CTI, LLC

Wood River Site
Alton, Illinois

Coal Combustion Residual (CCR) Impoundments and Related Facilities IDNR Dam Safety Program

Emergency Action Plan

Permit No. DS2011079

Distribution List:

- ☐ Copy 1 – CTI Wood River – Security
- ☐ Copy 2 – Site Safety Manager
- ☐ Copy 3 – Engineer
- ☐ Copy 4 – Madison County Emergency Management Agency
- ☐ Copy 5 – Village of E. Alton – Fire Chief
- ☐ Copy 6 – City of Alton – Fire Chief
- ☐ Copy 7 – E. Alton 911 – c/o E. Alton Police Chief
- ☐ Copy 8 – City of Alton – Wastewater Treatment Plant
- ☐ Copy 9 – CTI, Environmental Compliance
- ☐ Copy 10 – Illinois Dept. of Natural Resources – Dam Safety

August 2020

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1.0 Notification Information

1.1 Emergency Notification Information

The **Emergency Notification Procedure** is listed in **Section 1.2.** The **Emergency Response Organization** is shown in Figure 1.1, located on the next page. If the person discovering an embankment failure is a CTI employee or Security, they should first notify the Site Safety Manager. The Site Safety Manager would immediately assume the initial responsibility for managing the overall response to the emergency. The Site Safety Manager's initial responsibility would include making the emergency notifications listed in **Section 1.2**.

The Madison County Emergency Management Agency (EMA) as well as the Village of East Alton Primary Service Answering Point (PSAP -- 911) and Fire Departments and the City of Alton Fire Department, have been given copies of this Emergency Action Plan. If overtopping of the embankments with water or embankment failure is first noticed by the public and the County EMA or other agency are notified through a "911" call, the county organizations have been instructed to call Site Safety Manager at the number listed on Figure 1-1 – Emergency Response Organization.

The Wood River Site, at the direction of the Madison County EMA personnel, will assist response organizations in contacting nearby industrial establishments if an evacuation of those occupants is determined necessary, if embankment failure or overtopping of the embankments appears imminent. The businesses identified in **Section 0** will be contacted by going door-to-door. Addresses and telephone numbers for those requiring contact are also listed in the same section. **Section 1.4** Contains a listing of engineers and contractors that may be contacted for further assistance, should it be deemed necessary.

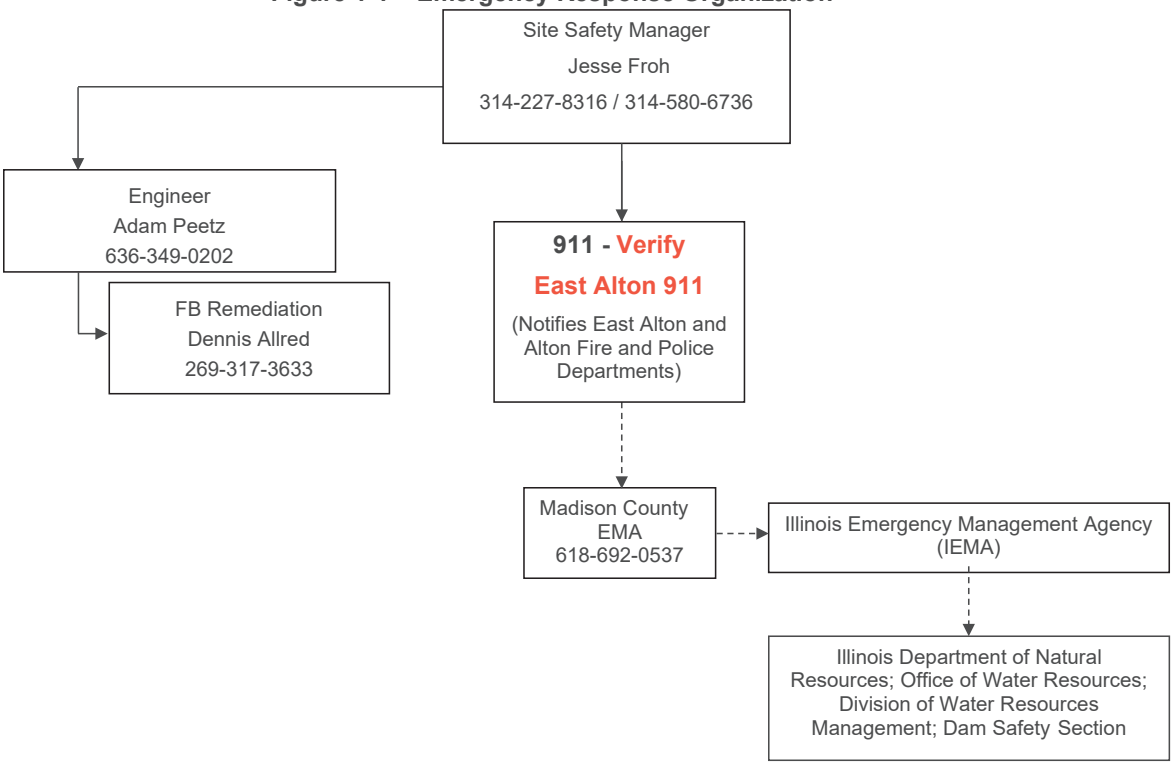
1.2 Emergency Notification Procedure Flowchart (Figure 1-1)

1. **Person Discovering Pond Embankment Failure Shall Notify:**
   Site Safety Manager – Jesse Froh at 314.227.8316 -or- 314.580.6736
   Engineer – Adam Peetz at 636.349.0202 -or- 314.616.0279

The Site Safety Manager shall Notify EAST ALTON 911 If Dam Failure Appears Imminent

NOTE: VERIFY YOU ARE SPEAKING TO EAST ALTON'S 911 !!

Figure 1-1 – Emergency Response Organization



Wood River East Ash Pond Emergency Action Plan Contact List

911 Will Notify Madison County Officials

Title	Name	Address	Phone	Alternate Phone	Email
911 Will Notify Madison County Officials:					
East Alton Police Chief Manager 911 (PSAP)	Darren Carlton	119 W. Main Street East Alton, IL 62024	618-259-2279		chief@eapolice.org
Fire Chief - Village. of East Alton	Rodney Palmer	209 N. Shamrock, East Alton, IL 62024	618-259-2984		r.palmer@eastaltonvillage.org
Fire Chief - City of Alton	Jesse Jemison	333 E. 20th St., Alton, IL 62002-6816	618-463-3565		firechief@alton-il.com
Madison County EMA **24 Hr**		101 East Edwardsville Road, Wood River, IL 62095	618-296-2400		
Madison County. EMA Director	Todd Fulton		618-296-4528	618-920-8361	thfulton@co.madison.il.us
Madison County. EMA Deputy Director	Mary Kate Brown		618-296-5907	618-910-4579	mkbrown@co.madison.il.us
Other Contacts:					
IDNR - OWR	Paul Mauer	One Natural Resources Way, Springfield, IL 62702	217-782-4427		paul.mauer@illinois.gov
Alton WWTP	Steve Gibson	19 Chessen Lane, Alton, IL 62002	618-463-3558	618-781-1452	sgibson@cityofaltonil.com

1.3 Adjacent Landowners and Occupants

1. Commercial or Industrial Occupants:

A. City of Alton – Wastewater Treatment Plant
Address: 19 Chessen Lane
Alton, IL 62002
Contact Name: Steve Gibson
Mobile: 618-463-3558 or 618-781-1452

Description of Location: The City of Alton WWTP is located directly north of the Wood River Site property. The offices are located within the site, with signs clearly directing visitors to the office location.

1.4 Engineer and Contractor Emergency Contacts

1. Engineers:

A. Engineer – Adam Peetz, P.E.
Office: 636-349-0202
Mobile: 314-616-0279
Email: adam@atonenv.com

2. Contractors:

A. F.B. Remediation
Dennis Alred:
Office: 269-317-3633
Email: dallred@fbremediation.com

B. F. E. Widman Construction
Address: Route 3
Godfrey IL
Greg Lilly: (618) 466-1036

C. Helmkamp Construction.
Address: #1 Helmkamp Dr
Wood River, IL 62095
Office: 618-251-2600 (Wood River)
Office: 314-355-2808 (St. Louis)

2.0 Statement of Purpose

This Emergency Action Plan (hereinafter referred to as the "Plan") identifies the statutory and regulatory purposes, objectives, responsibilities, and procedures for the safe operation and management of the Wood River Site CCR Impoundments and Related Facilities.

2.1 Reasons for This Emergency Action Plan

The Federal Emergency Management Agency (FEMA) as part of its National Dam Safety Program recommends all owners and operators should prepare an **Emergency Action Plan** (EAP) whenever there is the potential for loss of life or damage to property that might occur as the result of a failure of a dam. An EAP is a formal document that identifies the potential emergency conditions at a dam and specifies preplanned actions to be followed to minimize property damage and loss of life. The EAP specifies actions dam owner/operators should take to moderate or alleviate the problems at the dam. It should contain procedures and information to assist the dam owner in issuing early warning and notification messages to responsible downstream emergency management authorities of the emergency situation. It also should contain inundation map(s) to show the emergency management authorities of the critical areas for action in case of an emergency.

The Illinois Rivers, Lakes, and Streams Act (615 ILCS 5 1994 State Bar Edition) Paragraph 70a includes the statement "The Department (Illinois Department of Natural Resources) is authorized to carry out inspections of any dam within the state, and to establish standards and issue permits for the safe construction of new dams and the reconstruction, repair, operation and maintenance of all existing dams."

Similarly Part 3702 of the 92 Illinois Administrative Code, Chapter I entitled the "Construction and Maintenance of Dams" details the requirements to obtain a permit for the construction, operation, and maintenance of a dam. Wastewater treatment impoundments such as ash ponds, sewage treatment lagoons, etc., are required by the IDNR to comply with the provisions of the dam safety program because of the regulatory definition of a dam. 92 Illinois Administrative Code 3702.10 defines a dam as "all obstructions, walls, embankments, or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool."

As part of the Permit Number DS2011079, the IDNR required the Wood River Site to prepare, submit, and have approved an Emergency Action Plan, including a breach inundation map, consistent with current standards.

3.0 Description of the Ash Impoundments

3.1 Location

The Wood River Site is located on the closed Wood River Site property near Alton, Illinois. The Site is at the southernmost end of Chessen Lane and is bordered by levees for the Wood River Creek on the east side and IL State Highway 143 on the south side. There is a low-lying area to the west of the station, and a railroad line to the north. The entire site is in Madison County, Illinois, and is on the East bank of the Mississippi River at River Mile 199.6.

The East Ash Impoundment is located on the East portion of the property between the Wood River Creek levee and Chessen Lane. It is just north of the site's main building. To the north are currently unoccupied structures owned by CTI, LLC and then immediately to the north is the Alton Wastewater Treatment Plant. The West Ash Impoundment is located on the West portion of the property between Chessen Lane and the Lock and Dam. It is just North of IL State Highway 143 and the Mississippi River. The impoundments are located on the **Columbia Bottom (MO/IL)** USGS 7.5 minute quadrangle map in Section 19, Township T48N, Range R9W of the 3rd Principal Meridian. The impoundment system is located at approximately latitude 38˚52' north and longitude 90˚08' west.

Figure 3-1 through **Figure 3-3** identifies the location of the Wood River Site and the Ash Impoundments relative to the city of Alton and the Mississippi River.

Note: The West Ash Impoundment is classified as having a Class III, small dam system, and therefore does not require a dam EAP, however *The West Ash Impoundment System is covered in this Plan*.

3.2 Description of Dam and Appurtenances

The East Ash Impoundment consists of one large water and ash storage impoundment, (and a secondary pond that is not regulated by IDNR), that is approximately 1000 feet wide and 2000 feet long. The primary purpose of the pond was to provide settling of ash from water used to sluice the bottom ash and fly ash when the plant was in service. There is no runoff from adjacent areas into the system. Inflow is limited to precipitation falling directly into the system. The pond is constructed of an embankment made of ash and local soils.

The maximum dam height is approximately 33 feet. The outfall structure from the second pond discharges into an unnamed tributary of Wood River Creek, which ultimately discharges into the Mississippi River.

The West Ash Impoundment has 4 cells; Pond 1, Pond 2E, and Pond 2W which are inactive and contain CCR. Pond 3 only receives decanted water and stormwater runoff. The primary purpose of the pond was to provide settling and disposal of ash from water

used to sluice the bottom ash and fly ash when the plant was in service. There is no runoff from adjacent areas into the system. Inflow is limited to precipitation falling directly into the system. The ponds are constructed of an embankment made of ash and local soils, the final outfall of the West Pond Complex is through a 72-inch pipe controlled by the Wood River Drainage and Levee District (WRDLD) that discharges into Wood River.

Additional descriptive information is summarized on **Table 3-1 and Table 3-2**.

3.3 Hazard and Size Classification

The dam for the Wood River Site East Ash Impoundment system is classified as a high-hazard **Class I, Small dam**.

The dam for the Wood River Site West Ash Impoundment System is classified as a low-hazard **Class III, Small dam**.

3.4 Purpose of the Ash Impoundment Systems

Since the plant has been retired, the impoundments are now just a holding area for ash previously placed there and precipitation that falls directly on the impoundment. Discharges from the system are released into a corrugated metal pipe culvert under the rail loop, and then are subsequently discharged to the Mississippi River via Wood River Creek. All discharges are subject to the effluent limitations and monitoring requirements set forth in an NPDES permit issued by the Illinois Environmental Protection Agency (IL0000701).

Figure 3-1 Wood River Ash Impoundment Map

Figure 3-1 – Relative Location in Illinois

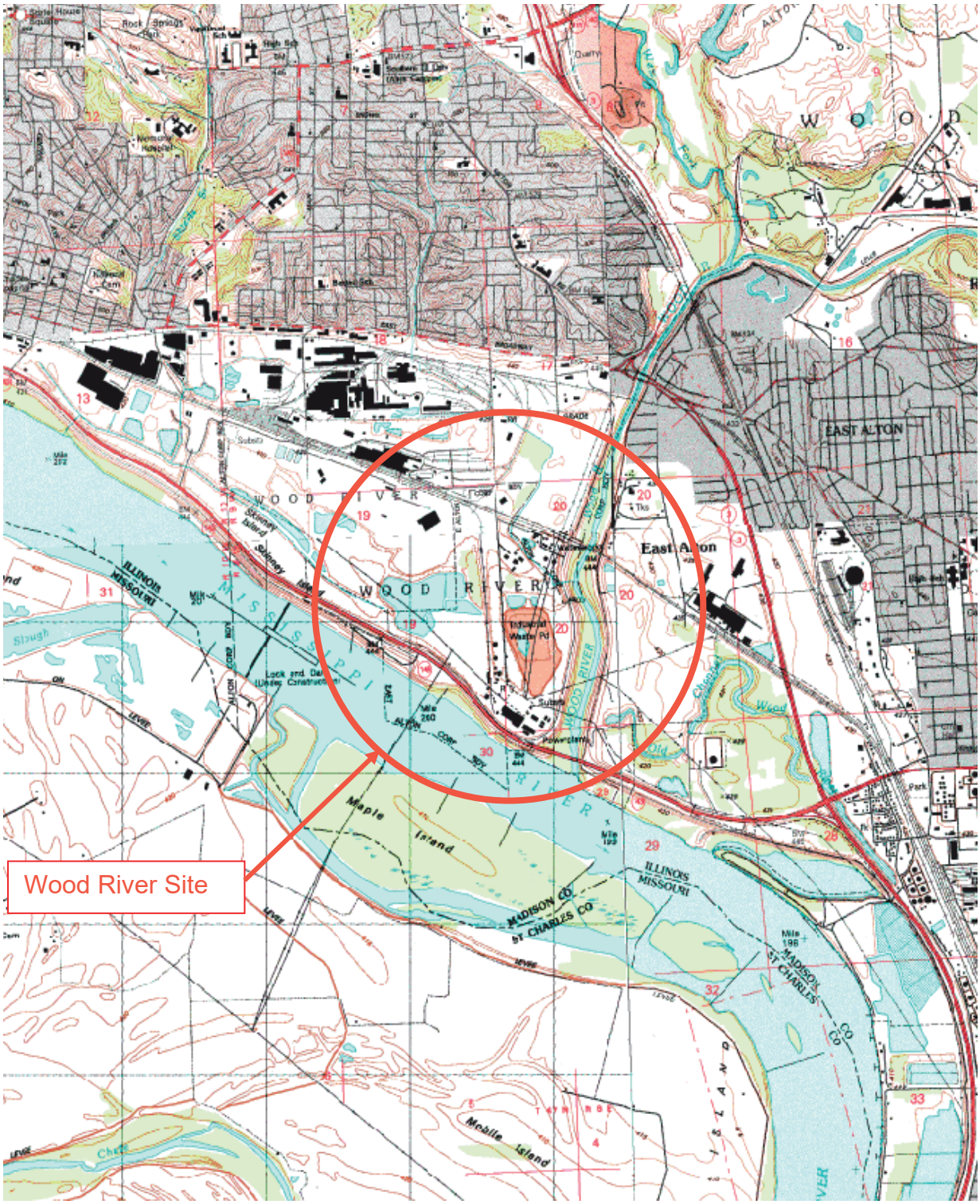


Figure 3-2 – Topographic Map of Immediate Area

Figure 3-3 – Aerial Photo of Alton Area

Table 3-1 – Wood River East Ash Impoundment Data

Parameter	Units	Primary Cell	Secondary Cell
Drainage Area	Acres	36	2
Dam			
Type		Earth Embankment	Earth Embankment
Elevation, Top of Dam	Feet (NGVD)	453	435
Height above Lowest Surrounding Elev.	Feet	33	12
Upstream Slope	Horizontal : Vertical	3:1	3:1
Downstream Slope	Horizontal : Vertical	3.5:1	3.5:1
Perimeter	Feet	5315	1167
Top Width	Feet	20	15
Streambed Elevation	Feet (NGVD)	Not Applicable	Not Applicable
Impoundment			
Elev. Max Normal Pool	Feet (NGVD)	450	432
Stor. Max Norm. Pool	Acre-Feet	422.5	13
Elevation, PMF Pool	Feet (NGVD)	451.5	432.5
Storage, PMF Pool	Acre-Feet	469	13.7
Length, PMF Pool	Miles	Not Applicable	Not Applicable
Storage, Top of Dam	Acre-Feet	517	17.7
Principal Spillway			
Type		Concrete Outfall Structure w/3 inlet pipes and open top	Concrete Outfall Structure with V-Notch Weir at top
Size	Feet	5 x 5	5 x 5
Elevation, Inlet Invert	Feet (NGVD)	Pipes at: 439.0, 443.0, and 447.0; open top at 450.0	431.0 at bottom of V-Notch weir
Elevation, Outlet Invert	Feet (NGVD)	432	417
Length	Feet	15 (vertical drop within structure)	11 (vertical drop within structure)
Length of Conduit	Feet	679	566
Auxiliary Spillway		None	None
Outlet Conduit			
Type		HDPE Pipe	HDPE Pipe
Size	Feet	2.5 diameter	3.0 diameter
Stilling Basin		None	None
Emergency Spillway			
Type		Principle spillway also serves as emergency spillway.	Principle spillway also serves as emergency spillway.

Table 3-2 – Wood River West Ash Impoundment Data

Parameter	Units	Pond 1	Pond 2W	Pond 2E	Pond 3
Drainage Area	Acres	22	19	11.5	10
Dam					
Type		Earth Embankment	Earth Embankment	Earth Embankment	Earth Embankment
Elevation, Top of Dam	Feet (NGVD)	436	433	430	430
Height above Lowest Surrounding Elev.	Feet	31	33	18	29
Upstream Slope	Horizontal : Vertical	3:1	3:1		
Downstream Slope	Horizontal : Vertical				
Outlet Conduit					
Type					CMP
Size	Feet				6.0 diameter
Stilling Basin		None	None	None	None
Emergency Spillway		n/a	n/a	n/a	10H:1V Invert ele 428.5 ft lined w/ 30 inch stone and 12 in of bedding

4.0 Emergency Detection, Evaluation, Classification and Response

4.1 Emergency Detection, Evaluation, and Actions

Table 4-1 identifies typical issues which may occur at the embankments of the Wood River Ash Impoundments systems, how to make a rapid evaluation of the problem, and actions which might be taken to correct the problem. The Director or his/her designee will be responsible for assuring these actions are taken.

4.2 Emergency Condition Descriptions

The emergency notification procedure is listed in detail in **Section 1.0**. This Section identifies the procedures to be followed in the event of a heavy rainfall or a dam failure. Three types of emergency conditions have been considered in this plan, those being (***"Condition A"***) failure of the dam is imminent or has occurred, (***"Condition B"***) a potential failure situation is developing, and (***"Condition C"***) a non-failure emergency. For a ***"Condition A"***, immediate contact with the emergency authorities is essential, for a ***"Condition B"*** or ***"Condition C"***, there may be time to take remedial or corrective actions to reduce the impact of a potential failure.

During a ***"Condition A"*** emergency, the Madison County EMA and CTI personnel will work together to notify the contacts listed in **Section 1.0** and **Section 1.4**. This includes the local landowners and the industrial or commercial entities in the flood inundation area, as well as the engineers and contractors.

During a ***"Condition B"*** emergency, station personnel will commence the notification procedure listed in **Section 1.0**. At this time, the notifications will be limited to CTI contacts and the Madison County EMA listed in **Table 1-1, first two sections**.

During a ***"Condition C"*** emergency, no notification will be made to the emergency authorities. However, the Site Safety Manager will undertake corrective action and increased observations of the dam, as noted herein.

Table 4-1, contains a list of potential dam problems, how they can be identified and evaluated, and what types of remedial activities should be commenced to reduce or eliminate the problem. Each problem, and the varying degrees of that problem have a suggested emergency condition shown in the **'Action to be Taken'** column. In the absence of more thorough information, the corresponding emergency condition should be used for that problem, however, some judgment is appropriate in determining the emergency condition.

Similar to **Table 4-1**, **Table 4-2** contains various potential problems with the Wood River East Ash Impoundment dam. However, the problems in **Table 4-2** are listed based on the water elevation in the Facility. Emergency conditions may be declared solely based on rising water elevation. Notifications and evacuations should be performed based on the appropriate emergency condition.

4.3 Emergency Response

During any emergency condition, other emergency response actions may be required by CTI personnel. Currently, CTI personnel continuously monitor embankment conditions.

The Site Safety Manager shall determine what immediate corrective action should be taken, how repairs shall be accomplished, and whether gradual or emergency (rapid) dewatering of the Impoundment is necessary. The Site Safety Manager has full authority to commit the resources of CTI, LLC to respond to the emergency.

Coordinate all corrective actions and maintain communications with the Madison County EMA. If asked, assist local EMA and/or Sheriff's office personnel in contacting the addresses of the residents in the potential flood inundation area (**see Section 1.0**). Note: the Madison County EMA and Sheriff offices also have a copy of this Plan and these pages.

If gradual dewatering of the Impoundment is deemed appropriate, dewatering should be accomplished by utilizing the Station mobile pump systems to remove water from the impoundment and route it through the secondary cell, to the maximum extent possible.

4.4 Special Conditions for a Seismic Event

Because the Wood River Ash Impoundments are located in a moderate to high seismic zone due to the New Madrid Fault, Wood River personnel shall notify one of the engineers in **Section 1.4** should a seismic event occur near the location, regardless of the presence of any visual problems.

The facility should be inspected by a registered Professional Engineer using the Guidelines for Inspection of Dams After Earthquakes, as published by the United States Society on Dams (USSD). A ***"Condition B"*** situation shall be in effect, at a minimum, until the dam has been inspected by the registered Professional Engineer. However, other more stringent emergency conditions may develop and must be responded to in an appropriate manner. Note that many of the same problems that are listed in **Table 4-1** may develop from a seismic event, and Wood River Station personnel should be careful to watch for signs of developing or imminent problems.

Table 4-1 – Potential Failure Problems, Possible Indicators, Suggested Evaluations, and Recommended Actions

Problem	Indicator	How to Evaluate the Problem	Action To Be Taken
Whirlpooling Water	Water flowing in a swirling circular motion in an area on the upstream side of the dam.	**This situation is critical and failure of the pond may be imminent, especially if there is evidence of water on the downstream face**.	Notify the Emergency Management Agency Office for evacuation of the dam breach area. Take the actions noted under "piping". ***"Condition A"***
Burrow Holes	**Holes** in the embankment varying in size from about one inch in diameter to one foot in diameter caused by animals.	If the holes do not penetrate through the embankment the situation is usually not serious. Some animal holes will have soil pushed out around the hole in a circular fashion which may look like a boil. Watch for the movement of water and soil particles from these holes to determine whether they are boils.	Backfill as deeply as possible with impervious material. If rodents become a nuisance, an effective rodent control program as approved by the IDNR District wildlife biologist should be implemented. ***"Condition C"***
Cracks	**Longitudinal Cracking**: Cracking along the length of the dam	This form of cracking can indicate the beginning of a slide or be an uneven settlement of the embankment.	Monitor the crack for future changes and contact a qualified engineer for assistance in the evaluation of the crack and recommended repairs. ***"Condition B"***
	Transverse Cracking: Cracking across the dam from upstream to downstream surfaces.	This form of cracking can indicate uneven settlement or the loss of support below the crack. Such cracks usually occur over an outlet conduit, near the abutments, or in the taller portion of the embankment.	If the crack does not extend completely across the dam and the pond water elevation is more than 10 feet below the base of the crack, monitor the crack for future changes and contact a qualified engineer for assistance in the evaluation of the crack and recommended repairs. ***"Condition C"*** If the crack extends across the dam or the pond water level is less than 10 feet below the base of the crack, both the upstream and downstream sides of the dam should be protected with a plug and an inverted filter as described under "seepage". The Emergency Management Agency office should also be notified of the situation so they may be prepared to act if the condition worsens. ***"Condition B"***

Table 4-1 **(continued) – Potential Failure Problems, Possible Indicators, Suggested Evaluations, and Recommended Actions**

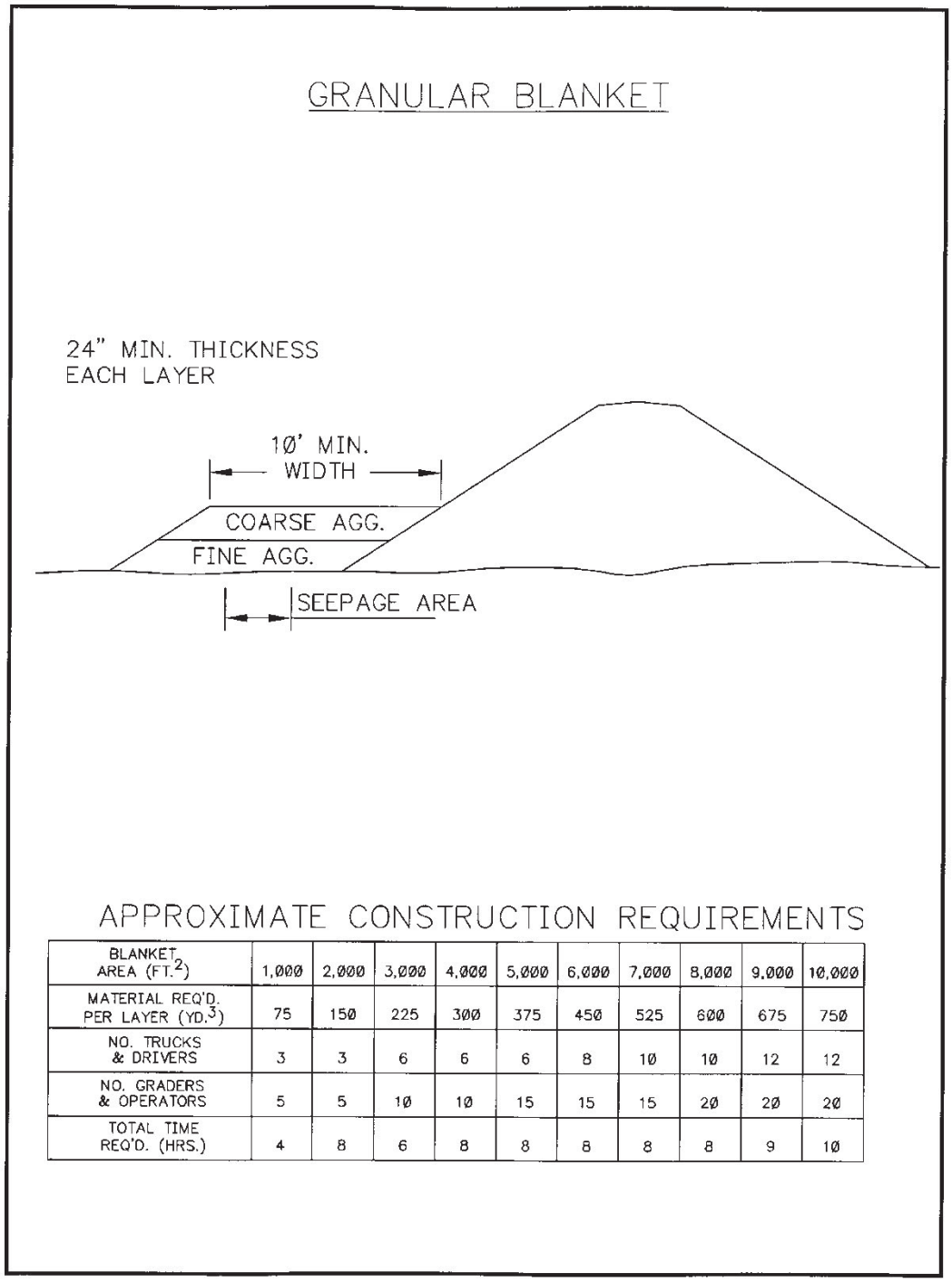
Problem	Indicator	How to Evaluate the Problem	Action To Be Taken
Slides	Movement of a portion of the embankment, either the upstream or downstream slope, toward the toe of the dam.	Condition 1: The slide does not pass through the crest and does not extend into the embankment more than five feet measured perpendicular to the slope.	A qualified engineer should be consulted before any repairs are initiated to determine the cause of the slide and to recommend any modifications to prevent future slides. The downstream side of the dam should be watched for the emergence of any water either through or opposite the slide. If water is discharging, the area should be treated as a seepage location and monitored as noted below. ***"Condition B"***
		Condition 2:The slide passes through the crest and that the water elevation is more than 10 feet below the lowered crest.	Use the same actions as noted above and notify the Emergency Management Agency of the situation so they may be prepared to act if the condition worsens. ***"Condition B"***
		Condition 3: The slide passes through the crest and the water elevation is less than 10 feet below the lowered crest.	This condition is critical and failure of the pond should be considered imminent. Notify the EMA office for evacuation of the dam breach area. Armor the crest of the lowered portion of the embankment and try to restore the lost freeboard. If seepage is also occurring, take the appropriate actions noted above. ***"Condition A"***
Seepage	**Wet area** on downstream embankment slope (or any other area downstream of the embankment) with very little or no surface water, or very minor seeps.	This condition may be caused by infiltration of rain water which is not serious, or may be the start of a serious seepage problem, which would be indicated by a quick change to one of the conditions noted below.	No immediate action required. However, the location of the seepage should be noted and observed for future comparison. ***"Condition C"***
	Same **wet area** as above with moderate seeps of clear or relatively clear water with rate of flow not increasing.	Measure the flow of water periodically and note any changes in clarity.	No immediate action required. Note the location, flow rate, and clarity of the seepage for future comparison. During increases in pond elevation, the seepage area should be watched for any changes. ***"Condition C"***
	Same **wet area** as above with moderate seeps of clear or relatively clear water with rate of flow increasing.	Measure the flow periodically and note any changes in clarity. Inspect downstream areas for any new seeps.	Contact a qualified engineer for an immediate inspection. Observe the condition constantly for any further changes in flow rate or clarity unless notified otherwise by the engineer. ***"Condition B"***

Table 4-1 **(continued) – Potential Failure Problems, Possible Indicators, Suggested Evaluations, and Recommended Actions**

Problem	Indicator	How to Evaluate the Problem	Action To Be Taken
Seepage (cont.)	**Piping** (seepage with the removal of material from the foundation of the embankment) with moderate to active flows of cloudy to muddy water.	If the water is cloudy to muddy and the rate of flow is increasing, this condition could lead to failure of the dam. **If, along with the piping, there is an upstream whirlpool caused by water passing through the embankment, failure of the dam may be imminent**.	Immediate action is necessary. If no whirlpool is noted on the upstream side of the dam, try to reduce the loss of material from the embankment by placing an "inverted filter" over the seepage area. The filter should consist of a three to five feet thick blanket of material graded from coarse sand and pea gravel at the interface with the seepage area to 3-inch stone at the resulting outer face. If needed, use larger stones on the top of the filter. Use filter cloth at the bottom of the filter if available. Do not try to "plug" or stop the flow of water from this location. Notify the EMA offices for evacuation of the dam breach area. ***"Condition A"*** If a whirlpool is noted on the upstream side of the dam, notify the EMA offices for evacuation of the dam breach area. Attempt to construct the inverted filter or boil ring over the seepage area on the downstream side of the dam as noted above. The thickness of the section will generally be greater than five feet. Plugging of the upstream entrance of the piping failure should also be attempted using large rock or anything else that is available. If the large material placed in the hole appears to have reduced the flow, follow with progressively smaller material in an attempt to seal the entrance. ***"Condition A"***
	Boils (soil particles deposited around a water exit forming a cone varying from a few inches in diameter (spaced two to three feet apart) to isolated locations several feet in diameter in the floodplain downstream of the dam).	Evaluation of the problem is the same as noted above for the various flow conditions, i.e. clear and constant, clear and increasing, and cloudy or muddy and increasing.	***"Evaluate as above for emergency condition."***

Table 4-2 – Impoundment Level Elevations and Emergency Actions

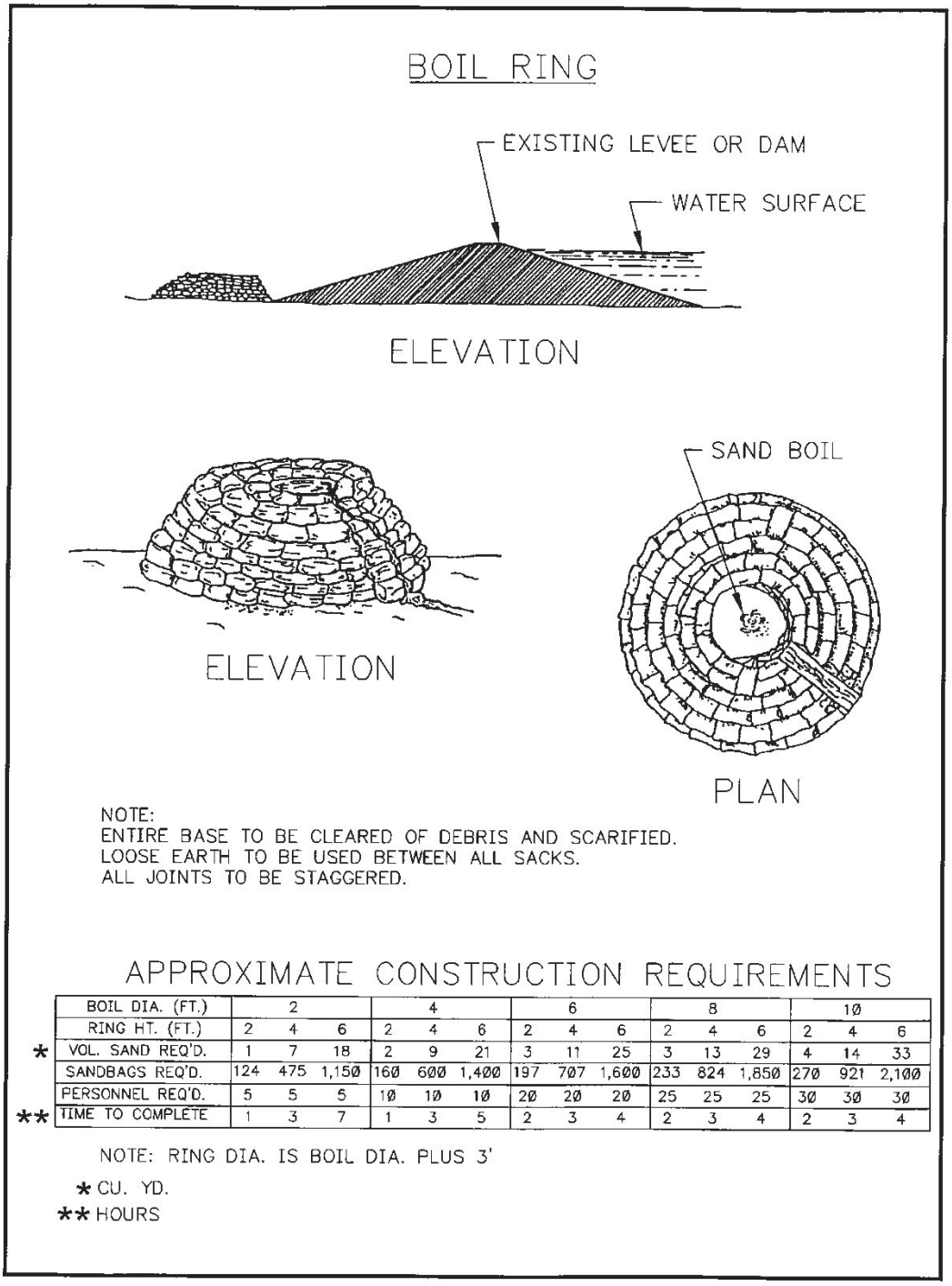
Suggested Surveillance Action	Pond Elevation
When the water level in the Wood River East Ash Impoundment is less than or equal to the noted elevation, only normal surveillance as called for in the Operation and Maintenance Plan need be performed. ***There is no emergency condition.***	**<450.75**
During and immediately following unusual storm and flood events, which causes the water level in the impoundment equal to or greater than the noted elevation, Wood River personnel will make visual inspections of the impoundment and its appurtenances at 1-hour intervals if it is presently raining and at 12-hour intervals if it is not currently raining.. ***This is a "Condition C" situation***.	**>=450.75**
When the Wood River East Ash Impoundment water level reaches the noted elevation, the pond and its appurtenances will be inspected at 1-hour intervals if it is presently raining and at 8-hour intervals if it is not presently raining. ***This is a "Condition C" situation.***	>= **451**
When the Wood River East Ash Impoundment water level reaches the noted elevation, and it is currently raining, The Site Safety Manager will notify the Madison County EMA offices that a ***"Condition B" condition exists*** at the Wood River East Ash Impoundment. The impoundment and its appurtenances will be inspected continuously if it is presently raining and at 4-hour intervals if it is not presently raining. If waves are breaking over the dam crest, the downstream face of the dam will be continuously monitored for erosion and/or failure.	>=**451.5**
When the Wood River East Ash Impoundment water level reaches the noted elevation, and it is currently raining, Site Safety Manager will notify the Madison County EMA offices that a ***"Condition A" condition exists*** at the Wood River East Ash Impoundment. The pond and its appurtenances will be monitored continuously until the rain has stopped ***and*** the water level falls two feet below the noted elevations ***and*** the emergency condition has been changed to ***"Condition B"*** or ***"Condition C"***. The downstream face of the dam will continue to be monitored for erosion and imminent failure.	>=**452**
When the Wood River East Ash Impoundment water level reaches the noted elevation and it is currently raining, or if water is flowing over any portion of any perimeter embankment, a notice to evacuate all residential, commercial, and industrial occupants in the flood inundation area shall be issued. All occupants within the dam breach wave area are to be evacuated. The impoundment and its appurtenances will be monitored continuously until pond water levels fall 2.25 feet below the noted elevations (i.e. to normal levels) and the rain has stopped. ***This continues to be a "Condition A" situation.*** Occupants of evacuated areas are not to return to the flood wave area until: (1) Water levels fall to normal pool elevations, and (2) The pond and its appurtenances have been inspected by the registered professional civil engineer who typically inspects the pond system (or his designee); and (3) All damages indicating a weakened condition of the pond have been remedied. **At that time, inflow pumping operations may also be resumed, as needed.**	>=**452.25**



APPROXIMATE CONSTRUCTION REQUIREMENTS

BLANKET AREA ($FT.^2$)	1,ØØØ	2,ØØØ	3,ØØØ	4,ØØØ	5,ØØØ	6,ØØØ	7,ØØØ	8,ØØØ	9,ØØØ	1Ø,ØØØ
MATERIAL REQ'D. PER LAYER ($YD.^3$)	75	15Ø	225	3ØØ	375	45Ø	525	6ØØ	675	75Ø
NO. TRUCKS & DRIVERS	3	3	6	6	6	8	1Ø	1Ø	12	12
NO. GRADERS & OPERATORS	5	5	1Ø	1Ø	15	15	15	2Ø	2Ø	2Ø
TOTAL TIME REQ'D. (HRS.)	4	8	6	8	8	8	8	8	9	1Ø

Figure 4-1 – Sketch of Inverted Filter Granular Blanket



APPROXIMATE CONSTRUCTION REQUIREMENTS

	BOIL DIA. (FT.)	2			4			6			8			10		
	RING HT. (FT.)	2	4	6	2	4	6	2	4	6	2	4	6	2	4	6
*	VOL. SAND REQ'D.	1	7	18	2	9	21	3	11	25	3	13	29	4	14	33
	SANDBAGS REQ'D.	124	475	1,150	160	600	1,400	197	707	1,600	233	824	1,850	270	921	2,100
	PERSONNEL REQ'D.	5	5	5	10	10	10	20	20	20	25	25	25	30	30	30
**	TIME TO COMPLETE	1	3	7	1	3	5	2	3	4	2	3	4	2	3	4

NOTE: RING DIA. IS BOIL DIA. PLUS 3'

* CU. YD.

** HOURS

Figure 4 2 – Sketch of Boil Ring

5.0 General Responsibilities under the Plan

5.1 Overall Responsibilities of the Wood River East Ash Impoundment

The Site Safety Manager has overall responsibility for making certain that the East Ash Impoundment is properly operated and maintained so that the structural integrity of the impoundment is never compromised. The Da Site Safety Manager m Safety Engineer has access to the staffs of CTI, LLC to ensure the impoundment is properly operated and maintained.

5.2 Emergency Response Organization

The Site Safety Manager has the complete authority to initiate and implement the administrative procedures set forth in this plan as well as the identified corrective actions to be taken at the Wood River Ash Impoundments.

Brief summary statements regarding the responsibilities of all the individuals and organizations who would likely be involved in responding to an emergency at the Wood River Ash Impoundments are listed in **Table 5-1**. Also included with these descriptions are the names of the individuals who currently hold these positions and the telephone numbers at which they can be reached.

Overall responsibility for responding to a failure rests with the Site Safety Manager. He/she (or their designee) would initially call upon other CTI resources to respond to the emergency. The Site Safety Manager (or designee) would also call upon, to the extent necessary, other organizations within the CTI. organizational structure for the support needed to respond to the emergency, and to develop and implement subsequent corrective actions. These organizations could include legal, insurance, environmental, engineering, and construction.

The Madison County EMA and the Illinois Emergency Management Agency would in all likelihood be involved in responding to an emergency. Site Safety Manager and contractors would work cooperatively with the staffs of those agencies to respond to, and implement corrective actions. These state and local agencies may also feel it necessary to contact other appropriate state and/or local agencies and organizations during the course of the emergency.

Table 5-1 – Department/Agency/Organizational Responsibilities

Agency/Organization	Name/Position	Responsibility
CTI		Responsible for plant decommissioning and environmental compliance and has full authority to commit manpower and resources to respond to a station emergency.
		Responsible for corporate wide dam safety. He also has full authority to commit manpower and resources to respond to a station emergency.
		Responsible for Environmental aspects of the Station. Coordinates response with Environmental Compliance and corporate headquarters personnel. He also has full authority to commit manpower and resources to respond to a station emergency.
East Alton 911		Initial contact in the event of imminent dam failure. Notifies Madison County EMA and other appropriate agencies.
Madison County EMA	Todd Fulton- Director	A necessary contact at the county or local level. The EMA would contact other local agencies (county sheriff; police; fire; hospitals, etc.) as well as local residents that should be evacuated.
	Mary Kate Brown – Deputy Director	An alternate contact for the Madison County EMA director.
Illinois Emergency Management Agency		Madison County EMA will contact IEMA
Illinois Department of Natural Resources; Office of Water Resources; Division of Water Resources Management; Dam Safety Section	Paul Mauer	The Illinois agency responsible for the safe design and operation of dams. The IDNR would become involved in an investigative role following a dam failure.
		Responsible for all communications with the media (TV, radio, print) during and following immediate response to the pond failure.
		Responsible for all legal evaluation and legal actions associated with the initial response and subsequent corrective action
CTI		Responsible for immediate construction support in responding to the pond failure. He would also be responsible for the follow-up corrective action or restoration of the failed pond.
	Phil Morris - Sr. Director Environmental	Responsible for overall environmental compliance support for air, land and water issues.
	Jacque Bush - Director Environmental	Responsible for water quality and permitting issues at Wood River site.

6.0 Preparedness

This section describes the routine and emergency inspections and actions (including dewatering) that station personnel would take if a failure appeared imminent or had already occurred at the Wood River East Ash Impoundment.

6.1 Normal Condition Inspections

Normal conditions surveillance consists of various visual inspections of the East Ash Impoundment and its appurtenances on a weekly, monthly, semiannual, and annual basis. These routine inspections are conducted when water levels are less than 450.75 feet msl. Items which are to be inspected during these routine inspections are those noted in the Operation and Maintenance Plan for the Wood River East Ash Impoundment. O&M inspection checklists are completed for each type of inspection, if applicable.

6.2 Unusual Condition Inspections

If an emergency condition should occur at the Wood River East Ash Impoundment (such as those items listed in Table 4-1 and Table 4-2):

During a ***"Condition C"*** situation, Site Safety Manager or designee will make visual inspections of the impoundment and its appurtenances at 1-hour intervals if it is presently raining, and 12-hour intervals if it is not presently raining.

During a ***"Condition B"*** situation, Site Safety Manager or designee will make visual inspections of the impoundment and its appurtenances continuously if it is presently raining, and 4-hour intervals if it is not presently raining.

During a ***"Condition A"*** situation, Site Safety Manager or designee will make visual inspections of the impoundment and its appurtenances continuously, until such time as the emergency situation is changed to a ***"Condition B"*** or ***"Condition C"*** situation.

Note that in the event of elevated water levels as listed in **Table 4-2**, more stringent inspections may be required for a given **"Condition"**, than are discussed above.

6.3 Equipment and Materials Locations

If equipment is required, the contractors listed in **Section 1.4** would be contacted to provide it.

6.4 Communications and Access

The communications methods for each individual contact will not change regardless of the timing of the emergency. Whether the event occurs during regular business hours, on a weekend, at night, or a Holiday, the procedure in **Section 1.0** will remain in effect.

Access to the site will be controlled by the Site Safety Manager during an emergency. Certain areas around the pond are secure for station security purposes and will remain secure to the extent possible, however, not to a point where it could affect the stability or safety of the dam. There are multiple access points around the Station, which should provide adequate access to a failure or potential failure location, during all types of weather conditions.

6.5 Annual Program Plan Table-Top Exercise

Once-annually, CTI personnel will conduct an exercise (location TBD)) with the Site Safety Manager, CTI environmental, and key community personnel such as the Madison County EMA, Sheriff's offices and the local fire department. The purpose of the exercise will be to make certain these personnel are familiar with the overall scope of this Emergency Action Plan and how various selected provisions of this Plan that would apply to each respective entity. Of importance will be to make certain that all key personnel of these various organizations know their respective roles and responsibilities in the event of an actual emergency.

The initial exercises will likely focus on the totality of the Plan to ensure overall personnel familiarity and preparedness. In subsequent years, the annual exercise may focus just on specific components of the Plan. An exercise plan should be prepared for each annual exercise and a report of each annual exercise should also be prepared. The report should identify deficiencies in the Plan and/or weaknesses in personnel preparedness with recommendations regarding appropriate corrective action and updating of the Plan. CTI Environmental shall prepare the report after each annual exercise and route the comments and minutes to all applicable participants.

7.0 Inundation Maps

7.1 Dam Embankment Height Info

Figure 7-1 shows the dam embankment heights for the Wood River East Ash Impoundment, broken down into three categories. The first category is shown in green and is the locations where there is basically no embankment, and therefore no downstream slopes. The yellow sections are sections where the embankment height is between zero feet and fifteen feet in height. The probability of a catastrophic failure in these areas is less likely due to the relative elevation of the water in the pond as compared to the adjacent land and the volume of ash in the impoundment. The areas where the embankment is over fifteen feet high are shown in red. These areas have the highest probability of having the most severe failure.


Legend:
No Embankment:
Embankment, H<15 feet:
Dam Embankment
15 ft< H < 25 feet:
Google earth
1988
Imagery Date: 8/6/2012 38°52'05.28" N 90°07'52.67" W elev 447 ft eye alt 6515 ft

Figure 7-1

7.2 Flood Inundation Maps

Due to the amount of ash in the primary cell of the ash pond system resulting in significantly less water in the primary cell, new flood inundation maps were prepared in May 2013 by URS Corporation. A “bathtub” approach utilizing MicroStation/Geopak software was performed. The basis for all calculations is a 2004 topographic survey of the immediate area that was modified to include the East Ash Pond construction and the current surveyed ash levels in the pond, see **Figure 7-2. Figure 7-3** shows the level of ash when the primary cell is at full capacity.

Water volumes were calculated for each of the three pool levels within the East Ash Pond. Calculated water volumes are Normal Operating Pool (448.00) equals 220,600 CY, Maximum Operating Pool (450.00) equals 301,400 CY, and “Rainy Day” on Normal Operating Pool (450.2) equals 309,600 CY. The “Rainy Day” case is based on the pond level during the Probable Maximum Precipitation (PMP) associated with the Probable Maximum Flood (PMF) event. That precipitation is 34.5” in a 24-hr storm, which is a relevant design parameter that is typically used to size structures and check for freeboard under the worst-case conditions.

An assumed boundary was delineated for the “bathtub” analysis. This conservative approach assumes that no water escapes outside of the boundary through wave overland flow or through adjacent culverts to drainage channels, creeks or rivers. Consequently, the PMF was only applied to the pond itself. An iterative calculation was completed to find the elevation within the assumed boundary that corresponded to the water volume calculated above. The elevations were calculated as follows: Normal Operating Pool (448.00) - 426.5 feet **(see Figure 7-4)**, Maximum Operating Pool (450.00) - 427.7 **(see Figure 7-5)**, “Rainy Day” on Normal Operating Pool (450.2) - 427.8 **(see Figure 7-6)**.

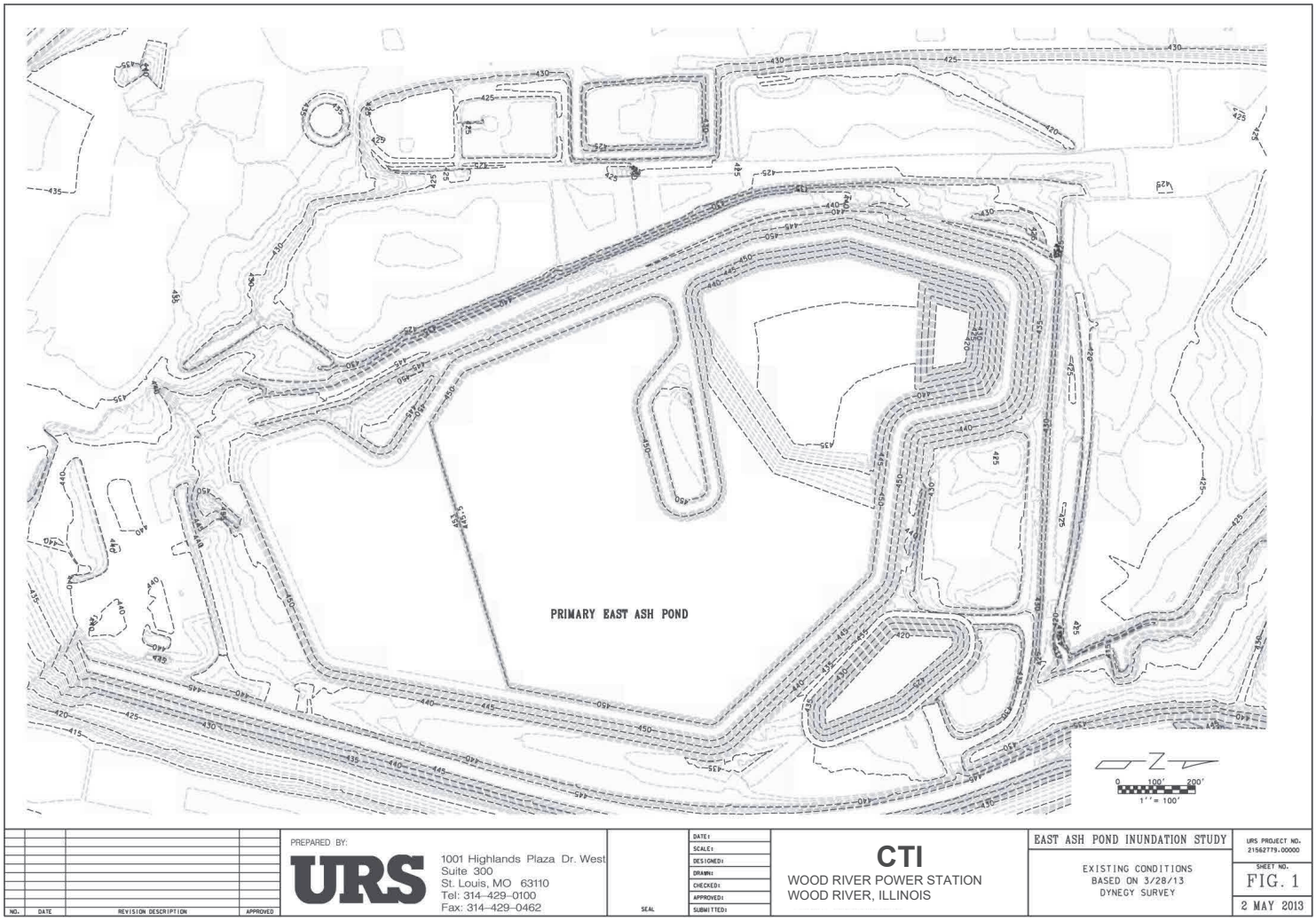

PRIMARY EAST ASH POND
0 100' 200'
1" = 100'
NO. DATE REVISION DESCRIPTION APPROVED
PREPARED BY:
URS
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110
Tel: 314-429-0100
Fax: 314-429-0462
SEAL
DATE:
SCALE:
DESIGNED:
DRAWN:
CHECKED:
APPROVED:
SUBMITTED:
CTI
WOOD RIVER POWER STATION
WOOD RIVER, ILLINOIS
EAST ASH POND INUNDATION STUDY
EXISTING CONDITIONS
BASED ON 3/28/13
DYNEGY SURVEY
URS PROJECT NO.
21562779.00000
SHEET NO.
FIG. 1
2 MAY 2013

Figure 7-2

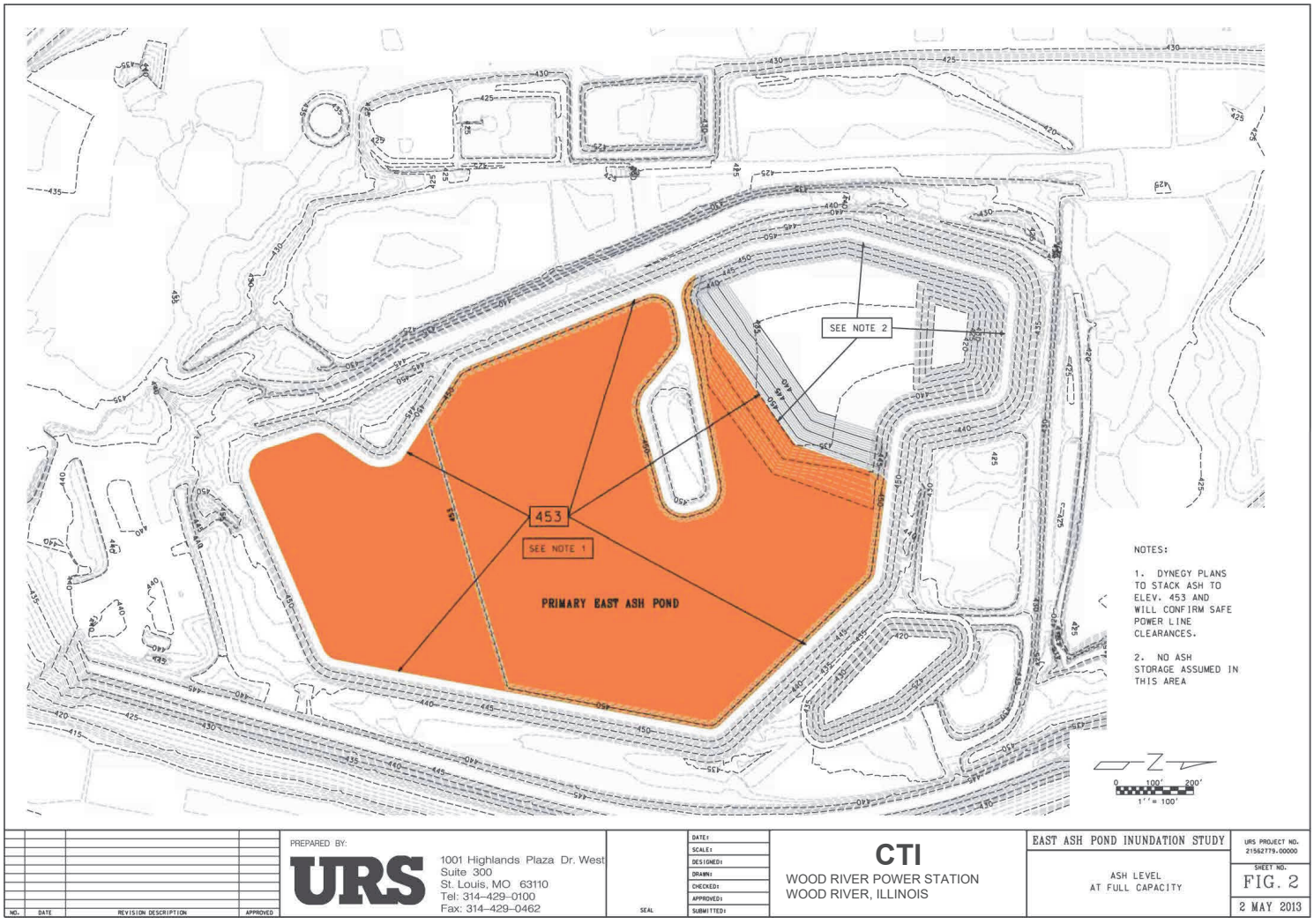

SEE NOTE 2
453
SEE NOTE 1
PRIMARY EAST ASH POND
NOTES:
1. DYNEGY PLANS TO STACK ASH TO ELEV. 453 AND WILL CONFIRM SAFE POWER LINE CLEARANCES.
2. NO ASH STORAGE ASSUMED IN THIS AREA
0 100' 200'
1'' = 100'
NO. DATE REVISION DESCRIPTION APPROVED
PREPARED BY:
URS
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110
Tel: 314-429-0100
Fax: 314-429-0462
SEAL
DATE:
SCALE:
DESIGNED:
DRAWN:
CHECKED:
APPROVED:
SUBMITTED:
CTI
WOOD RIVER POWER STATION
WOOD RIVER, ILLINOIS
EAST ASH POND INUNDATION STUDY
ASH LEVEL
AT FULL CAPACITY
URS PROJECT NO.
21562779.00000
SHEET NO.
FIG. 2
2 MAY 2013

Figure 7-3

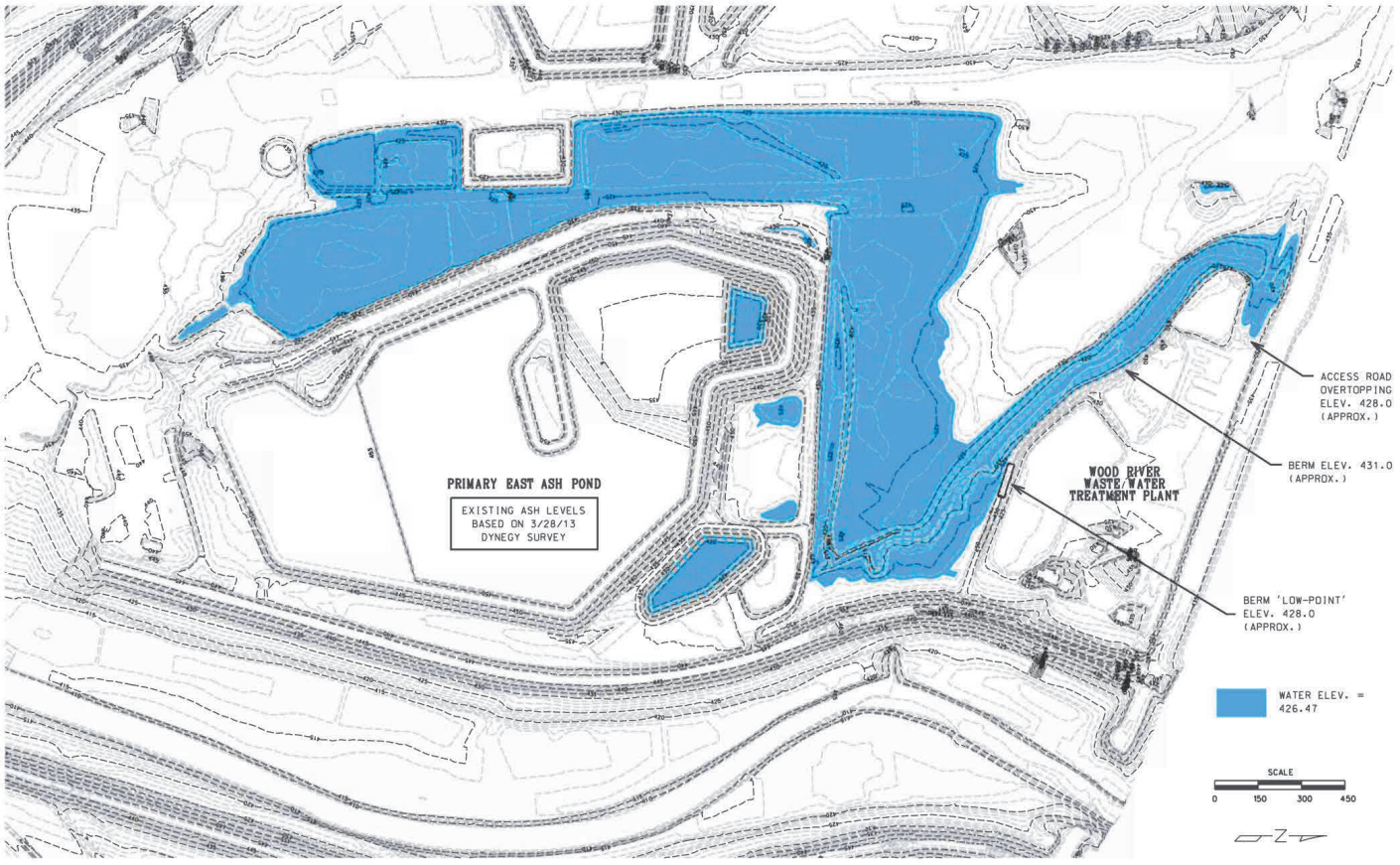
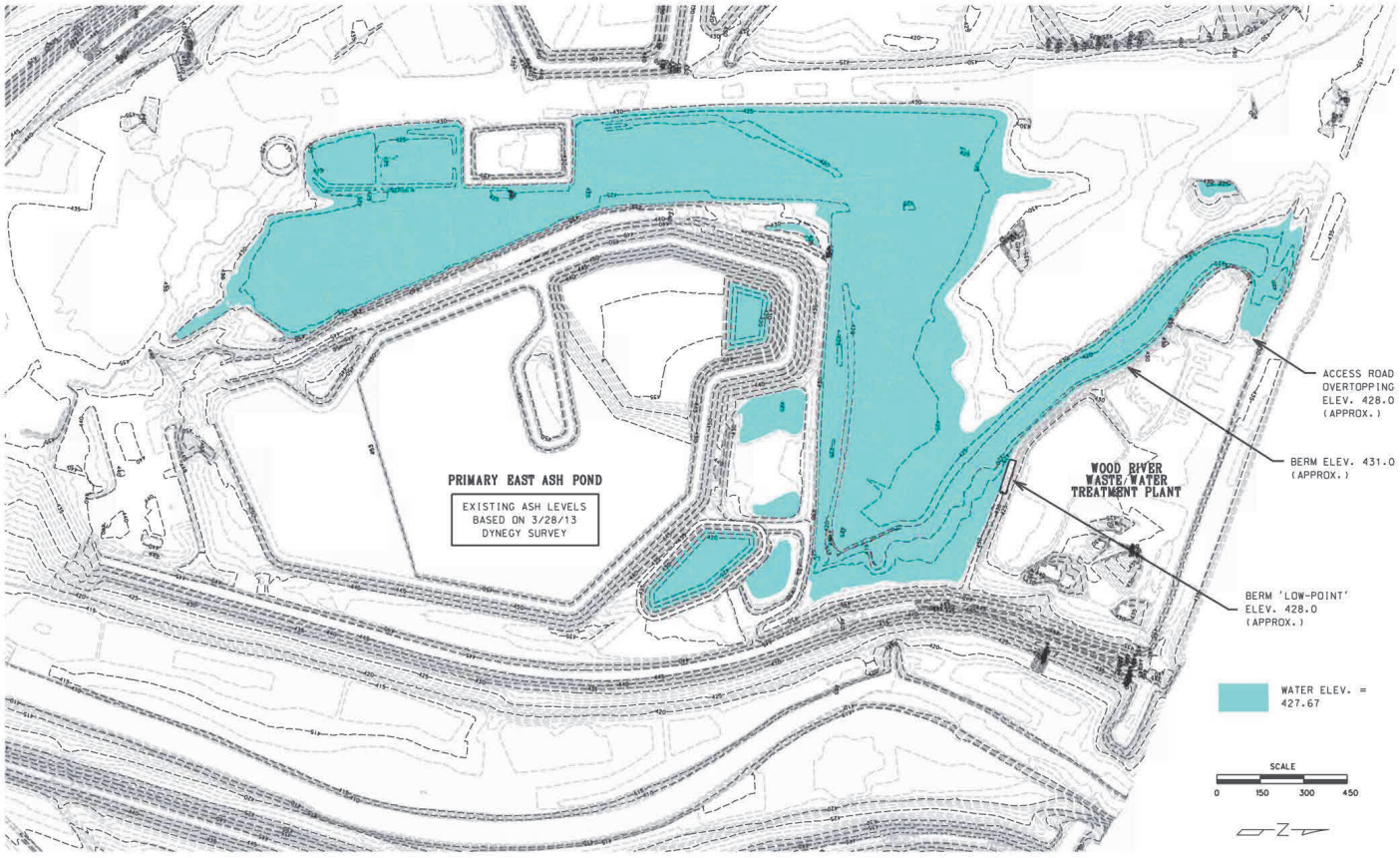

PRIMARY EAST ASH POND
EXISTING ASH LEVELS BASED ON 3/28/13 DYNEGY SURVEY
WOOD RIVER WASTE WATER TREATMENT PLANT
ACCESS ROAD OVERTOPPING ELEV. 428.0 (APPROX.)
BERM ELEV. 431.0 (APPROX.)
BERM 'LOW-POINT' ELEV. 428.0 (APPROX.)
WATER ELEV. = 426.47
SCALE
0 150 300 450
N
NO. DATE REVISION DESCRIPTION APPROVED
PREPARED BY:
URS
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110
Tel: 314-429-0100
Fax: 314-429-0462
SEAL
DATE:
SCALE:
DESIGNED:
DRAWN:
CHECKED:
APPROVED:
SUBMITTED:
CTI
WOOD RIVER POWER STATION
WOOD RIVER, ILLINOIS
EAST ASH POND INUNDATION STUDY
INUNDATION BOUNDARY
NORMAL OPERATION WATER LEVEL
POOL ELEV. = 448.00
URS PROJECT NO. 21562779.00000
SHEET NO.
FIG. 3
2 MAY 2013

Figure 7-4



NO.	DATE	REVISION DESCRIPTION	APPROVED

PREPARED BY:
URS
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110
Tel: 314-429-0100
Fax: 314-429-0462

SEAL

DATE:
SCALE:
DESIGNED:
DRAWN:
CHECKED:
APPROVED:
SUBMITTED:

CTI
WOOD RIVER POWER STATION
WOOD RIVER, ILLINOIS

EAST ASH POND INUNDATION STUDY
INUNDATION BOUNDARY
MAXIMUM OPERATION WATER LEVEL
POOL ELEV. = 450.00

URS PROJECT NO.
21562779.00000
SHEET NO.
FIG. 4
2 MAY 2013

Figure 7-5

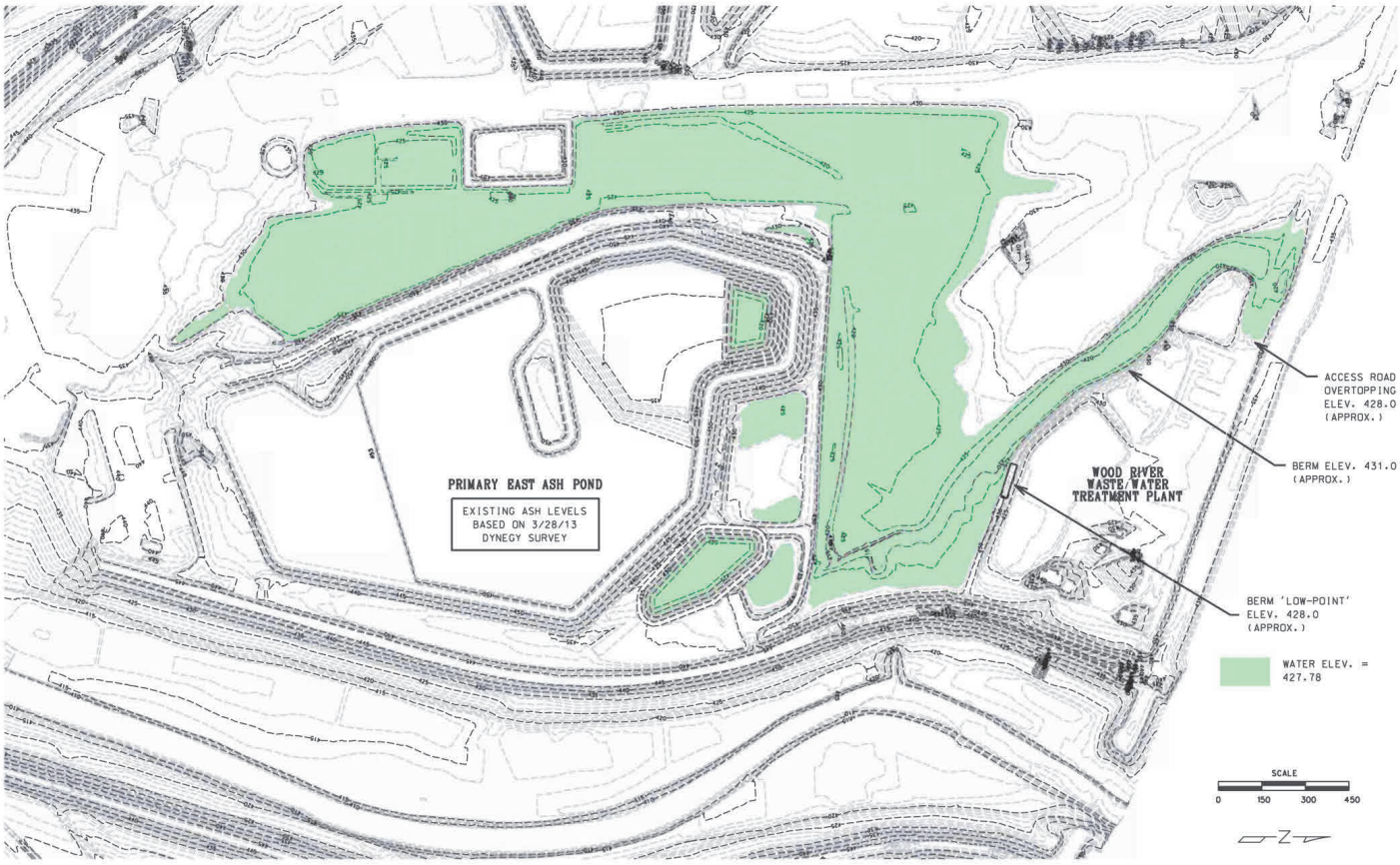

PRIMARY EAST ASH POND
EXISTING ASH LEVELS
BASED ON 3/28/13
DYNEGY SURVEY
WOOD RIVER
WASTE/WATER
TREATMENT PLANT
ACCESS ROAD
OVERTOPPING
ELEV. 428.0
(APPROX.)
BERM ELEV. 431.0
(APPROX.)
BERM 'LOW-POINT'
ELEV. 428.0
(APPROX.)
WATER ELEV. =
427.78
SCALE
0 150 300 450
PREPARED BY:
URS
1001 Highlands Plaza Dr. West
Suite 300
St. Louis, MO 63110
Tel: 314-429-0100
Fax: 314-429-0462
SEAL
DATE:
SCALE:
DESIGNED:
DRAWN:
CHECKED:
APPROVED:
SUBMITTED:
NO. DATE REVISION DESCRIPTION APPROVED
CTI
WOOD RIVER POWER STATION
WOOD RIVER, ILLINOIS
EAST ASH POND INUNDATION STUDY
INUNDATION BOUNDARY
MAXIMUM OPERATION
WATER LEVEL W/ PMF
POOL ELEV. = 451.49
URS PROJECT NO.
21562775.00000
SHEET NO.
FIG. 5
2 MAY 2013

Figure 7-6

8.0 Emergency Action Plan Approval

We, the undersigned, this date acknowledge this plan as a part of the emergency operation procedures that would be taken to protect life and reduce property damage in case of an emergency due to failure of any of the embankments of the Wood River Ash Impoundments.

Jesse Froh – Site Safety Manager — 10/21/2020 Date

Date — 10/30/2020