KENTON COUNTY FLOOD PREPAREDNESS PLAN

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PURPOSE

The purpose of this plan is to establish basic policies and procedures for flood preparedness in response to potential or actual flooding, including flash flooding, in Kenton County or one of its cities.

This is a supplemental plan to the Kenton County Emergency Operations Plan (EOP) and some information that is included in the EOP may not be repeated in here. Refer to the EOP for additional information.

SITUATION AND ASSUMPTIONS

Flash Flooding generally occurs in creeks and smaller tributaries as the result of excessive rainfall over short periods of time (within 6 hours of the event). Flash floods are generally short term events but can cause significant aftermath that can take longer times to recover from.

River Flooding occurs along rivers and large waterways, but it also causes tributary flooding as a result of backwater. It is further classified as Minor, Moderate, or Major based on pre-established "Flood Stage Levels) for various points along rivers and / or very large creeks. River floods generally take hours to days from the event that causes them, and the flood event can last several days as well.

Kenton County has been affected by both Flash Flooding and River Flooding many times in history. Kenton County is bordered on the north by the Ohio River and the east by the Licking River. In addition, there are numerous tributaries and feeder creeks throughout the county that are subject to Flash Flooding. The Banklick Creek Watershed covers a large portion of Kenton County and has been a historic contributor to many flood events.

Floods can occur at any time, but are more prevalent during spring and summer months. Occasionally, flash flooding will occur across roadways and property as a result of excessive rainfall.

The National Weather Service (NWS) uses the following products and terminology to warn the public of flash flood and flood situations. (For a description of flood warning / communications and warning receipt capabilities see the *Alerts and Warnings Procedures* Plan.)

Flood Advisory

A Flood Advisory is issued when a specific weather event that is forecast to occur may become a nuisance. It is issued when flooding is not expected to be bad enough to issue a warning. However, it may cause significant inconvenience, and if caution is not exercised, it could lead to situations that may threaten life and / or property.

Flood Watch

A Flood Watch means conditions are favorable for flooding to occur. It does not mean that flooding will definitely occur, but it is possible. If you are in the area of a flash flood

watch you should be prepared for flash flooding that may develop and may need to take action for your safety before it occurs.

Flash Flood Warning

A Flash Flood Warning is issued when a flash flood is imminent or occurring in the area. A flash flood is a sudden violent flood that can take from minutes to hours to develop. It is even possible to experience a flash flood in areas not immediately receiving rain. If you are in a flood prone area, move immediately to high ground. Never drive or walk through water of unknown depth covering roadways or the ground.

Flood Warning

A Flood Warning is issued when flooding is imminent or occurring in larger bodies of water such as rivers. Flood Warnings can be issued for areas that are hundreds of miles downstream of an area where excessive rain occurred.

CONCEPT OF OPERATIONS

This plan focusses on preparedness, response, and recovery for flooding events. The Chief Elected Officials (Kenton County Judge Executive and / or City Mayors) will provide direction and control regarding flood events.

Kenton County Fiscal Court and all cities located in Kenton County have designated Kenton County Homeland Security Emergency Management (KCHSEM) as their Emergency Management Agency. KCHSEM will coordinate all preparation, response, and recovery activities, as well as Emergency Operations Center (EOC) activities, in accordance with the Kenton County Emergency Operations Plan (EOP).

The National Incident Management System (NIMS) will be used when implementing this plan. State and federal resources that supplement local efforts will be directed by the state or federal government agency that supplied them.

Agencies and departments with responsibilities under this plan are encouraged to develop Standard Operating Guidelines (SOG's) consistent with the Kenton County Emergency Operations Plan (EOP) and this Flood Preparedness Plan.

The Chief Elected Official or their designee will make evacuation decisions regarding flood events and public safety. Evacuation Orders must be issued in a written document that is signed by the Chief Elected Official.

PHASES OF OPERATIONS – ACTIONS TO BE TAKEN

This plan addresses 3 specific phases (Preparedness, Response, and Recovery) of an event. Each phase has certain actions that should be taken which are outlined here.

Preparedness

The Preparedness Phase occurs prior to and in anticipation of an incident. This phase focuses on promotion of increased public awareness of the potential emergency, preparation of necessary materials and equipment for response to the emergency, participation in the National Floodplain Insurance Program (NFIP), conducting training and exercises, developing public information programs, and maintaining lists of available resources for use by emergency response personnel.

Public Notification And Warning

KCHSEM has developed and continues to maintain an *Alerts And Warning Procedures* plan as a supplement to the EOP. The county and cities should follow the procedures in that plan to pass along NWS Watches and Warnings to public safety personnel and the general public.

When a flood event is predicted or possible, KCHSEM personnel should provide an incident briefing which explains the potential incident and identifies those who will be available for incident management.

Anticipated Evacuations

KCHSEM has developed and continues to maintain an *Evacuation Plan* as a supplement to the EOP. While that plan addresses many different types of evacuations, information contained in this plan has been developed specifically for flood incidents and will take precedence in a flood situation.

KCHSEM will work with the NWS and Planning And Development Services Of Kenton County (PDS) to identify specific areas that will potentially flood as the water level rises; identify areas that will be inundated because of poor drainage or ponding unrelated to flood height in streams; and identify areas requiring evacuation for reasons other than inundation including:

- Loss of access or escape routes
- Loss or curtailment of utilities or other necessary services
- Site-specific problems

Evacuation areas will be prioritized based on factors such as total population affected, special needs population, anticipated time to evacuate, and any other factors that may need to be considered.

Once the evacuation areas have been identified, KCHSEM will work with the Red Cross or other shelter agencies to select at least one potential evacuation destination for each area. Multiple destinations or sites may be required if the affected population is large. Destinations / sites will be chosen based on accessibility, traffic flows, and proximity to the evacuation area.

Potential evacuation routes from each evacuated area to their designated evacuation site(s) will be identified based on anticipated road closures, projected traffic flows, and any other factors that may impact route selection.

Procedures for carrying out evacuations from each area will be developed that are consistent with the warning time available including:

- Transportation of evacuees
- Providing special assistance to those having unusual evacuation needs (including care for pets)
- Assuring that evacuation is complete
- Establishing traffic control to prevent entry into dangerous areas and facilitating evacuation traffic
- Establishing surveillance over the evacuation area to ensure safety of the area

Traffic Control And Security

KCHSEM will work with the Kentucky Department of Highways, local public works agencies, and local law enforcement agencies to identify requirements for traffic control and security that:

- Identify areas to be controlled at a variety of expected flood heights
- Specify locations where traffic control will be required
- Identify detours and / or types of control to be used
- Specify placement of personnel, barricades, and signs to effect necessary control and means of enforcement
- Restrict access to flood-damaged areas to just residents and other authorized persons.

Utility Management

KCHSEM will work with utility providers to plan for the safe curtailment of utility services to potentially impacted areas, including operational procedures to be used immediately prior to and during floods, and before evacuated areas are allowed to be re-occupied.

Citizens should be aware of where their electric, gas, and water shut-off devices are located and how to operate them. LP and bulk fuel tanks should be anchored or kept full to prevent them from floating away and becoming a hazard.

Maintenance Of Vital Records

Local government agencies shall establish procedures for protection of important records and documents located in areas subject to flooding, including those relating to:

- Vital statistics
- Tax and payroll information
- Utility records
- Property ownership
- Business records

Response

The Response Phase begins just before the onset of a flood and is based upon NWS information and actual weather conditions. During this phase, functions that are critical to lifesaving, protection, and meeting basic human needs are performed.

KCHSEM will work with the county and cities to prepare emergency declarations for the anticipated or current flooding conditions as needed based on the incident.

The county and cities will implement emergency plans and procedures for response to the incident, including notifications and warnings, evacuations, traffic control, utility control, and vital records preservation.

The county and cities will mobilize all necessary emergency services, local government agencies, support agencies, and other resources that are needed for the response. This includes reminding any local agencies in the affected areas to evacuate or protect their buildings / offices if necessary.

The county and cities may need to activate the EOC or Department Operation Centers in response to the incident. Refer to the Kenton County EOP and EOC policies and procedures for additional details.

All agencies need to maintain regular situation reports from the field to the EOC. These reports are the basis for the PIO's to develop releases to the public when necessary to minimize public alarm and to keep any evacuated area clear. The Kenton County EOC will keep the Kentucky Division of Emergency Management informed using scheduled situation reports.

Public Notification And Warning

Public Information Officers (PIO's) will be used to keep the public advised of the current situation and actions being taken by local government to manage the emergency, including actions to be taken to safeguard their lives and property.

Public information releases should include information such as the following:

- Height of water at normal stage and height at which flooding will occur
- Areas that may be (or will be) affected by the rising waters
- Areas that have been ordered to evacuate
- Shelter locations, feeding locations, and other requirements for taking care of evacuees
- Transportation assets available (if applicable) and how to request assistance
- Time evacuation will begin
- Evacuation routes

If multiple jurisdictions are involved, consideration should be given to establishing a Joint Information Service (JIS) in accordance with the Kenton County EOP.

Evacuations

Areas requiring evacuations will be identified and communicated to the public, response agencies, and local government agencies. Notifications will include shelter sites, evacuation routes, and time frames for completion.

Evacuation shelters and / or destinations will be established in conjunction with the Red Cross or other shelter agencies for those evacuees that require sheltering. Feeding locations may need to be established separate from the shelter sites. See Kenton County *Mass Care And Shelter Plan* for additional details.

Evacuation routes will be established and traffic controls will be implemented in accordance with the *Evacuation Plan* to assist evacuees.

Evacuation areas will be checked by Fire/EMS and law enforcement agencies to insure that everyone has left. Search and rescue operations may be needed to assist stranded inhabitants and trapped motorists. Rescue agencies may require assistance from boats, helicopters, and specially-equipped vehicles in addition to their traditional rescue equipment.

Once areas have been searched and cleared, they should be communicated to the EOC and properly marked to avoid duplication of efforts.

Traffic Control And Security

KCHSEM will work with the Kentucky Department of Highways, local public works agencies, and local law enforcement agencies to develop and implement a traffic control plan to expedite movement from areas ordered to evacuate.

The Traffic Control Plan should include designation of entrance routes for emergency services and exit routes for evacuation of citizens. Public Works agencies and Kentucky Department Of Highways will provide signs, barricades, and traffic control devices to assist in the marking and maintenance of evacuation routes.

Law enforcement agencies will establish a security plan for evacuated areas to protect property, prevent looting and theft, and observe for hazards.

Utility Management

Utility providers (gas, electric, telephone, water, and sanitation) will implement plans for the safe curtailment of services to potentially impacted areas. Priority will be given to potential life-threatening hazards in the mostly highly impacted areas.

PIO's shall remind the public to shut off electric, gas and water services prior to leaving their homes or businesses to prevent accidents. Whenever possible, LP and bulk fuel tanks should be anchored or kept full to prevent floating and becoming a hazard.

Maintenance Of Vital Records

Local government agencies within the impacted areas shall implement procedures for protection of important records and documents including (but not limited to):

- Vital statistics
- Tax and payroll information

- Utility records
- Property ownership
- Business records

Recovery

Recovery Phase operations often begin before conclusion of the Response Phase, and operations in both phases usually overlap. This phase can last for several months or years.

Damage Assessment

The first step in recovery is Damage Assessment (see Damage Assessment Plan for additional details).

Should the damage be significant, the County and / or cities may meet threshold requirements for a Presidential Declaration and subsequent Federal Assistance. Any Federal Assistance would be provided pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Assistance may be provided in the form of:

- Public and / or Individual assistance
- Establishment of Disaster Recovery Centers
- Establishment of Temporary Housing Facilities
- Federal Disaster Loans and Grants

The goal of Long-term recovery includes restoration of affected areas to pre-incident status or better whenever possible.

Maintenance Of Public Health

ESF 8 – Public Health and Medical and the Northern Kentucky Health Department will establish procedures and actions to preserve public health during and after a flood incident, including:

- Provision of medical services and care for sick and injured persons, including those in any shelters
- Establish procedures for locating missing persons and providing information to relatives and friends (in conjunction with the Operations Section in the EOC)
- Work with ESF 15 to advise the public on health concerns related to floods, including but not limited to, the potential for diseases, food product concerns and disinfection of public / private water supply sources and systems
- Continue and plan for the potential need for increased Health Department efforts to ensure food safety
- Inoculations and other preventative medical care
- Disease control, including the control of insects, rodents, and other vectors / pests
- Procedures for fatality management if necessary.

Restoration Of Services

County and city agencies should implement procedures for returning to normal traffic patterns including:

- Evaluation of road and bridge safety and subsequent repairs
- Establishment of priority levels for providing access to impacted areas
- Debris clearance and removal on all roadways, railways, and waterways

Utility services (gas, electric, telephone, water, and sanitation) should implement procedures to resume normal provision of utility services including:

- Priority and sequence for resuming services
- Restoration and repair of utility infrastructure and equipment
- Preparations to be made by property owners before restoration of services
- Utility system preparations (such as decontamination of water supplies)

Rehabilitation And Repair

Establish recommended procedures for post-flood clean-up including:

- Clearing, collecting, and disposing of debris and discarded goods
- Street washing
- Pumping basements, wells, and cisterns
- Returning materials that were temporarily relocated for safekeeping
- Clean-up and disposal of Hazardous Materials

Establish procedures for management of damaged structures including:

- Procedures for identification and evaluation of damage
- Demolition or temporary repair of hazardous buildings
- Identify potential sources and programs for recovery assistance

Establish procedures for mobilizing assistance from available sources including:

- Conditions under which requests for assistance will be made
- Channels to be followed in requesting assistance
- Preparations of necessary requests, disaster declaration, or other documentation required as a condition of assistance
- Tracking assistance
- Demobilization

DEBRIS REMOVAL

The debris removal process must be initiated promptly and conducted in an orderly, effective manner in order to protect public health and safety following a major catastrophic

event. Specific guidance to facilitate and coordinate the collection, removal, and disposal of debris following a disaster is contained in the Kenton County *Debris Management Plan*.

The first priority will be to clear debris from priority roads so that emergency vehicles and resources can get into the impacted areas.

The second priority will be providing access to critical facilities that have been pre-identified by state and local government. The need and demand for critical services will be increased significantly following a disaster and access to these facilities will be vital.

The third priority will be elimination of debris-related threats to public health and safety. This includes such things as the repair, demolition, or barricading of heavily damaged and unstable buildings, systems, or facilities that pose a danger to the public. Any actions taken to mitigate or eliminate the threat to the public health and safety must be closely coordinated with the owner or responsible party.

Appendix A - Kenton County Flood Plain Map

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Appendix B – Covington Flood Protection Plan

Covington, Kentucky
Covington Local Flood Protection Project
Flood Warning and Emergency Evacuation Plan (FWEEP)

1.0 Introduction

1.1 Need For The Plan

The Covington, Kentucky Local Flood Protection Project was federally designed and constructed to afford protection to the 1937 flood plus 3 feet of freeboard. With this level of protection there is a possibility that flooding within the protected area could occur from either a rare overtopping event of the levee or floodwall, an unexpected failure of the levee or a floodwall section. For this reason the local sponsor (City of Covington) was requested to develop a Flood Warning and Emergency Evacuation Plan (FWEEP). For the purposes of this plan, it is assumed the gravity outlets along the levee would be functioning properly and would not be blocked. The Operation and Maintenance Manual for this project contains detailed requirements for the pumping stations, closures, gravity outlet sluice gates, flap gates, and other necessary appurtenances.

2.0 General

2.1 Existing Flood Control Measures

The Covington Local Flood Protection Project (LFPP) is located in Kenton County, Kentucky on the left bank of the Ohio River between 471.3 and 470.4 miles below Pittsburgh, Pennsylvania. This combination levee/floodwall protection begins at about mile 471.3 on the Ohio River and continues upstream to about mile 470.4 where it ties into high ground about 1000 feet downstream of the Licking River. The protection then continues along the Licking River beginning at about mile 0.6 extending upstream to about mile 2.3 where it also ties into high ground. Top of protection for this flood protection system varies from about elevation 509.6 feet mean sea level (msl) NAVD to elevation 517.1 feet msl NAVD. These elevations include freeboard above the 1937 flood as well as raising the levees/floodwalls an additional amount, to assure potential floodwaters would overtop in the least hazardous areas.

2.2 Historical Floods

Of all actual historic floods that have reached the base of the levee or greater, the March 1964 flood was the greatest with an elevation of 494.3 feet msl NAVD which was about equal to a 2% chance (50-year) flood. Table I shows the largest of all historical floods and their associated peak elevations for the Covington area since this flood control project was completed in 1955. As shown on the table, the March 1997 flood was approximately equal to a 35-year event. All of the remaining events varied between 20-year and 10-year frequencies. According to City of Covington officials, they were not aware of any flood problems that occurred during these historic events.

2.3 Future Floods

Table 1 – Peak Historic Floods Since Project Completion

DATE	ELEVATION (NAVD)	FLOOD FREQUENCY
March 11, 1964	494.3	50 Year
March 6, 1997	492.8	35 Year
March 3, 1962	489.5	20 Year
March 10, 1955	489.2	
March 11, 1967	487.9	
March 10, 1963	487.6	
March 1, 1979	487.6	
May 11, 1958	486.1	
January 25, 1996	485.2	
May 30, 1968	485.0	

As stated earlier, the Covington Local Flood Protection Project was designed to an elevation equal to the 1937 flood plus three feet of free board. With this level of protection, it would be uncommon the project would experience a flood event that could overtop the levee. More frequent flood events may cause flooding in Covington, Kentucky from failure to properly install one or more of the closure structures. Problems from seepage will not be discussed because geotechnical analysis of the existing levee reveals that seepage is not a significant factor *(see Section IX.d.4.2 for more information in regard to the potential of underseepage to occur during the 1% chance (100-year) flood event with 90% chance assurance)*. Additionally, because there will be flapgates and/or sluice gates for each of the gravity outlet pipes under the levee, backflow through the pipes should not occur, assuming proper maintenance. If sluice/flapgates do not function properly during high water events, then backflooding through these pipes could occur causing interior flooding and evacuation of the area would need to be considered.

3.0 Flood Threat Recognition

3.1 Purpose

This section delineates how a potential flood threat along the Ohio River can be recognized. The resources and methods used to determine the severity of the threat are also described.

3.2 National Weather Service

The National Weather Service Forecast Office in Wilmington, Ohio has the primary responsibility for providing rainfall forecasts and flood warnings for Covington, Kentucky.

3.3 Flood Warning System

There is only one gage currently located in the vicinity of the Covington Levee that can be used to monitor the level of the Ohio River during flood events. The gage station is shared by the United States Army Corps of Engineers (USACE), National Weather

Service (NWS), and United States Geological Survey (USGS). The gage station, CCN01, is located on the Ohio River Suspension Bridge between Cincinnati, Ohio and Covington, Kentucky. Stages for this gage are read by satellite every hour. This information can be obtained from the NWS twenty-four hours a day. During flood periods, the NWS will also forecast river stages for the following five-day period. It is through the use of the existing gage and the Covington Local Flood Protection Project Operations and Maintenance Manuals that a procedure has been designed that determines the activities that must be accomplished for this FWEEP. This procedure is discussed in detail in the "Emergency Response Action" section of this report.

3.4 Rates of Rise

Rates of rise of the Ohio River can be determined from the gage station, CCN01, through NWS or USACE. With this additional information, along with the NWS five day forecasts for the Ohio River, slight modifications to the step by step plan discussed in "Emergency Response Action," may be made. This will be particularly true as experience is gained through observation with known flood events.

4.0 Warning Dissemination

4.1 Purpose

This section describes how local officials, responding agencies, and the public are notified of conditions which may necessitate the installation of the closures, or, in a worse case scenario, evacuation due to imminent flooding.

4.2 Agency Notification

The City of Covington receives severe weather alerts including flood warnings from the National Weather Service (NWS) office in Wilmington, Ohio. In addition, the Kenton County Homeland Security & Emergency Management Agency provides email notifications of all severe weather including flood warnings to all governmental agencies in Kenton County.

4.3 Public Notification

Public Notification is disseminated via several outlets. A complete listing of local radio stations is included in Exhibit A.

The Department of Public Improvements along with the Kenton County Homeland Security Emergency Management Agency monitors rising river conditions and river stage forecasts via the National Weather Service website as discussed in Section 3 of this document. The emergency alert system may be activated by the Kenton County Homeland Security Emergency Management Agency in the event conditions create a potential for flooding.

All efforts will be made to alert homeowners and businesses within flood prone areas or locations that could be flooded by overtopping of existing flood protection systems in advance as forecasted by the National Weather Service.

5.0 Emergency Response Action

5.1 Closure Structures

Closure structures are openings in the levee or floodwall specifically constructed for the purpose of allowing normal traffic during low water periods. They are normally closed prefabricated panels when floodwaters rise to predetermined heights. The Covington flood protection system includes 7 movable closures and 2 service openings. The "Order of Operations," found in the Covington Operations and Maintenance Manual, Plate 63, illustrates the Ohio River stage at which each closure needs to be installed.

5.1.1 Maintenance

The requirements of the O&M Manual for the maintenance of closure structures provide that:

"Closure structures for traffic openings shall be inspected by the superintendent every 90 days to be certain that:

(i) No parts are missing;
(ii) Metal parts are adequately covered with paint;
(iii) All movable parts are in satisfactory working order;
(iv) Proper closure can be made promptly when necessary;
(v) Sufficient materials are on hand for the erection of sandbag closures.

Sandbags are stored within all flood closure storage vaults. Sand is stored at the Department of Public Improvements maintenance garage located at 4399 Boron Drive, Covington, KY. Sand is made readily accessible in advance of an event by delivering to each closure structure or other areas as needed.

5.1.2 Inspection And Trial Erection

Closure structures shall be inspected at least once every ninety (90) days. Such inspection should be made at the beginning of the months of January, April, July, and October. Sample check list forms for use in making inspections of closures are contained in Appendix F in the Covington O&M manual revised dated 1984. These forms contain an inventory of all parts necessary for the erection and operation of the closures. All parts should be checked against the check list to ascertain their presence in the vault. Check thoroughly for evidences of corrosion or warping to determine whether the part is still usable. It is advisable to check the storage vaults immediately before impending high water to see that no parts are missing. All irregular or defective parts observed during inspections should be removed from the vault. The necessary remedial measures should be taken for cleaning, painting and oiling or greasing the parts. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each closure will be erected at least once in each three (3) year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

5.1.3 Operation

The requirements of the regulations for the operation of closure structures provide that:

"Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection, is given in the Operation and Maintenance Manual. Closure structures will be inspected frequently during flood periods to ascertain that no undue leaking is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them."

5.1.4 Flood Period Operation

It is imperative that ample time be allowed to erect the gate closures before the water reaches the sills. Due consideration must be given to the rate of rise of the river. Records indicate that the rate of rise has been as much as 0.92 foot per hour. Consideration must also be given to possible delays in the operation because of inexperienced help and other contingencies. "Table 2 Closure Data," page VII-4 of the Covington O&M Manual shows the order of erection, erection time, man power and sandbags needed for each closure.

5.1.5 Clean-Up

Upon final recession of flood waters, the timbers, trusses, etc. should be cleaned, metal surfaces painted where necessary; and all material inventoried against the closure parts check lists. The parts shall be placed in the storage vaults according to the arrangements shown on Plates 37 through 42 in the Covington O&M manual, copies of which have been mounted in plastic and placed in each respective storage vault. Sill and anchorage recesses shall be cleaned and painted and cover plates replaced. Surface paving or structures shall be restored to original condition. Gate recess corner angles in the abutments shall be cleaned and painted. Stocks of sealing materials and sandbags shall be replenished and damaged material immediately replaced. All damaged and unusable materials shall be moved and disposed of in the locally acceptable manner. Areas shall be left in a presentable order of cleanliness.

5.2 Sandbag Closures

A low area south from the end of the levee at Sta. 190+59 will require sandbagging. Sandbags used for erecting the sandbag closure shall contain about 1/3 cubic foot of clay or silt and shall be filled and placed generally as outlined in the Covington O&M Manual paragraph 10-06 and shown on Plate 11. The closure shall be erected to the level of the top of the adjacent wall.

5.3 Gravity Outlets

There are several gravity structure outlets through the existing levee for drainage of the interior storm run-off. In order to keep floodwaters from backing up through the gravity outlets, the flapgates should be kept free of blockage and maintained. The sluicegates located in the gatewells serve as a backup for the flapgates and should also be maintained

in good working order. Details for maintenance and "Order of Operations" of the flapgates and sluicegates are contained in the Covington Operations and Maintenance Manual revised dated 1984.

5.4 Pump Plants

There are ten pump plants constructed to remove storm and sanitary sewage runoff from the areas protected by the levee or floodwall during periods of high water stages. In order to provide pumping capabilities during high river events, the pump plants should be maintained in good operating condition. Details for maintenance and "Order of Operations" of the pump stations are contained in the Covington Operations and Maintenance Manual revised dated 1984, Section VIII titled "Pumping Plants".

5.5 Evacuation

In the event of a failure to install the closures or a rare overtopping event, evacuation of the protected areas would be necessary. It is beyond the scope of this FWEEP to show all of the possible scenarios for interior flooding of the project.

For an overtopping event or failure to install a closure, several areas along the levee system would be subject to flooding from water flooding inside the protection. Local officials will alert home owners and businesses of the potential for interior flooding of the flood protection project. These warnings will be provided at an early enough time that contents of homes might be moved and again at a later time to allow for an orderly evacuation of the protected area before overtopping occurs. Reference paragraphs 4.2 and 4.3 for this information.

Agreements should be made with organizations to use their facilities during possible future floods. The services of the Red Cross and Salvation Army to provide food, clothing, and other assistance should be utilized.

A complete list of shelter locations that have been designated to be used in the event that evacuation becomes necessary is included in Exhibit B.

5.6 Responsibilities

Table II lists the activities that must be accomplished during high water events. These activities are based on the Covington O&M manual assuming all closures are installed and holding.

The initiation of activities is based on the stage readings from the gage station, CCN01 that is located on the Ohio River Suspension Bridge between Cincinnati, Ohio and Covington, Kentucky. Stages for this gage are read by satellite every hour. This information can be obtained from USACE during normal working hours or from the NWS twenty-four hours a day. During flood periods, the NWS will also forecast river stages for the following five-day period which can be used to predict the rate of rise.

Table II: Order of Operation from Covington O&M Manual
Elevations from Ohio River Gage at the Cincinnati/Covington Suspension Bridge

River Stage	Elevation (NAVD)	Operations
25.40	453.60	INSPECT 6" FLAP GATE M.H. A-3
29.40	457.60	INSPECT 36"*36" SLUICE GATE-GATEWELL C-15A
30.80	459.00	INSPECT 36"*36" SLUICE GATE-GATEWELL C-17A

Table II: Order of Operation from Covington O&M Manual (Continued)
Elevations from Ohio River Gage at the Cincinnati/Covington Suspension Bridge

River Stage	Elevation (NAVD)	Operations
31.40	459.60	INSPECT 30" FLAP GATE M.H. B-18
31.90	460.10	INSPECT 72" SLUICE GATE-GATEWELL C-14
32.00	460.20	INSPECT 48" SLUICE GATE-GATEWELL A-2
32.00	460.20	INSPECT 84"*84" SLUICE GATE-GATEWELL C-1
32.00	460.20	INSPECT 8" FLAP GATE, OUTLET HEADWALL, STA 52
34.40	462.60	WILLOW RUN PUMP PLANT (SANITARY)
34.60	462.80	INSPECT 66" SLUICE GATE-GATEWELL C-8
36.00	464.20	INSPECT 48" SLUICE GATE-GATEWELL C-10
37.10	465.30	INSPECT 10" FLAP GATE, OUTLET HEADWALL, STA 4
38.00	466.20	INSPECT 60" SLUICE GATE-GATEWELL C-18
38.00	466.20	INSPECT 30" FLAP GATE M.H. B-20
38.30	466.50	INSPECT 30" SLUICE GATE M.H. B-17
38.40	466.60	INSPECT & OPEN 2-4'*5' COVER PLATES, INLET A-
38.40	466.60	INSPECT & OPEN 4-3'*5' COVER PLATES, INLET A-
38.40	466.60	INSPECT & OPEN 4-3'5' COVER PLATES, INLET A-5
40.00	468.20	INSPECT 11'*12" SLUICE GATE-GATEWELL A-1
40.70	468.90	INSPECT 24" SLUICE GATE-GATEWELL C-4
40.70	468.90	INSPECT 24" SLUICE GATE M.H. C-2
41.20	469.40	INSPECT 36" SLUICE GATE M.H. C-15
41.60	469.80	INSPECT 30" SLUICE GATE-GATEWELL C-16
41.70	469.90	INSPECT 36" SLUICE GATE M.H. C-7
41.80	470.00	INSPECT 24" SLUICE GATE-GATEWELL C-5
42.00	470.20	INSPECT 36" SLUICE GATE M.H. C-19
42.30	470.50	INSPECT 36" SLUICE GATE-GATEWELL C-12
42.40	470.60	INSPECT 48" SLUICE GATE-GATEWELL C-13
42.60	470.80	INSPECT 30" SLUICE GATE M.H. B-19
42.90	471.10	INSPECT 36" SLUICE GATE M.H. C-46A
43.00	471.20	INSPECT 20" FLAP GATE M.H. A-6
43.20	471.40	INSPECT 36" SLUICE GATE M.H. C-48 NEAR ADAMS
43.40	471.60	INSPECT 48" SLUICE GATE M.H. A-48
43.40	471.60	INSPECT 60" SLUICE GATE M.H. A-43
44.00	472.20	INSPECT 6" FLAP GATE M.H. C-29
44.20	472.40	INSPECT 18" SLUICE GATE-GATEWELL C-3
44.80	473.00	INSPECT 24"*24" SLUICE GATE M.H. C-4
45.50	473.70	INSPECT 72"*48" SLUICE GATE M.H. C-29
45.70	473.90	CLOSE 36" SLUICE GATE M.H. C-7
46.00	474.20	INSPECT 18"*12" TIDE GATE, STA 186+07
46.00	474.20	INSPECT 6" FLAP GATE, INLET C-1
46.00	474.20	CLOSE 36" SLUICE GATE M.H. C-19
46.30	474.50	CLOSE 36" SLUICE GATE-GATEWELL C-12
46.60	474.80	INSPECT & CLOSE 15" SLUICE GATE M.H. C-28
46.70	474.90	INSPECT 30" SLUICE GATE-GATEWELL C-9
46.90	475.10	CLOSE 36" SLUICE GATE M.H. C-46A
47.20	475.40	CLOSE 36" SLUICE GATE M.H. C-48
47.20	475.40	INSPECT 20" SLUICE GATE M.H. A-5

Table II: Order of Operation from Covington O&M Manual (Continued)
Elevations from Ohio River Gage at the Cincinnati/Covington Suspension Bridge

River Stage	Elevation (NAVD)	Operations
47.30	475.50	INSPECT 48" SLUICE GATE M.H. A-54
47.40	475.60	CLOSE 11'*12' SLUICE GATE-GATEWELL A-1
47.40	475.60	START WILLOW RUN PUMPING PLANT (STORM)
47.40	475.60	CLOSE 60" SLUICE GATE M.H. A-43
47.40	475.60	CLOSE 48" SLUICE GATE M.H. A-48
47.50	475.70	INSPECT 24" SLUICE GATE-GATEWELL C-7
48.00	476.20	INSPECT 24' SLUICE GATE-GATEWELL C-11
48.20	476.40	CLOSE 20" SLUICE GATE M.H. A-5
48.50	476.70	INSPECT 24"*24" SLUICE GATE M.H. C-7
49.20	477.40	INSPECT 24" SLUICE GATE-GATEWELL C-6
49.20	477.40	INSPECT 24"*24" SLUICE GATE M.H. B-15
49.40	477.60	INSPECT & OPEN 2-48"*36" SLUICE GATE, INLET C
49.40	477.60	INSPECT & OPEN 42" SLUICE GATE, INLET C-2
49.40	477.60	CLOSE 60" SLUICE GATE-GATEWELL C-18
49.40	477.60	CLOSE 36"*36" SLUICE GATE M.H. A-43
49.40	477.60	CLOSE 36"*36" SLUICE GATE M.H. A-48
49.40	477.60	START 24TH ST. PUMP PLANT
49.50	477.70	INSPECT 24"*24" SLUICE GATE M.H. C-19
49.60	477.80	START 19TH ST. PUMP PLANT
49.60	477.80	OPEN 72"*48" SLUICE GATE M.G. C-29
49.60	477.80	INSPECT 24"*24" SLUICE GATE M.H. C-6
49.60	477.80	CLOSE 72" SLUICE GATE-GATEWELL C-14
49.60	477.80	CLOSE 30" SLUICE GATE-GATEWELL C-16
50.60	478.80	INSPECT 8" SLUICE GATE M.H. B-21
50.80	479.00	INSPECT 24"*24" SLUICE GATE M.H. C-10
50.80	479.00	INSPECT 24"*24" SLUICE GATE M.H. C-13
51.00	479.20	START PATTON ST. PUMP PLANT
51.00	479.20	INSPECT & OPEN 48"*36" SLUICE GATE M.H. C-25
51.00	479.20	CLOSE 48" SLUICE GATE-GATEWELL C-13
51.00	479.20	CLOSE 24" SLUICE GATE-GATEWELL C-11
51.00	479.20	INSPECT & OPEN 18"*18" SLUICE GATE M.H. C-24
51.00	479.20	CLOSE 48" SLUICE GATE-GATEWELL C-10
51.00	479.20	CLOSE 30" SLUICE GATE-GATEWELL C-9
51.00	479.20	OPEN 24"*24" SLUICE GATE M.H. C-19
51.30	479.50	START RUSSELL ST. PUMP PLANT
51.30	479.50	INSPECT & CLOSE 48" SLUICE GATE M.H. B-61
51.30	479.50	OPEN 24"*24" SLUICE GATE M.H. B-15
51.30	479.50	CLOSE 30" SLUICE GATE M.H. B-17
51.30	479.50	CLOSE 48" SLUICE GATE-GATEWELL A-2
51.30	479.50	CLOSE 48" SLUICE GATE M.H. A-54
52.00	480.20	START MAIN ST. PUMP PLANT
52.50	480.70	INSPECT 18" FLAP GATE M.H. B-16
52.50	480.70	INSPECT & OPEN 24" SLUICE GATE M.H. B-16
52.50	480.70	CLOSE 30" SLUICE GATE M.H. B-19
54.30	482.50	START EIGTH ST. PUMP PLANT

Table II: Order of Operation from Covington O&M Manual (Continued)
Elevations from Ohio River Gage at the Cincinnati/Covington Suspension Bridge

River Stage	Elevation (NAVD)	Operations
54.30	482.50	CLOSE 24" SLUICE GATE-GATEWELL C-4
54.30	482.50	OPEN 24"*24" SLUICE GATE M.H. C-6
54.30	482.50	CLOSE 18" SLUICE GATE-GATEWELL C-3
54.30	482.50	INSPECT & OPEN 24"*24" SLUICE GATE M.H. C-5
54.30	482.50	CLOSE 24" SLUICE GATE-GATEWELL C-2
54.30	482.50	OPEN 24"*24" SLUICE GATE M.H. C-4
54.30	482.50	CLOSE 84"*84" SLUICE GATE M.H. C-1
54.40	482.60	INSPECT & CLOSE 10" GATE VALVE, VALVE BOX, ST
55.60	483.80	START PLEASANT ST. PUMP PLANT
55.60	483.80	CLOSE 66" SLUICE GATE-GATEWELL C-8
55.60	483.80	OPEN 36" SLUICE GATE M.H. C-15
55.60	483.80	CLOSE 24" SLUICE GATE-GATEWELL C-2
55.60	483.80	OPEN 24"*24" SLUICE GATE M.H. C-13
55.60	483.80	OPEN 24"*24" SLUICE GATE M.H. C-10
55.60	483.80	CLOSE 24" SLUICE GATE M.H. C-6
55.60	483.80	CLOSE 24" SLUICE GATE M.H. C-5
55.60	483.80	OPEN 24"*24" SLUICE GATE M.H. C-7
55.70	483.90	START COURT ST. PUMP PLANT
55.70	483.90	CLOSE 8" M.H. B-21
57.10	485.30	INSPECT & CLOSE 24" SLUICE GATE-GATEWELL C-15
58.70	486.90	ERECT 16TH ST. MOVABLE CLOSURE
58.80	487.00	INSPECT & CLOSE 42" SLUICE GATE M.H. C-6, AT
59.30	487.50	INSPECT 18" SLUICE GATE M.H. A-1
60.20	488.40	INSPECT 8" SLUICE GATE M.H. B-24
60.20	488.40	INSPECT 12" SLUICE GATE M.H. B-D, DTA 81+80
60.20	488.40	INSPECT 12" SLUICE GATE M.H. B-E, STA 81+80
60.30	488.50	ERECT BAKEWELL ST MOVABLE CLOSURE
61.00	489.20	12TH ST. SERVICE OPENING
62.00	490.20	INSPECT & CLOSE 24" SLUICE GATE-GATEWELL C-17
64.10	492.30	START KENNEDY ST. PUMP PLANT
64.10	492.30	INSPECT & CLOSE 8" SQ SLUICE GATE M.H. B-64A
64.10	492.30	CLOSE 8" SLUICE GATE M.H. B-24
64.10	492.30	CLOSE 12" SLUICE GATE M.H. B-D, STA 81+80
64.10	492.30	CLOSE 12" SLUICE GATE M.H. B-E STA 81+80
65.70	493.90	CLOSE 18" SLUICE GATE M.H. A-1
70.00	498.20	INSPECT & CLOSE 12" SLUICE GATE-GATEWELL C-19
70.20	498.40	ERECT WEST 2ND ST. MOVABLE CLOSURE
70.50	498.70	INSPECT 6" VALVE, CURB BOX, STA 82+97
75.20	503.40	ERECT OAKLAND AVE. MOVABLE CLOSURE
75.20	503.40	OAKLAND AVE. SERVICE OPENING
75.30	503.50	ERECT BOOTH HOSPITAL MOVABLE CLOSURE
75.70	503.90	ERECT EAST 2ND ST. MOVABLE CLOSURE
78.00	506.20	CLOSE 6" VALVE, CURB BOX, STA 82+97
81.00	509.20	SANDBAG LOW AREA, STA 190+59
81.00	509.20	ERECT SUSPENSION BRIDGE MOVABLE CLOSURE

6.0 Post Flood Recovery

6.1 Reoccupation

The following steps are a basic plan for safely reoccupying homes and businesses that have been flooded by the events previously discussed. Reoccupation and recovery should be done in accordance with the existing emergency response guides for Covington, Kentucky.

A. Once floodwaters have receded from the area in the event of a closure failure, or have drained from ponding areas from an overtopping event, and no further flooding is expected, reoccupation can begin.

B. Highway crews can remove debris from the roadways and bridges and inspect for damage.

C. If buildings have been severely flooded or if structural damage is suspected, the buildings should be inspected by the local Building Inspector to determine if they are safe.

D. Flooded basements must be pumped out and flooded rooms cleaned. Residents may request assistance from the community when pumping is required.

E. Various utility companies will inspect the areas that have been flooded to make sure that there are no dangerous conditions, such as leaking gas.

F. Residents should be advised to photograph and/or video damages to their homes. They should also be advised to keep written records of damaged or discarded items and depth of the flooding.

Appendix C – Local Broadcast Radio Stations

BROADCAST RADIO STATIONS

Station	Telephone	Fax
WCIN - AM 1480	513-281-7180	513-281-6125
WCKY - AM 1360	513-686-8300	513-333-4268
WCVX - AM 1050	513-533-2500	513-533-2527
WEBN - FM 102.7	513-686-8300	513-749-3299
WGRR - FM 103.5	513-699-5103	513-699-5000
WIZF - FM 100.9	513-679-6000	513-679-6014
WKFS - FM 107.1	513-686-8300	513-749-7444
WKRQ - FM 101.9	513-699-5102	513-699-5000
WLW - AM 700	513-421-6397	513-333-4240
WNKU - FM 89.7	859-572-6500	859-572-6604
WOBO - FM 88.7	513-724-3939	No fax
WOFX - FM 92.5	513-749-3699	513-749-4925
WRRM - FM 98.5	513-241-9898	513-749-3398
WSAI - AM 1530	513-686-8300	513-333-4240
WUBE - FM 105.1	513-699-5105	513-621-2105
WVMX - FM 94.1	513-749-3694	513-749-6499
WYGY - FM 96.5	513-241-9898	513-241-6689

Appendix D – Potential Shelter List

SHELTERS

Holmes High School
1 Castle Court
Covington, Kentucky 41014

Shelter Type: School
Kitchen: Full
Phone: 859-655-9545

Holy Cross High School
3617 Church Street
Covington, Kentucky 41015

Shelter Type: School
Kitchen: Full
Phone: 859-431-1335

John G. Carlisle Elementary School
910 Holman Street
Covington, Kentucky 41011

Shelter Type: School
Kitchen: Full
Phone: 859-292-5812
