

## = Effects of Hurricane Katrina in New Orleans =

As the center of Hurricane Katrina passed southeast of New Orleans on August 29, 2005, winds downtown were in the Category 1 range with frequent intense gusts and tidal surge. Hurricane force winds were experienced throughout the city, although the most severe portion of Katrina missed the city, hitting nearby St. Bernard and Plaquemines parishes. Hurricane Katrina made its final landfall in eastern St. Tammany Parish. The western eye wall passed directly over St. Tammany Parish, Louisiana as a Category 3 hurricane at about 9:45 am CST, August 29, 2005. The communities of Slidell, Avery Estates, Lakeshore Estates, Oak Harbor, Eden Isles and Northshore Beach were inundated by the storm surge that extended over six miles inland. The storm surge affected all 57 miles (92 km) of St. Tammany Parish's coastline, including Lacombe, Mandeville and Madisonville. The storm surge in the area of the Rigolets Pass was estimated to be 16 feet, not including wave action, declining to 7 feet (2 @ 1 m) at Madisonville. The surge had a second peak in eastern St. Tammany as the westerly winds from the southern eye wall pushed the surge to the east, backing up at the bottleneck of the Rigolets Pass.

In the City of New Orleans, the storm surge caused approximately 23 breaches in drainage canal and navigational canal levees and floodwalls. The failures of structures are considered by experts to be the worst engineering disaster in the history of the United States. By August 31, 2005, 80% of New Orleans was flooded, with some parts under 15 feet (4 @ 6 m) of water. The famous French Quarter and Garden District escaped flooding because those areas are above sea level. Responsibility for the performance of the city's levees belongs to the United States Army Corps of Engineers. The major breaches included the 17th Street Canal levee, the Industrial Canal levee, and the London Avenue Canal floodwall. These breaches caused the majority of the flooding, according to a June 2007 report by the American Society of Civil Engineers. The flood disaster halted oil production and refining which increased oil prices worldwide.

Between 80 and 90 percent of the residents of New Orleans were evacuated before the hurricane struck, testifying to some of the success of the evacuation measures. Despite this, many remained in the city, mainly those who did not have access to personal vehicles or who were isolated from the dissemination of news from the local governments. The Louisiana Superdome was used to house and support some of those who were unable to evacuate. Television shots frequently focused on the Superdome as a symbol of the flooding occurring in New Orleans.

The disaster had major implications for a large segment of the population, economy, and politics of the entire United States. It has prompted a Congressional review of the Army Corps of Engineers and the failure of portions of the federally built flood protection system which experts agree should have protected the city's inhabitants from Katrina's surge. Katrina has also stimulated significant research in the academic community into urban planning, real estate finance, and economic issues in the wake of a natural disaster.

## = = Background = =

New Orleans was settled on a natural high ground along the Mississippi River. Later developments that eventually extended to nearby Lake Pontchartrain were built on fill to bring them above the average lake level. Navigable commercial waterways extended from the lake into the interior of the city to promote waterborne commerce. After the construction of the Inner Harbor Navigation Canal in 1940, the state closed these waterways causing the town's water table to lower drastically.

In 1965, heavy flooding caused by Hurricane Betsy brought concerns regarding flooding from hurricanes to the forefront. That year Congress passed the Flood Control Act of 1965 which, among other issues, gave authority for design and construction of the flood protection in the New Orleans metropolitan area to the United States Army Corps of Engineers subject to cost sharing principles, some of which were waived by later legislation. The local municipalities were charged with maintenance once the projects were completed. After 1965, the corps built a levee system around a much larger geographic footprint that included previous marshland and swamp. Many new subdivisions were developed to cater to those who preferred a more suburban lifestyle but were

open to remaining within the city limits of New Orleans . Historians question why the area farthest east was developed , since it was viable wetlands and because ringing this region with levees did nothing significant toward protecting the city . What expansion accomplished was to increase the amount of land that could be developed , and it was a reason for the Army Corps to expand the size of its project . In addition the structures caused subsidence of up to 8 feet ( 2 @. @ 4 m ) in some areas due to the consolidation of the underlying organic soils .

A 1999 ? 2001 study Richard Camapanella , Tulane School of Architecture , using LIDAR technology found that 51 % of the terrestrial surface of the contiguous urbanized portions of Orleans , Jefferson , and St. Bernard parishes lie at or above sea level , with the highest neighborhoods at 10 ? 12 feet ( 3 @. @ 0 ? 3 @. @ 7 m ) above mean sea level . Forty nine percent lies below sea level , in places to equivalent depths .

When authorized , the flood control design and construction were projected to take 13 years to complete . When Katrina made landfall in 2005 , the project was between 60 ? 90 % complete with a projected date of completion estimated for 2015 , nearly 50 years after authorization . Moreover , another major hurricane flooding had long been predicted , and while the close call of Hurricane Georges in September 1998 galvanized some scientists , engineers and politicians into collective planning , as at October 2001 , Scientific American declared that " New Orleans is a disaster waiting to happen " . However , even the most insistent calls to evacuate before Katrina , did not warn that the levees could breach .

On August 29 , 2005 , flood walls and levees catastrophically failed throughout the metro area . Many collapsed well below design thresholds ( 17th Street and London Canals ) . Others collapsed after a brief period of overtopping ( Industrial Canal ) caused ? scouring ? or erosion of the earthen levee walls . In eastern New Orleans , levees along the Gulf Intracoastal Waterway failed in several places because they were built with sand and erodible materials instead of clay , an obvious construction flaw .

= = Pre @-@ Katrina preparations = =

The eye of Hurricane Katrina was forecast to pass through the city of New Orleans . In that event , the wind was predicted to come from the north as the storm passed , forcing large volumes of water from Lake Pontchartrain against the levees and possibly into the city . It was also forecast that the storm surge in Lake Pontchartrain would reach 14 ? 18 feet ( 4 @. @ 3 ? 5 @. @ 5 m ) , with waves reaching 7 feet ( 2 m ) above the storm surge .

On August 28 , at 10 : 00 a.m. CDT , the National Weather Service ( NWS ) field office in New Orleans issued a bulletin predicting catastrophic damage to New Orleans and the surrounding region . Anticipated effects included , at the very least , the partial destruction of half of the well @-@ constructed houses in the city , severe damage to most industrial buildings , rendering them inoperable , the " total destruction " of all wood @-@ framed low @-@ rise apartment buildings , all windows blowing out in high @-@ rise office buildings , and the creation of a huge debris field of trees , telephone poles , cars , and collapsed buildings . Lack of clean water was predicted to " make human suffering incredible by modern standards . "

It was also predicted that the standing water caused by the storm surge would render most of the city uninhabitable for weeks and that the destruction of oil and petrochemical refineries in the surrounding area would spill waste into the flooding . The resulting mess would coat every surface , converting the city into a toxic marsh until water could be drained . Some experts said that it could take six months or longer to pump all the water out of the city .

= = Evacuation order = =

On Saturday night , Max Mayfield , director of the National Hurricane Center , did something he had done only once before . He called the governors of Alabama , Louisiana , and Mississippi to warn them of the severity of the coming storm . He issued a special warning to Mayor Ray Nagin , telling him that some levees in the greater New Orleans area could be overtopped . Later , Mr. Mayfield

would tell Brian Williams with NBC Nightly News that he went to bed that night believing he had done what he could . On Sunday , he made a video call to U.S. President George W. Bush at his farm in Crawford , Texas about the severity of the storm .

Many New Orleans residents took precautions to secure their homes and prepare for possible evacuation on Friday the 26th and Saturday the 27th . On August 27 the state of Louisiana was declared an emergency area by the Federal Government , and by mid morning of that day , many local gas stations which were not yet out of gas had long lines . Nagin first called for a voluntary evacuation of the city at 5 : 00 p.m. on August 27 and subsequently ordered a citywide mandatory evacuation at 9 : 30 a.m. on August 28 , the first such order in the city 's history . In a live news conference , Mayor Nagin predicted that , " the storm surge most likely will topple our levee system " , and warned that oil production in the Gulf of Mexico would be shut down .

Many neighboring areas and parishes also called for evacuations . By mid @-@ afternoon , officials in Plaquemines , St. Bernard , St. Charles , Lafourche , Terrebonne , Jefferson , St. Tammany , and Washington parishes had called for voluntary or mandatory evacuations . "

Although Mayor Ray Nagin ordered a mandatory evacuation of the city , many people refused to leave or were unable to do so . In Plaquemines Parish , an official described those remaining behind as " gambling with their own lives . " Reasons were numerous , including a belief that their homes or the buildings in which they planned to stay offered sufficient protection , lack of financial resources or access to transportation , or a feeling of obligation to protect their property . These reasons were complicated by the fact that an evacuation the previous year for Hurricane Ivan had resulted in gridlocked traffic for six to ten hours . The fact that Katrina occurred at the end of the month , before pay checks were in the hands of many was also significant . A " refuge of last resort " was designated at the Louisiana Superdome . Beginning at noon on August 28 and running for several hours , city buses were redeployed to shuttle local residents from 12 pickup points throughout the city to the " shelters of last resort . "

By the time Hurricane Katrina came ashore early the next morning , Mayor Nagin estimated that approximately one million people had fled the city and its surrounding suburbs . By the evening of August 28 , over 100 @,@ 000 people remained in the city , with 20 @,@ 000 taking shelter at the Louisiana Superdome , along with 300 National Guard troops . The Superdome had been used as a shelter in the past , such as during 1998 's Hurricane Georges , because it was estimated to be able to withstand winds of up to 200 miles per hour ( 320 km / h ) and water levels of 35 feet ( 11 m ) . While supplies of MREs ( Meals ready to eat ) and bottled water were available at the Superdome , Nagin told survivors to bring blankets and enough food for several days , warning that it would be a very uncomfortable place .

= = Direct Effects = =

Hurricane Katrina made its second and third landfalls in the Gulf Coast region on August 29 , 2005 as a Category 3 hurricane .

On Monday August 29 area affiliates of local television station WDSU reported New Orleans was experiencing widespread flooding due to several Army Corps @-@ built levee breaches , was without power , and that there were several instances of catastrophic damage in residential and business areas . Entire neighborhoods on the south shore of Lake Pontchartrain were flooded .

The extensive flooding stranded many residents , who remained so long after Hurricane Katrina had passed . Stranded survivors dotted the tops of houses citywide . Some were trapped inside attics , unable to escape . Many people chopped their way onto their roofs with hatchets and sledge hammers , which Mayor Nagin had residents urged to store in their attics in case of such events . Clean water was unavailable , and power outages were expected to last for weeks .

By 11 : 00 p.m. August 29 , Mayor Nagin described the loss of life as " significant " with reports of bodies floating on the water throughout the city , though primarily in the eastern portions . Some hotels and hospitals reported diesel fuel shortages . The National Guard began setting up temporary morgues in select locations .

### == Communications failures ==

Coordination of rescue efforts August 29 and August 30 were made difficult by disruption of the communications infrastructure . Many telephones , including most cell phones , and Internet access were not working because of line breaks , destruction of base stations , or power failures , even though some base stations had their own back @-@ up generators . In a number of cases , reporters were asked to brief public officials on the conditions in areas where information was not reaching them any other way .

All local television stations were disrupted . Local television stations , and newspapers , moved quickly to sister locations in nearby cities . New Orleans CBS @-@ affiliate WWL @-@ TV was the only local station to remain on the air during and after the storm , broadcasting from Baton Rouge . Broadcasting and publishing on the Internet became an important means of distributing information to evacuees and the rest of the world , with news networks citing blogs like Interdictor and Gulfsails for reports of what was happening in the city . Amateur radio provided tactical and emergency communications and handled health @-@ and @-@ welfare enquiries . By September 4 , a temporary communications hub was set up at the Hyatt Hotel in downtown New Orleans .

The first television pictures out of New Orleans shown on national TV were from Houston 's ABC owned and operated KTRK which flew its helicopter to New Orleans in the days after the storm .

### == Damage to buildings and roads ==

Most of the city 's major roads were damaged . The only route out of the city was east to the east bank of New Orleans on the Crescent City Connection bridge . The I @-@ 10 Twin Span Bridge traveling east towards Slidell , suffered severe damage ; 473 spans were separated from their supports and 64 spans dropped into the lake . The 24 @-@ mile ( 39 km ) long Lake Pontchartrain Causeway escaped unscathed but was only carrying emergency traffic . On August 29 , at 7 : 40 a.m. CDT , it was reported that most of the windows on the north side of the Hyatt Regency New Orleans had been blown out , and many other high rise buildings had extensive window damage . The Hyatt was the most severely damaged hotel in the city , with beds reported to be flying out of the windows . Insulation tubes were exposed as the hotel 's glass exterior was completely sheared off .

Louis Armstrong New Orleans International Airport was closed before the storm but reported no flooding in airplane movement areas or inside of the building itself . By August 30 , it was reopened to humanitarian and rescue operations . Commercial cargo flights resumed on September 10 , and commercial passenger service resumed on September 13 .

The Superdome sustained significant damage , including two sections of the roof when waterproof membrane had essentially been peeled off by wind . On August 30 , Louisiana governor Kathleen Blanco ordered the complete evacuation of the remaining people that sought shelter in the Superdome . They were then transported to the Astrodome in Houston , Texas .

### == Levee failures ==

As of mid @-@ day Monday , August 29 , the eye of Hurricane Katrina passed east of the City subjecting it to hurricane wind conditions , but sparing New Orleans the worst impact . The City seemed to have escaped most of the catastrophic wind damage and heavy rain that had been predicted . Most buildings came through well structurally .

However , the city 's levee and flood walls designed and built by the US Army Corps of Engineers breached in over fifty locations . Storm surge breached the levees of the Mississippi River @-@ Gulf Outlet Canal ( " MR @-@ GO " ) in approximately 20 places and flooded all of Saint Bernard Parish , the east bank of Plaquemines Parish and the historic Lower Ninth Ward . The major levee breaches in the city included breaches at the 17th Street Canal levee , the London Avenue Canal , and the wide , navigable Inner Harbor Navigation Canal , which left approximately 80 % of New Orleans flooded . There were three major breaches at the Industrial Canal ; one on the upper side

near the junction with MR @-@ GO , and two on the lower side along the Lower Ninth Ward , between Florida Avenue and Claiborne Avenue . The 17th Street Canal levee was breached on the lower ( New Orleans West End ) side inland from the Old Hammond Highway Bridge , and the London Avenue Canal breached in two places , on the upper side just back from Robert E. Lee Boulevard , and on the lower side a block in from the Mirabeau Avenue Bridge . Flooding from the breaches put the majority of the city under water for days , in many places for weeks . Many roads and buildings were damaged by Hurricane Katrina .

In a June 2006 report on the disaster , the U.S. Army Corps of Engineers admitted that faulty design specifications , incomplete sections , and substandard construction of levee segments , contributed to the damage done to New Orleans by Hurricane Katrina . A report released by the American Society of Civil Engineers in June 2007 concluded that two @-@ thirds of the flooding in the city could have been avoided if the levees had held .

The failure of the Hurricane Protection Project of New Orleans has prompted many government officials to call for many congressional committee hearings and investigations . The group Levees.org led by Sandy Rosenthal called for 8 / 29 Commission to investigate both the engineering and decision @-@ making behind the collapse of a flood protection system that should have held against Katrina 's storm surge .

= = = Loss of life = = =

Final reports indicate that the official death toll , according to the Louisiana Department of Health , was 1 @, @ 464 people . The first deaths were reported shortly before midnight on August 28 , 2005 , as three nursing home patients died during an evacuation to Baton Rouge . On September 4 , Mayor Nagin speculated that the death toll could rise as high as ten thousand after the clean @-@ up was completed . Some survivors and evacuees reported seeing bodies lying in city streets and floating in still @-@ flooded sections , especially in the east of the city . The advanced state of decomposition of many corpses , some of which were left in the water or sun for days before being collected , hindered efforts by coroners to identify many of the dead .

There were six deaths confirmed at the Superdome . Four of these were from natural causes , one was the result of a drug overdose , and one was a suicide . At the Convention Center , four bodies were recovered . One of these four is believed to be the result of a homicide . Body collection throughout the city began on approximately September 9 . Prior to that date , the locations of corpses were recorded , but most were not retrieved .

Later studies determined that most of New Orleans ' Katrina dead were elderly persons living near levee breaches in the Lower Ninth Ward and Lakeview neighborhoods of New Orleans .

= = Aftermath = =

= = = Civil disturbances = = =

The aftermath of Hurricane Katrina was characterized by extensive reporting of looting , violence , shooting against rescuers , murder and rape . While some criminal acts did occur , such as the emptying of an entire Walmart , many reports were also exaggerated , inflated , or simply fabricated . Several news organizations went on to issue retractions .

There were reports of snipers taking potshots at rescue helicopters ; these were false . Reports of gangs roving the city shooting police officers and survivors were also false , as only one policeman was shot in the aftermath of Katrina and no indictments were brought forward against the supposed gang members .

While looting was indeed widespread , many reported instances of " looting " were in fact stranded survivors scavenging necessary supplies such as food , water , clothing , and shelter . Some instances of looting were later found out to have been carried out by a small number of NOPD officers .

Rebecca Solnit , writing in The Nation , reported that ? Several weeks after Hurricane Katrina , community organizer and former Black Panther Malik Rahim had told Amy Goodman on her nationally syndicated program DemocracyNow ! , " During the aftermath , directly after the flooding , in New Orleans hunting season began on young African American men . In Algiers , I believe , approximately around 18 African American males were killed . No one really know [ s ] what 's the overall count . " ?

These investigations led to at least one indictment by the Department of Justice .

Civil disturbances in post @-@ Hurricane Katrina were consistent with all existing research on disaster sociology , which concludes that ? [ post @-@ disaster ] widespread looting [ is ] a myth ? , and were vastly overstated by the media , ultimately fueling a climate of suspicion and paranoia which greatly hampered rescue efforts and further worsened the conditions of the survivors .

Some initial reports of mass chaos , particularly in stories about the Superdome , were later found to be exaggerated or rumor . In the Superdome for example , the New Orleans sex crimes unit investigated every report of rape or atrocity and found only two verifiable incidents , both of sexual assault . The department head told reporters , " I think it was urban myth . Any time you put 25 @,@ 000 people under one roof , with no running water , no electricity and no information , stories get told . " Based on these reports , government officials expected hundreds of dead to be found in the Superdome , but instead found only 6 dead ( of which there were 4 natural deaths , one drug overdose and one suicide ) . In a case of reported sniper fire , the " sniper " turned out to be the relief valve of a gas tank popping every few minutes .

Additional acts of unrest occurred following the storm , particularly with the New Orleans Police Department . In the aftermath , a tourist asked a police officer for assistance , and got the response , " Go to hell , it 's every man for himself . " Also , one @-@ third of New Orleans police officers deserted the city in the days before the storm , many of them escaping in their department @-@ owned patrol cars . This added to the chaos by stretching law enforcement thin . Additionally , several NOPD officers were arrested weeks after Katrina for suspicion of vehicle theft .

= = = Gretna controversy = = =

The City of Gretna on the West Bank of the Mississippi River received considerable press coverage when , in the aftermath of Hurricane Katrina ( late August 2005 ) , displaced and dehydrated survivors who attempted to escape from New Orleans by walking over the Crescent City Connection bridge over the Mississippi River were turned back at gunpoint by City of Gretna Police , along with Crescent City Connection Police and Jefferson Parish Sheriff 's deputies , who set up a roadblock on the bridge in the days following the hurricane .

= = = Re @-@ establishing governance = = =

On August 31 , New Orleans 's 1 @,@ 500 @-@ member police force was ordered to abandon search and rescue missions and turn its attention toward controlling the widespread looting . The city also ordered a mandatory curfew . Mayor Nagin called for increased federal assistance in a " desperate S.O.S. " , following the city 's inability to control looting . He was often misquoted as declaring " martial law " in the city , despite there being no such term in Louisiana state law ( a declaration of a state of emergency was instead made ) . On the same day , Governor Kathleen Blanco announced the arrival of a military presence , stating that " they have M @-@ 16s and are locked and loaded . These troops know how to shoot and kill and I expect they will . " Despite the increased law enforcement presence , crime continued to be a problem .

Relief efforts were constantly disrupted by violence , and there were reports of groups of armed men running rampant through the streets , looting and pillaging unattended buildings and stores . Charity Hospital , one of several facilities attempting to evacuate patients , was forced to halt the effort after coming under gunfire . By September 1 , 6 @,@ 500 National Guard troops had arrived in New Orleans , and on September 2 Blanco requested a total of 40 @,@ 000 for assistance in evacuation and security efforts in Louisiana . In addition , the Louisiana State Guard and state

defense forces from several states were activated to aid the National Guard in sheltering the large number of refugees leaving Louisiana and assist in other disaster recovery operations .

Some concern over the availability and readiness of the Louisiana National Guard to help stabilize the security situation was raised . Guardsman Lieutenant Colonel Pete had commented that " dozens of high water vehicles , humvees , refuelers , and generators were abroad . " At the time of the hurricane , approximately 3 @, @ 000 members of the Guard were serving a tour of duty in Iraq . With total personnel strength of 11 @, @ 000 , this meant that 27 % of the Louisiana National Guard was abroad . However , both the White House and the Pentagon argued that the depletion of personnel and equipment did not impact the ability of the Guard to perform its mission ? rather , impassable roads and flooded areas were the major factors impeding the Guardsmen from securing the situation in New Orleans .

Before Hurricane Katrina , the murder rate in New Orleans was ten times higher than the U.S. average . After the situation in New Orleans was brought under control , criminal activity in New Orleans dropped significantly .

In response to the increase in criminal activity in New Orleans , makeshift prisons were constructed to house prisoners for short periods of time . Camp Greyhound was a temporary prison that housed more than 200 suspected looters in New Orleans until they could be transferred to other institutions . With room for 700 prisoners , the facility was guarded by officers from one of the United States ' toughest prisons , the Louisiana State Penitentiary at Angola . The station 's bus terminals were converted into chain @-@ link prison cells that could hold up to fifteen prisoners each . These prisoners were kept in conditions that included a portable toilet and military issued meals , but excluded a mattress or cot .

This camp demonstrated the reaction time and resourcefulness of the law enforcement of Louisiana . Several prisons were uninhabitable due to flooding , and the officers were forced to be flexible and work with the tools available to them . Law enforcement constructed the necessary offices of a police station in the general areas of the bus station , which included the offices of the District Attorney and the Justice Department . Camp Greyhound did have several issues with police records due to flooding , and prisoners who had committed minor infractions were kept in the same areas as those with more serious allegations . The facility was run on backup generators and outdated fingerprinting methods were used , which added to the confusion of the facility .

= = = The Superdome = = =

As one of the largest structures in the city , evacuees were brought to the Superdome to wait out the storm or to await further evacuation . Many others made their way to the Superdome on their own , hoping to find food , water , shelter , or transport out of town . On August 29 , Katrina passed over New Orleans with such force that it ripped two holes in the Superdome roof . On the evening of August 30 , Maj. Gen. Bennett C. Landreneau , of the Louisiana National Guard , said that the number of people taking shelter in the Superdome had risen to around 15 @, @ 000 to 20 @, @ 000 as search and rescue teams brought more people to the Superdome from areas hard @-@ hit by the flooding . As conditions worsened and flood waters continued to rise , on August 31 , Governor Blanco ordered that all of New Orleans , including the Superdome , be evacuated . The area outside the Superdome was flooded to a depth of 3 feet ( 0 @. @ 91 m ) , with a possibility of 7 feet ( 2 @. @ 1 m ) if the area equalized with Lake Pontchartrain . Governor Blanco had the state send in 68 school buses on Monday to begin evacuating people .

Despite increasingly squalid conditions , the population inside continued to grow . The situation inside the building was described as chaotic ; reports of rampant drug use , fights , rape , and filthy living conditions were widespread . At the time , as many as 100 were reported to have died in the Superdome , with most deaths resulting from heat exhaustion , but other reported incidents included an accused rapist who was beaten to death by a crowd and an apparent suicide . Despite these reports , though , the final official death toll was significantly less : six people inside ( 4 of natural causes , one overdose , and an apparent suicide ) and a few more in the general area outside the stadium .

FEMA had announced that , in conjunction with Greyhound , the National Guard , and Houston Metro , the 25 @, @ 000 people at the Superdome would be relocated across state lines to the Houston Astrodome . Roughly 475 buses were promised by FEMA to ferry evacuees with the entire evacuation expected to take two days . By September 4 , the Superdome had been completely evacuated .

Although the Superdome suffered damage by water and wind to the overall interior and exterior structures , as well as interior damage from human waste and trash , the facility was repaired at a cost of US \$ 140 million and was ready for games by the autumn of 2006 .

= = = New Orleans Convention Center = = =

Because of Hurricane Katrina , the Ernest N. Morial Convention Center suffered a loss of water pressure and electricity , and one of its convention halls had a large hole in its ceiling . The center was otherwise only lightly damaged .

On August 29 , as people were being turned away at the Superdome and rescues continued , rescuers began dropping people off at the Convention Center , which , at 8 feet ( 2 m ) above sea level , easily escaped the flood . Captain M.A. Pfeiffer of the NOPD was quoted as saying , " It was supposed to be a bus stop where they dropped people off for transportation . The problem was , the transportation never came . " By the afternoon of the 29th , the crowd had grown to about 1 @, @ 000 people . The convention center 's president ( who was there with a small group of convention center employees at this time ) addressed the crowd near dark , informing them that there was no food , water , medical care , or other services . By late on the evening of the 29th , the convention center had been broken into , and evacuees began occupying the inside of the convention center .

A contingent of 250 National Guard engineering units occupied one part of the convention center beginning August 30 and remained there until September 1 , at times barricaded in their location . The units were never given orders to control the crowd , and were not expected to be prepared for such a task , as engineering units . The number of people at the convention center continued to grow over the next three days by some estimates to as many as 20 @, @ 000 people . Reasons for arriving included being sent to the convention center from the overwhelmed Superdome , being dropped off there by rescuers , or hearing about the convention center as a shelter via word of mouth . No checking for weapons was done among the crowd as was done at the Superdome , and a large store of alcohol kept at the Convention Center was looted . Reports of robberies , murder , and rape began to surface . In general , those who died , regardless of cause of death , were not moved or removed and were left to decompose .

By September 1 , the facility , like the Superdome , was completely overwhelmed and declared unsafe and unsanitary . However , even though there were thousands of people who were evacuating at the center , along with network newscasters , pleading desperately for help on CNN , FOX , and other broadcast outlets , FEMA head Michael Brown and Homeland Security Secretary Michael Chertoff both claimed to have no knowledge of the use of the Convention Center as a shelter until the afternoon of September 1 .

A sizable contingent of National Guard arrived on September 2 to establish order and provide essential provisions , and on September 3 , buses began arriving at the convention center to pick up the refugees there . The Convention Center was completely evacuated by September 4 .

= = = Evacuation efforts = = =

On August 31 , a public health emergency was declared for the entire Gulf Coast , and Louisiana Governor Kathleen Blanco ordered a mandatory evacuation of all those remaining in New Orleans . Relief organizations scrambled to locate suitable areas for relocating evacuees on a large scale . Many of the survivors in the Superdome were bussed to the Reliant Astrodome in Houston , Texas . Houston agreed to shelter an additional 25 @, @ 000 evacuees beyond those admitted to the Astrodome , including one " renegade bus " that was commandeered by private citizen Jabbar Gibson , who had been released on bond from the Orleans Parish Prison just days before the storm



hit , and had a previous criminal conviction . By September 1 , the Astrodome was declared full and could not accept any more evacuees . The George R. Brown Convention Center nearby was opened to house additional evacuees . San Antonio , Texas also agreed to house 25 @, @ 000 refugees , beginning relocation efforts in vacant office buildings on the grounds of KellyUSA , a former air force base , and Reunion Arena in Dallas , Texas was mobilized to house incoming evacuees , and smaller shelters were established in towns across Texas and Oklahoma . Arkansas also opened various shelters and state parks throughout the state for evacuees .

Expected to last only two days , the evacuation of remaining evacuees proved more difficult than rescue organizations anticipated as transportation convoys struggled with damaged infrastructure and a growing number of evacuees . By the morning of September 1 , Governor Blanco reported that the number of evacuees in the Superdome was down to 2 @, @ 500 . However , by evening , eleven hours after evacuation efforts began , the Superdome held 10 @, @ 000 more people than it did at dawn . Evacuees from across the city swelled the crowd to about 30 @, @ 000 , believing the arena was the best place to get a ride out of town .

Evacuation efforts were hastened on September 2 by the wider dispersal of evacuees among newly opened shelters . Louis Armstrong International Airport was reopened to allow flights related to relief efforts , and began to load evacuees onto planes as well .

Elements of the 82nd Airborne Division arrived in New Orleans September 3 . The flooding was a challenge for the paratroopers when they first arrived . The division had just four boats at the time , however , the division quickly started getting Coast Guard , Navy and Marine assets placed under their control . Army Maj. Gen. William B. Caldwell IV , the 82nd 's commanding general , noted : " We eventually became the 82nd ' Waterborne ' Division , " the general said , " and that really was our forte " during search @-@ and @-@ rescue and security missions in flooded sections of the city .

Task Force Katrina Commander Army Lt. Gen. Russel Honoré also charged the paratroopers to straighten out the evacuation situations at Louis Armstrong New Orleans International Airport , the New Orleans Convention Center and the Superdome . In all , 3 @, @ 600 of the division 's paratroopers were deployed to New Orleans to participate in Task Force All @-@ American . The unit worked in tandem with state , local and other federal authorities to feed , process and transport evacuees to other accommodations ; the division 's soldiers helped evacuate 6 @, @ 000 New Orleans residents . By September 18 , the 82nd Division medical personnel had treated 1 @, @ 352 people and given 2 @, @ 047 immunizations , according to unit documents . By September 19 , 82nd Division military engineers had cleared 185 city blocks of debris , cleared 113 streets , and removed 218 trees , according to unit documents .

On September 3 , some 42 @, @ 000 evacuees were evacuated from New Orleans , including those remaining in the Superdome and Convention Center . Efforts turned to the hundreds of people still trapped in area hotels , hospitals , schools and private homes .

On September 6 , Mayor Ray Nagin ordered a forced evacuation of everyone from the city who was not involved in clean up work , citing safety and health concerns . The order was given not only as an attempt to restore law and order , but also out of concern about the hazardous living conditions in the city . Eviction efforts escalated three days later , when door @-@ to @-@ door searches were conducted to advise remaining residents to leave the city . Despite this , a number of residents defied the eviction order . While initially lax in enforcing evictions , National Guard troops eventually began to remove residents by force .

= = = Health effects = = =

There was a concern that the prolonged flooding would lead to an outbreak of health problems for those who remained in the city . In addition to dehydration and food poisoning , there was also potential for the spread of hepatitis A , cholera , tuberculosis , and typhoid fever , all related to the growing contamination of food and drinking water supplies in the city compounded by the city 's characteristic heat and stifling humidity . Survivors could also face long @-@ term health risks due to prolonged exposure to the petrochemical tainted flood waters and mosquito @-@ borne diseases

such as yellow fever , malaria and West Nile Virus .

On September 2 , an emergency triage center was set up at the airport . A steady stream of helicopters and ambulances brought in the elderly , sick , and injured . Baggage equipment was used as gurneys to transport people from the flight line to the hospital , which was set up in the airport terminal . The scene could be described as , " organized chaos " , but efficient . By September 3 , the situation started to stabilize . Up to 5 @, @ 000 people had been triaged and fewer than 200 remained at the medical unit .

Hospital evacuations continued from other area hospitals that were flooded or damaged . Reports from the Methodist Hospital indicated that people were dying of dehydration and exhaustion while the staff worked unendingly in horrendous conditions . The first floor of the hospital flooded and the dead were stacked in a second floor operating room . Patients requiring ventilators were kept alive with hand @-@ powered resuscitation bags .

Among the many hospitals shut down by damage related to the hurricane was the public hospital serving New Orleans , Charity Hospital , which was also the only trauma center serving that region . The destruction of the hospital 's structure has forced the continued closure as funding for a new building is sought out .

On September 6 , E. coli was detected in the water supply . According to the CDC , five people died from bacterial infections caused by the toxic waters . The deaths appear to have been caused by *Vibrio vulnificus* bacteria , of the Cholera family .

= = = Economy = = =

Before Katrina 's landfall in 2005 , the economy of New Orleans relied heavily on its usefulness and income derived from being a port city . The population grew and the economy peaked in the late 19th century . However , in the recent years , after rapid industrialization and the development of faster methods of transporting goods , the economy of New Orleans has been in a steady decline . As a result , New Orleans came to rely on three major industries for economic revenue : transportation , entertainment , and public services . However , after Katrina 's landfall , these sectors , including the overall economy , were reduced and heavily affected by the natural disaster .

After the hurricane , the labor force diminished and wages decreased by staggering amounts . In July 2005 , 9 @, @ 592 people applied for unemployment services and the payroll of metropolitan firms declined by 13 @. @ 6 % between July 2005 and July 2007 , indicating an estimated loss of 70 @, @ 000 jobs . The sectors most affected were service @-@ related industries , fluctuating with the population . The only sector to truly thrive after landfall was construction , which was in high demand to make needed repairs and rebuild destroyed homes .

In the first initial months following Katrina , the labor force reduced faster than the demand and unemployment rates skyrocketed . However , as of September 2006 , the unemployment rates have never fallen below national average , indicating improvement . In the second quarters of both 2005 and 2007 , the firms ' wages were increased by 21 % , twice more than national increases , indicating even further improvement , although the gains were varied across the sectors .

There have been some suggestions concerning the usage of natural capital to further aid New Orleans 's economy . One such is that , as opposed to rebuilding on flooded lands , restoring acres of wetlands to profit from the economic wealth . The Mississippi delta provides the United States with one of the largest fisheries and the most important flyway terminus , enabling New Orleans to profit from these ecological industries . Furthermore , by increasing the wetlands , it would help create a natural barrier that could aid New Orleans in future storms . It is estimated that if New Orleans were to restore 1 @, @ 700 square miles ( 4 @, @ 400 km<sup>2</sup> ) of wetland lost before 2005 , the natural capital would be worth an estimated \$ 6 billion / year , or \$ 200 billion at the present value . While New Orleans has made numerous efforts in rebuilding their economy , and has been successful with tourist @-@ attracting events such as Mardi Gras , the natural capital provided could further assist the city in returning to its pre @-@ Katrina wealth and economy .

= = Claims of differential racial effects = =

Following Katrina there were widespread claims that the effect of the hurricane was much greater on black and less economically advanced people , and that it had relatively less impact on predominantly white , and wealthier people . " The city ' s remarkable recovery has , to a troubling degree , left behind the African @-@ Americans who still make up the majority of its population , " according to FiveThirtyEight . This claim is based on statistics showing that black residents of New Orleans are more likely to be unemployed than when the storm hit , and more likely to be living in poverty . Household incomes of blacks have also fallen , and the wage gap between black and whites has grown . All these changes are attributed in some way to Katrina .

About 175 @, @ 000 black residents departed New Orleans over the year following the storm , while only 100 @, @ 000 returned , pushing the African American population to 59 percent , from 66 percent previously . The biggest impact has been on the middle @-@ class blacks , given that most black professionals are older and more advanced in their careers , and the majority of the affluent and middle class are white .

These setbacks to the black population in New Orleans corresponded with a large number of educated white arrivals , contributing to a high rate of business formation in the city . These newcomers have had the effect of driving up housing prices , making rent less affordable for the majority black residents .

The influence of blacks in the city receded politically , too : in 2010 New Orleans elected its first white mayor in 32 years , a white majority ( 5 @-@ 2 ) took control of the City Council , which had previously been black , and a white police chief and district attorney were elected . Lance Hill of Tulane University said : " The perception among most African @-@ Americans is that they are living politically as a defeated group in their own city . "