The boundary of the analysis grid was coincident with the Moultonborough Bay boundary. The outflow elements on the grid were established along the southwest, south, and southeast edges of the grid.

Channel roughness factors (Mannings "n") used in the hydraulic computations were chosen by engineering judgment. The Manning's "n" values for all detailed studied streams are listed in the following table:

Manning's "n" Values

Stream	Channel "n"	Overbank "n"
Bartlett Brook	0.040-0.055	0.060-0.150
Bay Tributary 1	*	0.040-0.250
Bay Tributary 1.1	*	0.040-0.250
Bearcamp River	0.035-0.070	0.050-0.150
Berry Pond / Berry Pond Tributary 1	0.025-0.070	0.040-0.100
Berry Pond Diversion	*	*
Branch River	*	*
East Branch Saco River	0.034-0.060	0.060-0.180
Ellis River	0.030-0.060	0.040-0.150
Halfway Brook	0.035-0.050	0.100
Halfway Brook Tributary 1	0.050-0.100	0.070-0.100
Kearsarge Brook	0.030-0.055	0.040-0.120
Lovell River	0.040-0.060	0.040-0.100
Marsh Brook	0.050-0.070	0.070-0.110
Red Hill River	0.029-0.070	0.070-0.100
Red Hill River Tributary 1	0.050-0.070	0.070-0.100
Red Hill River Tributary 1 Diversion	0.070	0.100
Rocky Branch	0.035-0.050	0.085-0.110
Saco River	0.034-0.060	0.060-0.250
Shannon Brook	0.050-0.070	0.100
Shannon Brook Tributary 1	0.050-0.070	0.100
Swift River	0.034-0.056	0.060-0.250
Weed Brook	0.050-0.070	0.070-0.100
Weed Brook Diversion	0.070	0.100
Weed Brook Tributary 1	0.040-0.070	0.040-0.100
West Branch	0.060-0.070	0.100
Wildcat Brook	0.040-0.065	0.060-0.120

*Data Not Available

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

The profile baselines depicted on the FIRM represent the hydraulic modeling baselines that match the flood profiles on this FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the Special Flood Hazard Area.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered

valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was NGVD. With the finalization of NAVD, many FIS reports and FIRMs are being prepared using NAVD as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. This can be done by applying a standard conversion factor. The Flood Profiles, and Base (1-percent annual chance) Flood Elevations (BFEs) in the previous FIS reports, are in NGVD. These were converted to NAVD by applying the conversion factor of -0.393 feet to each detailed study stream in the effective FIS reports (NGVD – 0.393 ft. = NAVD). It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate limits between the communities. The average conversion factor that was used to convert the data in this FIS report to NAVD was calculated using the National Geodetic Survey's (NGS) VERTCON online utility (Reference 39). The data points used to determine the conversion are listed in Table 5.

Table 5 – Vertical Datum Conversion

Quad Name	Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88
Mount Washington	SE	44.250	-71.250	-0.187
Carter Dome	SE	44.250	-71.125	-0.187
Wild River	SE	44.250	-71.000	-0.246
Crawford Notch	SE	44.125	-71.375	-0.197
Stairs Mountain	SE	44.125	-71.250	-0.325
Jackson	SE	44.125	-71.125	-0.338
Chatham	SE	44.125	-71.000	-0.341
Mount Carrigain	SE	44.000	-71.375	-0.322
Bartlett	SE	44.000	-71.250	-0.344
North Conway West	SE	44.000	-71.125	-0.433
North Conway East	SE	44.000	-71.000	-0.459
Waterville Valley	SE	43.875	-71.500	-0.272
Mount Tripyramid	SE	43.875	-71.375	-0.410
Mount Chocorua	SE	43.875	-71.250	-0.463
Silver Lake	SE	43.875	-71.125	-0.449
Conway	SE	43.875	-71.000	-0.423
Squam Mountains	SE	43.750	-71.500	-0.440

Table 5 – Vertical Datum Conversion (*Continued*)

Quad Name	Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88
Center Sandwich	SE	43.750	71.375	-0.446
Tamworth	SE	43.750	-71.250	-0.410
Ossipee Lake	SE	43.750	-71.125	-0.512
Freedom	SE	43.750	-71.000	-0.531
Center Harbor	SE	43.625	-71.375	-0.466
Melvin Village	SE	43.625	-71.250	-0.463
Tuftonboro	SE	43.625	-71.125	-0.472
Ossipee	SE	43.625	-71.000	-0.499
Wolfeboro	SE	43.500	-71.125	-0.446
Sanbornville	SE	43.500	-71.000	-0.538
			Average:	**-0.393**

For additional information regarding conversion between NGVD and NAVD, visit the NGS website at www.ngs.noaa.gov, or contact the NGS at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data Table, and Summary of Stillwater Elevations Table. Users should reference the data presented in the FIS report as well as additional information

that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community.

For Bartlett Brook, East Branch Saco River, in Bartlett, Rocky Branch, the Saco River, and the Swift River, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:400 with a contour interval of 20 feet (Reference 1; Reference 3).

For Bay Tributary 1 and Bay Tributary 1.1, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using a combination of the flood elevations and depth of flow determined at each grid cell. The area of inundation was established with an approximate minimum depth of 0.5 feet. The 1- and 0.2-percent-annual-chance floodplain boundaries were checked to ensure consistency with the 2010 LiDAR data (Reference 15).

For the Bearcamp River, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:4,800, with a contour interval of 20 feet, in Ossipee (Reference 40). The boundaries were interpolated using topographic maps at a scale of 24,000 with a contour interval of 20 feet and a soil map, in Tamworth (Reference 41; Reference 42).

For Belleau Lake, the 1- percent-annual-chance floodplain boundaries have been delineated using field observations and USGS digital raster graphs at a scale of 1:24,000 with a contour interval of 20 feet, in conjunction with Digital Orthophoto Quadrangles at a scale of 1:12,000 (Reference 12).

For Berry Pond/Berry Pond Tributary 1, Berry Pond Diversion, Halfway Brook, Halfway Brook Tributary 1, the Red Hill River, Red Hill River Tributary 1, Red Hill River Tributary 1 Diversion, Shannon Brook, Shannon Brook Tributary 1, Weed Brook, Weed Brook Diversion, and Weed Brook Tributary 1, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using LiDAR data with a 2-foot contour interval derived from the data that was collected by Photo Science, Inc. (Reference 15).

For Ossipee Lake, in Freedom and Ossipee, and Pequawket Pond, in Conway, the 1-percent-annual-chance floodplain boundaries have been delineated using using topographic maps at a scale of 1:24,000, with a contour interval of 20 feet (Reference 42). In addition, the boundaries for Pequawket Pond, in Conway, were interpolated using digital photogrammetry at a scale of 1:600 with a contour interval of 5 feet (Reference 43).

For the Branch River, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:62,000 with a contour interval of 20 feet (Reference 10).

For East Branch Saco River, in Jackson, Marsh Brook, and Wildcat Brook, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:400 with a contour interval of 20 feet (Reference 44).

For the Ellis River, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:20, with a contour interval of 4 feet, in the Town of Bartlett (Reference 1), and topographic maps at a scale of 1:400 with a contour interval of 20 feet, in the Town of Jackson (Reference 44).

For Lake Wentworth-Crescent Lake, Lake Winnipesaukee, Moultonborough Bay, in Tuftonboro, and Rust Pond, the 1-percent-annual-chance floodplain boundaries have been delineated using topographic maps at a scale of 1:62,500 with a contour interval of 20 feet and soils maps (Reference 41; Reference 45).

For Moultonborough Bay, Ossipee Lake, in Effingham, Pequawket Pond, in Albany, Province Lake, in Effingham, and Squam Lake, the 1-percent-annual-chance floodplain boundaries have been delineated using LiDAR data with a 2-foot contour interval derived from the data that was collected by Photo Science, Inc. (Reference 15).

For Great East Lake, Province Lake, in Wakefield, and Stump Pond, the 1-percent-annual-chance floodplain boundaries have been delineated using topographic maps at a scale of 1:62,000 with a contour interval of 20 feet (Reference 10).

For Kearsarge Brook and West Branch, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were

interpolated using topographic maps at a scale of 1:24,000, with a contour interval of 20 feet (Reference 42).

All streams studied by approximate methods were taken directly from the previous FIRMs for each community.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, and AO), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS report and on the FIRM were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 6). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the WSEL of the 1-percent-annual-chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

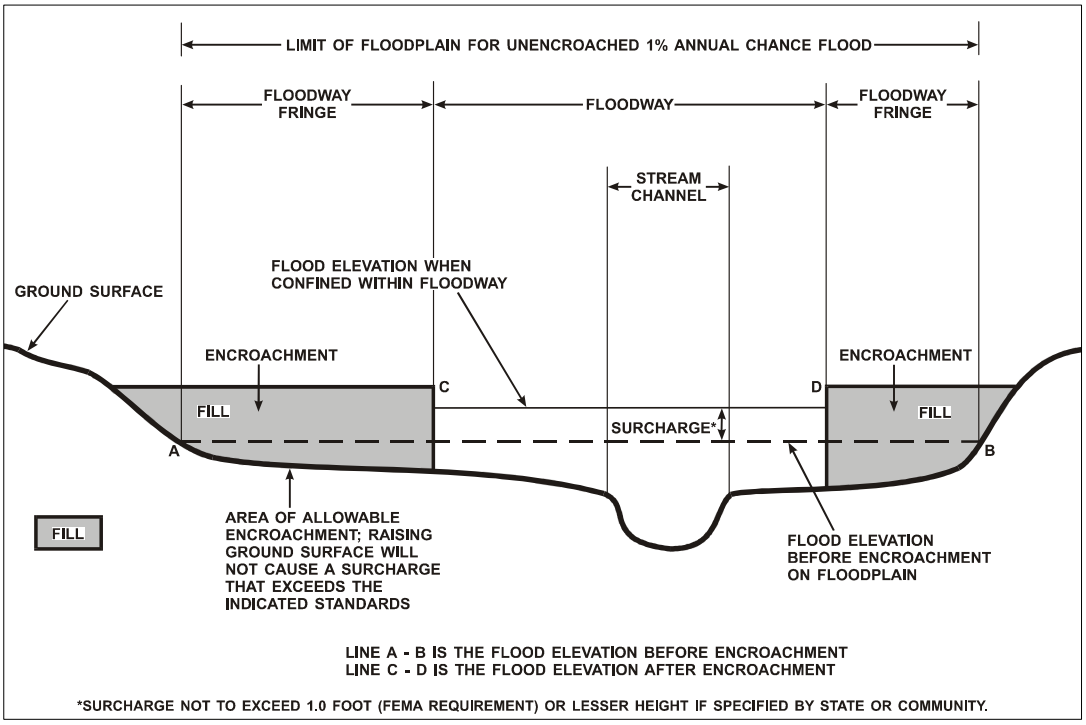

Figure 1 - Floodway Schematic

No floodways were computed for Bay Tributary 1, Bay Tributary 1.1, and Branch River.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BARTLETT BROOK								
A	1,162	1,265	5,853	0.2	652.2	652.2	653.2	1.0
B	2,429	100	147	8.1	657.3	657.3	657.4	0.1
C	3,696	210	1,028	0.9	666.6	666.6	666.9	0.3
D	4,752	70	118	8.0	672.9	672.9	673.2	0.3
E	5,069	110	330	2.9	676.1	676.1	677.0	0.9
F	5,597	55	177	5.3	686.1	686.1	686.8	0.7
G	5,861	14	73	12.9	694.8	694.8	695.2	0.4
H	6,389	19	90	10.4	717.8	717.8	718.2	0.4
I	6,864	23	93	10.1	730.8	730.8	731.4	0.6
J	7,022	29	92	10.2	738.0	738.0	738.0	0.0

[1]Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

BARTLETT BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEARCAMP RIVER								
A	2,380	1,325	10,852	1.8	414.0	414.0	415.0	1.0
B	4,810	1,631	9,618	2.0	414.4	414.4	415.4	1.0
C	7,455	543	4,954	3.9	415.5	415.5	416.3	0.8
D	8,015	795	5,163	3.8	416.3	416.3	416.9	0.6
E	9,350	1,274	7,004	2.8	418.3	418.3	418.6	0.3
F	9,790	1,016	3,122	6.2	418.8	418.8	419.8	1.0
G	13,110	2,043	14,123	1.4	420.7	420.7	421.7	1.0
H	14,810	1,823	11,243	1.7	421.0	421.0	422.0	1.0
I	18,120	1,337	10,191	1.9	421.6	421.6	422.5	0.9
J	20,680	893	5,243	3.7	422.2	422.2	423.0	0.8
K	22,600	494	3,057	5.5	424.3	424.3	424.9	0.6
L	25,800	1,146	8,695	1.9	426.5	426.5	427.2	0.7
M	26,348	580	7,789	2.1	427.3	427.3	427.9	0.6
N	29,788	672	4,937	3.4	428.3	428.3	428.9	0.6
O	30,248	390	11,040	1.5	430.1	430.1	430.9	0.8
P	35,330	-	-	-	431.3	431.3	-	-
Q	39,160	-	-	-	434.5	434.5	-	-
R	40,490	-	-	-	435.7	435.7	-	-
S	42,500	-	-	-	436.9	436.9	-	-
T	45,690	-	-	-	438.9	438.9	-	-
U	47,190	-	-	-	439.9	439.9	-	-

[1] Feet above confluence with Ossipee Lake

- Data Not Available

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

BEARCAMP RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEARCAMP RIVER (CONTINUED)								
V	48,630	-	-	-	441.4	441.4	-	-
W	48,980	-	-	-	443.4	443.4	-	-
X	49,460	-	-	-	445.3	445.3	-	-
Y	51,240	-	-	-	454.6	454.6	-	-
Z	52,890	-	-	-	466.6	466.6	-	-
AA	53,160	-	-	-	469.4	469.4	-	-
AB	55,220	-	-	-	482.8	482.8	-	-
AC	59,020	-	-	-	506.7	506.7	-	-
AD	59,330	-	-	-	513.8	513.8	-	-
AE	61,890	-	-	-	529.5	529.5	-	-
AF	62,470	-	-	-	541.0	541.0	-	-
AG	63,030	-	-	-	546.9	546.9	-	-
AH	63,760	-	-	-	557.9	557.9	-	-
AI	64,020	-	-	-	566.1	566.1	-	-
AJ	64,590	-	-	-	571.1	571.1	-	-
AK	64,810	-	-	-	572.4	572.4	-	-
AL	65,950	-	-	-	573.4	573.4	-	-
AM	68,110	-	-	-	575.6	575.6	-	-
AN	71,590	-	-	-	586.3	586.3	-	-
AO	71,930	-	-	-	589.8	589.8	-	-

[1] Feet above confluence with Ossipee Lake

- Data Not Available

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

BEARCAMP RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BEARCAMP RIVER (CONTINUED)								
AP	73,640	-	-	-	590.2	590.2	-	-
AQ	77,400	-	-	-	591.8	591.8	-	-

[1] Feet above confluence with Ossipee Lake

- Data Not Available

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

BEARCAMP RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BERRY POND / BERRY POND TRIBUTARY 1								
A	2,118	1,497	2,430	0.5	568.6	568.6	568.6	0.0
B	4,048	436	816	1.4	568.8	568.8	569.0	0.0
C	7,735	475	449	0.3	569.2	569.2	570.1	0.9
D	10,129	45	84	1.8	577.5	577.5	578.4	0.9
E	11,395	18	28	5.5	594.6	594.6	595.2	0.6
F	11,942	22	47	3.3	602.7	602.7	603.4	0.7
G	12,674	10	17	4.4	607.2	607.2	607.5	0.3
H	13,333	53	76	1.0	615.5	615.5	616.3	0.8

[1]Feet above Limit of Detailed Study (Limit of Detailed Study is approximately 150 feet upstream of State Highway 25/Whittier Highway)

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

BERRY POND / BERRY POND TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
BERRY POND DIVERSION								
A	1,557	65	198	4.1	538.3	538.3	539.3	1.0
B	2,076	79	352	2.3	552.9	552.9	553.4	0.5
C	2,662	71	345	2.4	553.7	553.7	554.6	0.9
D	3,364	97	555	1.5	556.7	556.7	557.4	0.7
E	4,031	113	464	1.8	565.7	565.7	566.6	0.9
F	4,245	52	195	4.2	568.1	568.1	568.6	0.5

[1]Feet above convergence with Red Hill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

BERRY POND DIVERSION

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
EAST BRANCH SACO RIVER								
A	1,901	585	2,494	4.0	519.5	519.5	520.5	1.0
B	2,376	125	807	12.5	523.3	523.3	524.3	1.0
C	2,587	278	2,738	3.7	529.9	529.9	530.9	1.0
D	3,485	229	1,315	7.7	537.9	537.9	538.9	1.0
E	4,488	120	848	11.9	549.3	549.3	550.3	1.0
F	4,752	124	866	11.6	552.4	552.4	553.4	1.0
G	5,227	112	905	11.1	560.0	560.0	561.0	1.0
H	5,438	84	1,027	9.8	564.9	564.9	565.9	1.0
I	7,022	350	1,003	9.5	583.7	583.7	584.6	0.9
J	8,342	100	688	13.9	611.4	611.4	512.1	0.7
K	9,240	250	1,336	7.2	623.5	623.5	624.2	0.7
L	10,824	162	867	11.0	660.5	660.5	661.2	0.7
M	11,986	80	640	14.9	692.2	692.2	692.2	0.0
N	12,250	200	1,046	9.1	697.6	697.6	697.7	0.1
O	13,411	300	1,345	7.1	713.2	713.2	713.8	0.6
P	14,626	74	591	16.2	728.8	728.8	728.8	0.0
Q	15,682	100	896	10.7	749.0	749.0	749.7	0.7
R	17,054	77	556	15.3	784.7	784.7	784.7	0.0
S	18,374	100	980	8.7	803.2	803.2	803.9	0.7
T	19,483	166	749	11.3	816.1	816.1	816.1	0.0

[1] Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

EAST BRANCH SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
EAST BRANCH SACO RIVER (CONTINUED)								
U	20,275	200	918	9.2	835.6	835.6	835.9	0.3
V	21,225	300	1,667	5.1	845.6	845.6	846.4	0.8
W	22,229	119	640	13.3	864.5	864.5	864.8	0.3
X	23,126	100	689	12.3	889.5	889.5	890.4	0.9

[1] Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

EAST BRANCH SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ELLIS RIVER								
A	4,171	447	1,953	9.4	537.0	537.0	537.5	0.5
B	4,488	550	3,271	5.6	540.5	540.5	540.5	0.0
C	4,752	129	-	-	540.8	540.8	541.4	0.6
D	4,910	223	1,720	10.7	541.5	541.5	542.1	0.6
E	5,438	268	2,376	7.7	545.4	545.4	546.4	1.0
F	5,861	180	1,762	10.4	545.7	545.7	546.5	0.8
G	6,230	200	1,821	10.1	549.3	549.3	549.3	0.0
H	7,128	400	2,258	8.2	555.9	555.9	556.1	0.2
I	7,762	251	2,330	7.9	560.9	560.9	561.8	0.9
J	9,187	150	1,347	13.7	574.5	574.5	575.4	0.9
K	10,666	126	1,279	14.4	595.0	595.0	595.9	0.9
L	12,514	200	1,696	10.8	617.5	617.5	617.5	0.0
M	13,094	103	1,776	10.4	687.4	687.4	687.4	0.0
N	13,411	170	2,174	8.5	689.3	689.3	689.3	0.0
O	14,098	190	1,557	11.8	689.9	689.9	690.2	0.3
P	16,051	100	1,211	15.2	710.7	710.7	710.9	0.2
Q	18,850	180	1,481	12.4	735.2	735.2	735.4	0.2
R	19,747	150	1,641	11.4	745.1	745.1	745.1	0.0
S	20,434	150	640	11.2	749.6	749.6	750.3	0.7
T	20,750	150	2,179	8.4	753.9	753.9	754.0	0.1
U	21,384	350	4,074	4.5	755.9	755.9	756.3	0.4

[1]Feet above confluence with Saco River

-Data not available

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

ELLIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ELLIS RIVER (CONTINUED)								
V	22,493	650	2,835	3.9	758.5	758.5	759.3	0.8
W	22,810	200	968	11.4	760.2	760.2	760.2	0.0
X	23,021	200	2,038	5.4	765.6	765.6	765.6	0.0
Y	23,285	85	1,102	10.0	765.6	765.6	765.6	0.0
Z	23,707	150	1,160	9.5	766.4	766.4	767.3	0.9
AA	24,552	150	1,006	11.0	775.2	775.2	775.8	0.6
AB	25,344	380	1,914	5.8	784.7	784.7	785.2	0.5
AC	25,925	140	939	11.8	790.9	790.9	790.9	0.0
AD	26,882	140	1,245	8.9	804.3	804.3	805.0	0.7
AE	27,878	140	1,133	9.8	814.6	814.6	815.1	0.5
AF	30,254	80	738	15.0	848.0	848.0	848.0	0.0
AG	31,627	100	763	12.1	872.4	872.4	872.5	0.1
AH	33,053	100	926	10.0	890.5	890.5	891.3	0.8
AI	34,056	100	756	12.3	913.2	913.2	913.3	0.1
AJ	35,534	80	624	14.8	946.6	946.6	946.6	0.0
AK	37,066	400	1,948	4.8	967.0	967.0	968.0	1.0
AL	39,547	300	1,373	5.2	983.0	983.0	984.0	1.0
AM	40,920	100	606	11.8	996.2	996.2	996.3	0.1
AN	42,029	200	708	10.1	1,013.0	1,013.0	1,013.4	0.4
AO	44,194	150	943	7.6	1,033.5	1,033.5	1,033.6	0.1

[1]Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

ELLIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ELLIS RIVER (CONTINUED)								
AP	45,197	60	457	15.6	1,052.5	1,052.5	1,052.5	0.0
AQ	46,094	100	790	9.0	1,065.5	1,065.5	1,066.1	0.6
AR	46,886	100	543	13.1	1,080.6	1,080.6	1,080.6	0.0
AS	47,098	60	476	15.0	1,086.6	1,086.6	1,087.0	0.4
AT	48,206	100	644	11.1	1,111.2	1,111.2	1,111.5	0.3
AU	48,734	120	634	11.2	1,127.8	1,127.8	1,127.8	0.0
AV	49,474	120	864	8.2	1,138.7	1,138.7	1,139.4	0.7

[1]Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

ELLIS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALFWAY BROOK								
A	964	79	165	2.5	507.9	507.9	507.9	0.0
B	1,930	35	79	5.2	515.0	515.0	515.0	0.0
C	3,524	32	101	4.0	523.9	523.9	524.0	0.1
D	6,565	70	181	2.1	535.7	535.7	535.8	0.1
E	7,862	25	60	6.3	543.9	543.9	543.9	0.0
F	9,324	35	65	4.1	556.6	556.6	556.6	0.0
G	11,225	39	176	1.5	582.7	582.7	583.0	0.3
H	12,900	34	42	6.3	630.8	630.8	630.8	0.0
I	13,849	31	40	6.5	669.6	669.6	669.6	0.0
J	14,882	42	45	5.9	727.0	727.0	727.3	0.3
K	16,281	36	43	6.2	808.5	808.5	808.5	0.0
L	16,850	14	31	8.4	846.0	846.0	846.0	0.0
M	17,454	23	37	7.2	894.5	894.5	894.5	0.0
N	18,192	14	31	8.4	974.3	974.3	974.3	0.0
O	20,238	28	39	6.8	1,145.4	1,145.4	1,145.4	0.0
P	20,724	23	37	7.2	1,190.5	1,190.5	1,190.6	0.1
Q	21,355	19	34	7.7	1,251.3	1,251.3	1,251.3	0.0
R	21,746	18	34	7.8	1,292.5	1,292.5	1,292.5	0.0
S	22,197	13	31	8.6	1,330.5	1,330.5	1,330.7	0.2
T	22,883	17	33	7.9	1,381.4	1,381.4	1,381.8	0.4
U	23,458	12	30	8.9	1,423.4	1,423.4	1,423.7	0.3

[1]Feet above confluence with Moultonborough Bay

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

HALFWAY BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
HALFWAY BROOK TRIBUTARY 1								
A	314	145	189	1.0	528.6	527.5[2]	527.5[2]	0.0
B	1,123	122	196	1.0	532.4	530.1[2]	530.2[2]	0.1
C	1,560	678	552	0.3	534.8	533.3[3]	533.3[3]	0.0
D	2,813	709	591	0.3	534.8	534.1[3]	534.1[3]	0.0
E	3,622	104	89	2.1	536.0	536.0	536.0	0.0
F	4,267	107	164	1.2	537.2	537.2	537.2	0.0
G	4,525	63	138	1.4	541.2	541.2	541.3	0.1

[1]Feet above confluence with Halfway Brook

[2]Elevation computed without consideration of effects from flooding controlled by Halfway Brook

[3]Elevation computed without consideration of backwater effects from Halfway Brook

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

HALFWAY BROOK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION[2]			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
KEARSARGE BROOK								
A	2,144	210	1,230	3.5	470.6	467.5[3]	468.3[3]	0.8
B	2,904	62	423	10.1	473.0	473.0	473.1	0.1
C	3,490	100	857	5.0	483.4	483.4	483.4	0.0
D	3,939	300	3,954	1.1	492.3	492.3	492.5	0.2
E	5,143	355	3,854	1.1	492.3	492.3	492.6	0.3
F	5,460	287	2,453	1.3	492.4	492.4	492.7	0.3
G	6,088	620	3,341	1.0	494.2	494.2	495.2	1.0
H	6,199	590	2,639	1.2	494.3	494.3	495.2	0.9
I	7,519	101	325	9.9	498.4	498.4	498.5	0.1
J	8,210	62	411	7.8	507.2	507.2	507.8	0.6
K	8,622	58	254	12.7	514.5	514.5	514.5	0.0
L	9,002	125	518	6.2	521.4	521.4	522.3	0.9
M	9,324	474	1,285	2.5	531.3	531.3	531.4	0.1
N	9,995	60	266	12.1	532.6	532.6	533.0	0.4
O	11,172	105	418	7.7	549.3	549.3	550.3	1.0

[1]Feet above confluence with Saco River

[2]Elevation computed without consideration of ice jam effects

[3]Elevation computed without consideration of backwater effects from Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

KEARSARGE BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
LOVELL RIVER								
A	70	403	797	1.7	414.0	409.7[2]	410.7[2]	1.0
B	2,100	391	537	2.5	414.0	412.6[2]	412.8[2]	0.2
C	4,070	450	1,329	2.4	418.2	418.2	419.1	0.9
D	5,285	444	1,126	2.8	421.6	421.6	422.3	0.7
E	6,170	300	1,190	2.7	423.2	423.2	424.1	0.9
F	6,913	347	395	8.1	425.1	425.1	425.3	0.2
G	7,180	56	440	7.3	427.1	427.1	427.7	0.6
H	7,220	56	461	6.9	427.4	427.4	428.0	0.6
I	7,750	243	1,102	2.9	429.7	429.7	430.7	1.0
J	8,160	57	317	10.1	431.4	431.4	431.6	0.2
K	8,180	57	342	9.3	431.9	431.9	432.0	0.1

[1] Feet above confluence with Ossipee Lake

[2] Elevation computed without consideration of backwater effects from Ossipee Lake

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

LOVELL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
MARSH BROOK								
A	106	17	56	10.4	1,100.4	1,100.4	1,100.4	0.0
B	581	110	174	3.3	1,114.8	1,114.8	1,115.8	1.0
C	1,320	30	71	8.1	1,147.7	1,147.7	1,147.7	0.0
D	1,637	20	78	7.5	1,161.6	1,161.6	1,161.8	0.2
E	1,848	20	75	7.7	1,170.0	1,170.0	1,170.0	0.0
F	1,954	20	61	9.5	1,172.7	1,172.7	1,172.7	0.0
G	2,218	26	65	8.9	1,185.7	1,185.7	1,185.7	0.0

[1] Feet above confluence with Wildcat Brook

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

MARSH BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
RED HILL RIVER								
A	500	158	1,041	3.1	514.6	514.6	514.6	0.0
B	3,418	763	6,057	0.5	515.3	515.3	515.4	0.1
C	5,149	90	540	5.9	518.5	518.5	518.5	0.0
D	6,500	146	1,681	1.8	535.4	535.4	535.4	0.0
E	11,323	1,028	12,619	0.2	535.5	535.5	535.5	0.0
F	13,541	77	1,087	2.5	535.6	535.6	535.8	0.2
G	20,097	862	7,710	0.2	535.7	535.7	536.7	1.0
H	23,055	234	1,390	1.1	535.7	535.7	536.7	1.0
I	24,101	79	389	3.8	539.0	539.0	539.3	0.3
J	25,255	117	612	2.4	547.2	547.2	548.1	0.9
K	27,218	85	327	3.5	567.8	567.8	567.8	0.0
L	29,374	75	201	5.7	570.2	570.2	570.3	0.1
M	30,622	50	139	8.3	579.1	579.1	579.4	0.3
N	32,358	207	754	1.5	586.2	586.2	587.1	0.9

[1]Feet above confluence with Moultonborough Bay

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

RED HILL RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
RED HILL RIVER TRIBUTARY 1								
A	1,365	33	115	3.1	538.8	538.8	539.7	0.9
B	2,579	29	66	5.3	549.9	549.9	550.9	1.0
C	3,991	27	56	6.3	586.6	586.6	587.2	0.6
D	5,241	25	46	6.2	636.0	636.0	636.4	0.4
E	5,749	25	52	7.2	664.8	664.8	664.8	0.0
F	6,275	17	57	7.1	702.4	702.4	703.1	0.7
G	6,818	19	79	5.1	746.9	746.9	747.4	0.5
H	7,162	16	44	9.1	772.7	772.7	772.8	0.1
I	7,608	23	68	5.9	807.4	807.4	807.8	0.4
J	8,140	18	45	9.0	850.1	850.1	850.5	0.4

[1]Feet above confluence with Red Hill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

RED HILL RIVER TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
RED HILL RIVER TRIBUTARY 1 DIVERSION								
A	685	26	25	5.5	535.5	534.7[2]	534.7[2]	0.0
B	1,007	30	38	3.6	542.4	542.4	542.5	0.1
C	1,567	60	62	2.2	558.0	558.0	558.1	0.1
D	2,276	20	30	4.6	575.8	575.8	575.8	0.0
E	2,925	40	32	4.3	597.7	597.7	597.8	0.0

[1]Feet above convergence with Red Hill River

[1]Elevation computed without consideration of effects from flooding controlled by Red Hill River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

RED HILL RIVER TRIBUTARY 1 DIVERSION

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
ROCKY BRANCH								
A	211	155	901	10.1	564.8	564.8	564.8	0.0
B	528	138	1,443	6.3	573.8	573.8	573.8	0.0
C	1,003	176	765	11.9	576.0	576.0	576.0	0.0
D	2,270	138	717	12.7	596.8	596.8	596.8	0.0
E	2,851	91	615	14.9	606.6	606.6	606.9	0.3
F	3,960	63	544	16.8	627.4	627.4	627.6	0.2
G	4,594	58	529	17.3	643.6	643.6	643.6	0.0
H	5,438	48	497	18.4	661.3	661.3	661.4	0.1
I	6,547	96	824	11.1	682.0	682.0	683.0	1.0
J	6,917	164	505	18.1	692.6	692.6	693.5	0.9
K	8,078	89	685	13.3	712.8	712.8	713.5	0.7
L	8,554	109	650	14.1	723.6	723.6	723.6	0.0
M	9,557	87	675	13.5	747.1	747.1	747.5	0.4
N	10,718	127	868	10.5	763.5	763.5	764.4	0.9
O	12,038	88	606	15.1	785.2	785.2	785.2	0.0

[1]Feet above confluence with Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

ROCKY BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SACO RIVER								
A	2,957	5,322	33,255	1.7	413.5	413.5	414.5	1.0
B	4,752	1,152	8,525	6.5	414.3	414.3	415.3	1.0
C	10,138	383	8,303	6.6	419.6	419.6	420.6	1.0
D	13,675	212	5,196	10.6	421.7	421.7	422.7	1.0
E	15,206	1,259	19,793	2.8	423.4	423.4	424.4	1.0
F	16,896	1,376	17,327	3.2	423.8	423.8	424.8	1.0
G	19,325	3,417	35,078	1.6	424.4	424.4	425.4	1.0
H	22,810	310	6,848	8.0	425.1	425.1	426.1	1.0
I	23,866	529	9,009	6.1	426.3	426.3	427.3	1.0
J	25,238	826	12,370	4.5	426.9	426.9	427.9	1.0
K	27,298	978	13,965	3.9	428.0	428.0	429.0	1.0
L	28,248	802	11,174	4.9	429.2	429.2	430.2	1.0
M	28,776	1,836	15,150	3.6	429.5	429.5	430.5	1.0
N	29,990	320	6,303	8.7	429.9	429.9	430.9	1.0
O	30,888	450	8,888	6.2	432.6	432.6	433.6	1.0
P	31,627	325	5,499	10.0	434.5	434.5	435.5	1.0
Q	32,208	270	4,925	11.2	436.7	436.7	437.7	1.0
R	33,053	300	5,729	9.6	438.3	438.3	439.3	1.0
S	34,267	609	10,289	5.4	439.8	439.8	440.8	1.0
T	35,218	300	5,879	9.4	439.9	439.9	440.9	1.0
U	37,013	235	5,664	9.7	441.0	441.0	442.0	1.0

[1]Feet above Carroll/Oxford County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SACO RIVER (CONTINUED)								
V	38,808	248	4,687	11.7	446.0	446.0	447.0	1.0
W	40,286	320	5,926	9.3	449.2	449.2	450.2	1.0
X	41,290	307	6,418	8.6	451.8	451.8	452.8	1.0
Y	42,134	260	5,261	10.5	453.5	453.5	454.5	1.0
Z	43,877	1,308	18,238	2.7	456.2	456.2	457.2	1.0
AA	45,989	1,863	17,896	2.7	456.6	456.6	457.6	1.0
AB	49,262	1,373	21,064	2.3	457.2	457.2	458.2	1.0
AC	53,064	1,986	19,108	2.5	458.1	458.1	459.1	1.0
AD	55,757	1,564	14,163	3.4	458.9	458.9	459.9	1.0
AE	57,394	2,351	18,265	2.7	459.7	459.7	460.7	1.0
AF	60,667	1,798	16,914	2.9	461.5	461.5	462.5	1.0
AG	63,254	1,790	21,748	2.2	466.2	466.2	467.2	1.0
AH	68,587	1,577	19,161	2.5	467.6	467.6	468.6	1.0
AI	70,171	642	9,991	4.9	468.2	468.2	469.2	1.0
AJ	76,982	3,429	27,306	1.8	470.5	470.5	471.5	1.0
AK	83,952	4,736	24,810	2.0	473.4	473.4	474.4	1.0
AL	88,282	2,247	17,122	2.8	479.7	479.7	480.7	1.0
AM	89,971	1,003	8,799	5.5	481.3	481.3	482.3	1.0
AN	93,192	2,269	17,116	2.8	485.6	485.6	486.6	1.0
AO	94,406	2,032	13,198	3.7	486.8	486.8	487.8	1.0

[1]Feet above Carroll/Oxford County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SACO RIVER (CONTINUED)								
AP	96,941	3,265	17,877	2.7	489.0	489.0	490.0	1.0
AQ	98,419	3,990	17,017	2.9	491.3	491.3	492.3	1.0
AR	102,273	2,635	13,921	3.5	499.5	499.5	500.5	1.0
AS	104,174	769	9,441	5.1	502.8	502.8	503.8	1.0
AT	106,550	846	6,237	7.8	507.8	507.8	508.8	1.0
AU	107,870	742	8,302	5.8	513.0	513.0	514.0	1.0
AV	109,401	1,089	9,314	4.6	516.2	516.2	517.2	1.0
AW	111,725	1,187	9,344	4.6	521.5	521.5	522.5	1.0
AX	114,576	147	10,979	3.9	530.6	530.6	531.6	1.0
AY	116,318	236	2,243	14.9	537.9	537.9	538.9	1.0
AZ	118,649	1,758	7,877	4.3	545.9	545.9	546.9	1.0
BA	119,750	657	3,039	11.0	555.0	555.0	556.0	1.0
BB	120,067	414	4,910	6.8	561.7	561.7	562.7	1.0
BC	121,070	159	2,196	13.5	564.6	564.6	565.6	1.0
BD	122,021	150	1,991	14.9	570.6	570.6	571.6	1.0
BE	123,710	140	2,126	13.9	577.9	577.9	578.9	1.0
BF	124,080	122	2,163	13.7	580.3	580.3	581.3	1.0
BG	124,819	128	2,233	13.3	583.7	583.7	584.7	1.0
BH	125,717	189	2,855	10.4	587.1	587.1	588.1	1.0
BI	127,301	872	9,581	3.1	589.8	589.8	590.8	1.0

[1]Feet above Carroll/Oxford County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SACO RIVER (CONTINUED)								
BJ	128,673	1,789	11,415	2.6	591.5	591.5	592.5	1.0
BK	130,310	484	3,398	8.7	594.8	594.8	595.8	1.0
BL	131,524	1,250	7,048	4.0	599.5	599.5	600.5	1.0
BM	132,897	796	7,408	4.2	604.6	604.6	605.6	1.0
BN	134,165	418	3,208	9.2	607.5	607.5	608.5	1.0
BO	135,485	896	7,027	4.2	611.6	611.6	612.6	1.0
BP	136,593	423	2,572	11.5	615.2	615.2	616.2	1.0
BQ	137,649	870	7,490	4.0	620.1	620.1	621.1	1.0
BR	138,705	1,045	5,767	5.1	622.8	622.8	623.8	1.0
BS	141,715	1,370	7,791	3.8	631.9	631.9	632.9	1.0
BT	144,461	877	5,900	5.0	639.0	639.0	640.0	1.0
BU	145,728	939	5,769	5.1	643.8	643.8	644.8	1.0
BV	148,473	359	1,896	10.1	657.8	657.8	658.8	1.0
BW	150,902	919	5,788	5.1	667.3	667.3	668.3	1.0
BX	152,381	215	2,091	14.0	674.7	674.7	675.7	1.0
BY	153,595	285	2,394	11.6	682.5	682.5	683.5	1.0
BZ	155,126	200	1,985	14.0	689.9	689.9	690.9	1.0
CA	156,289	231	2,321	11.9	697.6	697.6	698.6	1.0
CB	158,717	526	2,766	9.5	715.7	715.7	716.7	1.0

[1]Feet above Carroll/Oxford County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SACO RIVER (CONTINUED)								
CC	160,406	346	2,285	11.5	730.9	730.9	731.9	1.0
CD	161,779	142	1,803	14.5	738.9	738.9	739.9	1.0
CE	162,201	133	1,739	15.1	746.7	746.7	747.7	1.0
CF	162,941	190	2,069	12.7	750.5	750.5	751.5	1.0
CG	164,102	137	1,692	15.5	757.7	757.7	758.7	1.0
CH	166,373	103	1,498	17.5	771.7	771.7	772.7	1.0

[1]Feet above Carroll/Oxford County Boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SACO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SHANNON BROOK								
A	811	652	3,219	0.8	508.3	508.3	508.5	0.2
B	2,379	58	452	5.5	509.9	509.9	510.7	0.8
C	3,431	56	359	6.9	516.8	516.8	516.8	0.0
D	4,205	69	249	10.0	523.8	523.8	524.3	0.5
E	5,340	43	202	12.3	535.2	535.2	535.2	0.0
F	6,026	74	283	8.8	544.1	544.1	544.3	0.2
G	8,216	125	684	2.3	551.1	551.1	552.0	0.9
H	9,196	160	931	1.7	558.0	558.0	558.6	0.6
I	12,614	192	493	2.4	561.4	561.4	562.1	0.7
J	14,561	400	923	1.3	566.3	566.3	567.0	0.7
K	16,561	231	628	1.9	572.0	572.0	572.9	0.9
L	19,482	412	634	1.7	585.9	585.9	586.8	0.9
M	20,869	80	337	3.2	600.0	600.0	600.5	0.5
N	21,952	57	164	6.5	608.4	608.4	608.6	0.2
O	23,352	80	191	5.6	638.1	638.1	639.0	0.9
P	24,704	74	160	6.6	679.3	679.3	680.2	0.9
Q	25,952	44	126	8.5	728.8	728.8	729.1	0.3
R	26,496	37	109	9.7	753.4	753.4	753.4	0.0
S	27,518	50	121	8.8	821.2	821.2	821.3	0.1
T	28,736	46	117	9.1	893.0	893.0	893.0	0.0
U	29,488	24	70	9.8	987.3	987.3	987.3	0.0

[1]Feet above confluence with Moultonborough Bay

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

SHANNON BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SHANNON BROOK (CONTINUED)								
V	30,318	37	90	7.6	1,074.5	1,074.5	1,074.5	0.0
W	31,061	43	85	8.1	1,125.2	1,125.2	1,125.2	0.0
X	31,699	30	76	9.1	1,190.4	1,190.4	1,190.4	0.0

[1]Feet above confluence with Moultonborough Bay

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

SHANNON BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SHANNON BROOK TRIBUTARY 1								
A	280	35	60	3.3	549.6	547.8[2]	548.1[2]	0.3
B	599	25	55	3.5	552.1	552.1	552.7	0.6
C	1,575	20	48	4.8	561.4	561.4	561.5	0.1
D	2,175	41	46	5.0	573.3	573.3	573.3	0.0
E	2,550	33	84	2.7	581.3	581.3	581.3	0.0
F	2,790	30	49	4.7	586.0	586.0	586.3	0.3

[1]Feet above confluence with Shannon Brook

[2]Elevation computed without consideration of backwater effects from Shannon Brook

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

SHANNON BROOK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION[2]			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
SWIFT RIVER								
A	581	1,649	11,681	1.3	454.9	453.7[3]	454.7[3]	1.0
B	1,690	538	4,865	3.1	455.8	455.0[3]	456.0[3]	1.0
C	3,115	3,001	21,102	0.7	458.6	458.6	459.6	1.0
D	4,699	2,148	9,458	1.5	459.4	459.4	460.4	1.0
E	6,389	764	3,971	3.5	463.7	463.7	464.7	1.0

[1]Feet above confluence with Saco River

[2]Elevation computed without consideration of ice jam effects

[3]Elevation computed without consideration of backwater effects from Saco River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

SWIFT RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WEED BROOK								
A	1,921	155	1,030	0.8	585.3	585.3	585.4	0.1
B	3,402	40	222	4.5	598.9	598.9	599.4	0.5
C	5,449	48	210	3.0	614.5	614.5	615.4	0.9
D	6,323	34	159	4.0	622.1	622.1	622.4	0.3
E	7,673	64	257	2.5	638.7	638.7	639.5	0.8
F	9,158	150	310	2.1	645.2	645.2	646.1	0.9
G	10,683	44	164	3.9	662.7	662.7	663.7	1.0
H	11,634	36	91	7.0	678.3	678.3	678.6	0.3
I	12,253	51	113	5.7	694.5	694.5	694.6	0.1

[1]Feet above confluence with Berry Pond

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

WEED BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WEED BROOK DIVERSION								
A	1,206	37	201	1.9	574.2	574.2	574.7	0.5
B	2,825	106	428	0.9	574.3	574.3	575.1	0.8
C	4,167	143	507	0.8	575.9	575.9	576.8	0.9
D	5,075	80	254	1.5	577.7	577.7	578.3	0.6

[1]Feet above convergence with Berry Pond

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

WEED BROOK DIVERSION

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WEED BROOK TRIBUTARY 1								
A	650	42	97	3.8	609.1	609.1	609.1	0.0
B	1,498	37	88	4.2	620.3	620.3	620.7	0.4
C	2,351	37	70	5.6	657.7	657.7	657.7	0.0
D	3,344	37	57	7.0	726.1	726.1	726.1	0.0
E	4,224	72	136	2.9	770.6	770.6	770.7	0.1
F	5,023	80	257	1.6	774.8	774.8	775.6	0.8
G	5,522	82	307	1.3	777.9	777.9	778.0	0.1
H	6,881	118	62	4.1	784.6	784.6	784.8	0.2

[1]Feet above confluence with Weed Brook

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

FLOODWAY DATA

WEED BROOK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WEST BRANCH								
A	150	204	751	1.2	414.0	408.1[2]	409.1[2]	1.0
B	4,350	200	544	1.7	414.0	413.8[2]	414.4	0.6
C	5,230	150	465	2.0	415.3	415.3	415.8	0.5
D	8,300	150	516	1.8	422.7	422.7	422.9	0.2
E	10,900	150	317	2.9	428.7	428.7	429.1	0.4
F	12,500	150	373	2.5	435.2	435.2	435.2	0.0
G	13,070	240	666	1.4	435.9	435.9	436.3	0.4
H	13,810	182	372	2.5	436.9	436.9	437.9	1.0
I	15,500	175	537	1.7	441.6	441.6	442.1	0.5
J	16,750	150	426	2.2	443.7	443.7	444.6	0.9
K	17,330	32	263	3.5	445.4	445.4	446.1	0.7
L	17,370	32	268	3.4	445.6	445.6	446.3	0.7

[1] Feet above confluence with Ossipee Lake

[2] Elevation computed without consideration of backwater effects from Ossipee Lake

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

WEST BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WILDCAT BROOK								
A	211	300	1,190	7.8	756.5	751.6[2]	752.0[2]	0.4
B	1,109	200	1,206	7.7	756.5	756.3[2]	757.0[2]	0.7
C	1,531	200	820	11.3	764.1	764.1	764.1	0.0
D	2,165	100	607	15.2	785.2	785.2	785.2	0.0
E	2,640	108	653	14.2	866.2	866.2	866.2	0.0
F	3,221	120	718	12.9	898.7	898.7	898.7	0.0
G	3,590	150	814	11.4	917.7	917.7	917.7	0.0
H	3,802	150	1,223	7.6	924.8	924.8	924.8	0.0
I	4,435	200	1,645	5.6	927.0	927.0	927.6	0.6
J	5,438	300	1,906	4.9	929.0	929.0	930.0	1.0
K	6,811	250	1,225	5.8	933.8	933.8	934.4	0.6
L	7,920	300	1,343	5.3	938.8	938.8	939.8	1.0
M	9,134	400	1,546	4.6	944.4	944.4	945.2	0.8
N	10,507	200	730	9.7	954.0	954.0	954.3	0.3
O	11,933	250	1,042	6.8	966.9	966.9	967.8	0.9
P	12,566	80	538	13.2	978.8	978.8	978.8	0.0
Q	13,358	100	556	12.7	1,001.4	1,001.4	1,001.4	0.0
R	13,570	100	1,119	6.3	1,007.2	1,007.2	1,007.4	0.2
S	14,309	80	573	12.4	1,009.2	1,009.2	1,009.8	0.6
T	15,312	230	895	7.9	1,029.1	1,029.1	1,029.2	0.1
U	16,579	200	866	8.2	1,045.7	1,045.7	1,046.3	0.6

[1] Feet above confluence with Ellis River

[2] Elevation computed without consideration of backwater effects from Ellis River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

WILDCAT BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)
WILDCAT BROOK (CONTINUED)								
V	17,741	200	1,052	6.7	1,062.2	1,062.2	1,062.8	0.6
W	19,061	90	579	12.2	1,091.3	1,091.3	1,091.5	0.2
X	19,800	150	596	9.6	1,114.6	1,114.6	1,115.5	0.9
Y	20,434	120	541	10.6	1,140.1	1,140.1	1,141.1	1.0
Z	21,278	80	454	12.6	1,177.0	1,177.0	1,177.0	0.0
AA	21,437	80	738	7.8	1,184.1	1,184.1	1,184.2	0.1
AB	22,282	120	557	10.3	1,218.6	1,218.6	1,218.6	0.0
AC	23,390	120	569	10.1	1,249.3	1,249.3	1,249.4	0.1

[1] Feet above confluence with Ellis River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH (ALL JURISDICTIONS)

FLOODWAY DATA

WILDCAT BROOK

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Carroll County. Previously, FIRMs were prepared for each incorporated community of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community are presented in Table 7.

7.0 OTHER STUDIES

This report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Federal Insurance and Mitigation Division by contacting FEMA Region I, 99 High Street, Mitigation Division, Risk Analysis Branch, 6th Floor, Boston, Massachusetts 02110.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, Town of Bartlett, Carroll County, New Hampshire, March 1, 1984.

2. Federal Insurance Administration, Flood Insurance Study, Town of Conway, Carroll County, New Hampshire, Flood Insurance Study Report, October 1978; Flood Insurance Rate Map, April 16, 1979.

3. Federal Emergency Management Agency, Flood Insurance Study, Town of Conway, Carroll County, New Hampshire, June 3, 2002.

4. Federal Emergency Management Agency, Flood Insurance Study, Town of Freedom, Carroll County, New Hampshire, July 3, 1995.

5. Federal Insurance Administration, Flood Insurance Study, Town of Jackson, Carroll County, New Hampshire, Flood Insurance Study Report, January 2, 1979; Flood Insurance Rate Map, July 2, 1979.

6. Federal Emergency Management Agency, Flood Insurance Study, Town of Ossipee, Carroll County, New Hampshire, June 17, 1991.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATE
Albany, Town of	January 17, 1975	None	March 1, 1995	None
Bartlett, Town of	June 28, 1974	July 26, 1977	May 1, 1979	March 1, 1984
Brookfield, Town of	January 3, 1976	None	May 17, 1977	None
Chatham, Town of	January 3, 1975	December 10, 1976	None	None
Conway, Town of	September 6, 1974	August 27, 1976	April 16, 1979	June 3, 2002
Eaton, Town of	January 17, 1975	October 1, 1976	None	None
Effingham, Town of	January 17, 1975	None	August 1, 2009	None
Freedom, Town of	August 30, 1974	August 13, 1976	December 1, 1992	July 3, 1995
*Hale's Location, Town of	N/A	None	N/A	None
Harts Location, Town of	None	None	None	None
Jackson, Town of	August 30, 1974	November 5, 1976	July 2, 1979	None
Madison, Town of	January 17, 1975	November 29, 1977	August 1, 2005	None
Moultonborough, Town of	February 11, 1977	December 21, 1979	March 1, 2000	None
Ossipee, Town of	June 21, 1974	December 17, 1976	June 17, 1991	July 3, 1995

*No special flood hazard areas identified

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATE
Sandwich, Town of	July 26, 1974	November 26, 1976	July 17, 1986	September 2, 1993
Tamworth, Town of	July 19, 1974	November 12, 1976	July 16, 1991	None
Tuftonboro, Town of	March 28, 1975	August 30, 1977	May 4, 1989	None
Wakefield, Town of	July 26, 1974	June 25, 1976	June 17, 1991	July 17, 2006
Wolfeboro, Town of	January 17, 1975	None	May 17, 1989	None

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, NH
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

7. Federal Emergency Management Agency, Flood Insurance Study, Town of Ossipee, Carroll County, New Hampshire, July 3, 1995.

8. Federal Emergency Management Agency, Flood Insurance Study, Town of Tamworth, Carroll County, New Hampshire, July 16, 1991.

9. Federal Emergency Management Agency, Flood Insurance Study, Town of Tuftonboro, Carroll County, New Hampshire, May 4, 1989.

10. Federal Emergency Management Agency, Flood Insurance Study, Town of Wakefield, Carroll County, New Hampshire, June 17, 1991.

11. Federal Emergency Management Agency, Flood Insurance Study, Town of Newfield, York County, Maine, Flood Insurance Study Report, December 5, 1984; Flood Insurance Rate Map, June 5, 1985.

12. Federal Emergency Management Agency, Flood Insurance Study, Town of Wakefield, Carroll County, New Hampshire, July 17, 2006.

13. Federal Emergency Management Agency, Flood Insurance Study, Town of Wolfeboro, Carroll County, New Hampshire, May 17, 1989.

14. Federal Emergency Management Agency, Flood Insurance Study, Grafton County, New Hampshire (All Jurisdictions), February 20, 2008.

15. Photo Science, Inc., LiDAR data, Carroll County, 2010.

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