PUBLIC SUBMISSION

As of: 3/10/21 2:54 PM
Received: March 08, 2021
Status: Pending_Post
Tracking No. km1-gn3y-ygho
Comments Due: March 08, 2021
Submission Type: Web

Docket: NRC-2021-0036
Palisades Nuclear Plant and Big Rock Point Plant Consideration of Approval of Transfer of Control of Licenses and Conforming Amendments

Comment On: NRC-2021-0036-0001
Palisades Nuclear Plant and Big Rock Point Plant Consideration of Approval of Transfer of Control of Licenses and Conforming Amendments

Document: NRC-2021-0036-DRAFT-0050
Comment on FR Doc # 2021-02357

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General Comment

Attached is a 23-page listing of Kalamazoo Gazette newspaper headlines having to do with Consumers Power Company, the then owner of Palisades and Big Rock Point nuclear power plants, with dates ranging from January 2, 1972 to May 8, 1991.

Eight separate attachments, each covering 2-3 pages of the 23-page document, were required, because of the large size (50+ Megabytes) of the entire 23-page document, given your regulations.gov size limit per attachment.

The index was provided to me by Kay Cumbow, a long-time Palisades and Big Rock Point citizen watchdog in Michigan, affiliated with multiple grassroots organizations over several decades. Many of the articles have to do with Palisades, and some have to do with Big Rock Point. I request that you search through them for articles having to do with radioactive releases at either Palisades or Big Rock Point. That would provide further evidence re: where radioactive contamination at these nuclear power plant sites is, that still needs to be cleaned up, in order to protect the Great Lakes, and all people and other living things that call them home.

Please note that Big Rock Point operated beginning in 1962, so those years of operations also need to be accounted for. There may be other newspapers of record, besides the Kalamazoo Gazette, such as the Traverse City Record Eagle, and others even closer, as in Petoskey, where records of radioactive contamination incidents at Big Rock Point are recorded.

In addition, Big Rock Point kept operating after 1991, till August 1997, when it entered its decommissioning phase.

Palisades, of course, also continued operating after May 1991 -- right up to the present actually. So

additional Kalamazoo Gazette (which later changed its affiliation and name to MLive) article archives should be searched. One way to do this would be at the following online database, provided by the Kalamazoo Public Library (KPL): <https://kzpl.sirsi.net/uhtbin/cgisirsi/x/x/CENTRAL/60/1182/X>

Search terms such as <Palisades> or <nuclear> could yield results. The local reference room at the KPL may also prove very valuable, such as its microfiche and microfilm collections.

The point is, the U.S. Nuclear Regulatory Commission is mandated to protect public health, safety, security, and the environment. The NRC should be very concerned with the radioactive contamination at both the Palisades and Big Rock Point nuclear power plant sites, where it is located, and making sure it is completely cleaned up, no matter how deep down beneath the current ground surface level it goes, and even if it extends beyond Palisades and Big Rock Point's property lines, such as into Lake Michigan itself. Any source of information that could provide insights or shed light on those vital questions and pursuits must be carefully examined, including local newspaper coverage of the infamous Operating Experience (OE) at both atomic reactors.

NRC's own dockets on both reactors should be exhaustively searched. In the past several weeks alone, a thousand or more documents -- most more than 25-years old -- have appeared in the Palisades docket at NRC ADAMS. These documents, too, should be carefully scrutinized by NRC staff. And whichever company that owns Palisades and Big Rock Point, going forward, and whichever companies that do the decommissioning (facility dismantlement and radiological cleanup) work at Palisades, should be required, by NRC, to completely clean up any and all radioactive contamination at the site.

Even the Big Rock Point site should be carefully re-examined for lingering radioactive contamination. We fear significant, hazardous radioactive contamination remains at the Big Rock Point site, even today. Please see the 11/30/2006 report entitled "Say Yes to Michigan, Say No to the 'Plutonium State Park': Background on Big Rock Point Nuclear Power Plant." It documents over 3 million curies of radioactivity released into the environment by Big Rock Point, by its own admission, as long documented in documents in NRC's possession. These massive releases did not disappear into nothingness. Some of them could still contaminate the Big Rock Point site. Some of them may have migrated off-site, but are still nearby. The site and its environs should be carefully examined for lingering radioactive contamination. This includes the Big Rock Point subsurface, below the arbitrarily and capriciously shallow cut off point that NRC allowed then owner Consumers Energy, and its decommissioning contractor British Nuclear Fuels, Ltd., to call it a day at. As documented in the report, Big Rock Point had significant spills, leaks, and operational radioactivity releases, that were never adequately cleaned up, far from it, even though decommissioning was declared finished in 2006, and NRC even has gone so far as to release the site for unrestricted use.

In short, these sites are like crime scenes. Forensic investigation is called for. Lingering contamination must be completely removed.

Attachments

1 to 3

4 to 6

7 to 9

10 to 12

13 to 15

16 to 18

19 to 21

22 to 23

11 30 06 Big Rock backgrounder 2 27 2007.doc - bigrockbackgrounder272007

CONSUMERS POWER COMPANY

CONSUMERS POWER COMPANY

X	Inspectors find cooling system flaw at plant		KG	05/09/1989 B,004:1
	Consumers threatens court over Midland plant plan		KG	05/03/1989 E,001:4
	James River plan off list of Consumers plants		KG	05/02/1989 B,006:1
	Hot summer could mean brownouts		KG	05/01/1989 B,008:1
	State may block Palisades sale		KG	03/30/1989 A,001:4
	Consumers seeks Palisades sale		KG	03/16/1989 B,012:1
	Fishermen like fish kills better than fish net		KG	03/09/1989 B,011:1
	Critics say PSC ruling unfair		KG	02/01/1989 B,005:3
	Power users face increase		KG	01/31/1989 A,001:1
	Consumers fined for safety problem		KG	01/26/1989 B,014:3
	Revived: Deciding when to resume dividends		KG	01/25/1989 B,006:1
	Palisades: a view from the inside	*	KG	01/22/1989 H,001:1
	Problems at N-plant blamed on sloppiness		KG	01/13/1989 B,001:3
	Consumers pays $150,000 fine		KG	01/09/1989 B,005:1
	Allegan hills hide gas to burn on cold nights		KG	01/05/1989 B,005:1
	Consumers faces Palisades fine		KG	01/04/1989 B,006:1
	Palisades Nuclear Plant is back on line		KG	12/28/1988 E,001:1
	Palisades among plants receiving counterfeit parts		KG	12/21/1988 B,001:5
	Consumers appoints three district managers	*	KG	12/16/1988 B,012:1
	Palisades down again		KG	12/06/1988 B,001:4
	Palisades plant is back online after refueling ...		KG	12/02/1988 B,004:1
	Fish barrier isn't likely to end feud at plant	*	KG	11/27/1988 G,004:1
	Utility honors its life-saver	*	KG	11/21/1988 B,001:1
	Sparks fly over blackout repairs		KG	11/18/1988 B,001:1
X	Radiation hits Palisades crew		KG	11/15/1988 A,001:3
	Kelley blasts plan to build fish net		KG	11/08/1988 E,003:1
	Power companies agree to install net to protect		KG	10/28/1988 B,005:3
	They solved mystery of discontented cows	*	KG	09/28/1988 A,001:4
	Grades better at Palisades		KG	09/13/1988 B,008:1
	Pump plant costly with or without fish kills		KG	09/09/1988 B,006:4
	Opinion: Caution needed as we consider energy need		KG	08/30/1988 A,006:1
	Grades for Palisades improved		KG	08/26/1988 E,003:5
	Heat could validate power company claim	*	KG	08/24/1988 A,001:3
	Utility alters Palisades deal		KG	08/15/1988 B,005:1
	Palisades shut down until December		KG	08/11/1988 B,012:3
	Old problem returns to shut down Palisades N-plant		KG	08/09/1988 E,001:1
	Consumers Power chief comes home with upbeat words	*	KG	07/06/1988 B,006:4
	Nuke plant safety check includes 2 in Michigan		KG	06/29/1988 E,003:1
	Consumers Power may build resort		KG	06/20/1988 B,005:5
	Palisades closer to sale		KG	06/14/1988 B,008:1
	$400,000 given man who stepped in hole		KG	06/02/1988 B,003:1
	Palisades report by Nader group generating heat	*	KG	06/02/1988 B,014:1
	Cook plant review favorable		KG	06/02/1988 B,014:2
	Midland plant generating controversy, not energy	*	KG	05/19/1988 B,014:1
	Palisades has new manager with training emphasis	*	KG	04/23/1988 A,003:4
	Palisades manager appointed		KG	04/15/1988 B,006:4
	New Palisades manager appointment is expected	*	KG	04/11/1988 B,005:1
	Kalamazoo native heads new cadre at Consumers	*	KG	04/07/1988 B,003:1
	Manager of Palisades plant moves up at Consumers	*	KG	04/07/1988 B,012:1
	Electric customers speak against Consumers plan		KG	03/31/1988 B,012:1
	Utility OKs buying cogenerated power		KG	03/22/1988 B,001:2
	County COG continues in Midland case		KG	03/11/1988 B,001:5
	New utility president has local roots	*	KG	03/09/1988 A,001:1
	Changes at the top for energy firm		KG	03/08/1988 B,006:3
	Paper plant project prompts power play		KG	03/07/1988 B,001:1
	Nuke disaster test turns 'what if?' into		KG	02/22/1988 B,001:1
	...at Palisades, findings 'good news'	*	KG	02/09/1988 C,001:1
	Palisades back to full power		KG	01/30/1988 A,003:3
	Plumbing woes don't deter Palisades		KG	01/27/1988 B,005:1
	Correction		KG	01/18/1988 B,005:3
	Consumers Power Co.'s parent company to move		KG	01/17/1988 F,009:1
	MUCC president praises Ludington net rejection		KG	01/09/1988 A,010:2
	State rejects plan to save fish from plant		KG	01/06/1988 B,005:1
	Palisades plant sold	*	KG	01/01/1988 E,001:1
	Panel fuels rate hike bid for Midland nuke plant		KG	12/31/1987 A,001:1
	Delay, but Palisades plant deal is still 'go'		KG	12/30/1987 B,001:6
	Consumers Power strategy is no secret: diversity		KG	12/20/1987 I,002:1
	Utility's plan to save fish nets skepticism		KG	12/18/1987 B,008:4
	Leak shuts down Palisades plant		KG	12/05/1987 A,003:3
	Anti-nuclear plant group points to problems		KG	11/11/1987 B,011:1
	Utilities sued over fish kills		KG	11/10/1987 A,001:6

CONSUMERS POWER COMPANY

Consumers wants rate case expedited		KG	11/06/1987 B,006:1
Nuke no more	*	KG	10/11/1987 E,001:5
Palisades plant sale fueling debate over rates		KG	10/09/1987 A,001:1
Palisades sold for $550 million	*	KG	10/07/1987 A,001:4
Utility: Palisades will improve		KG	10/02/1987 D,001:3
NRC to critique Palisades plant		KG	09/30/1987 E,001:3
Consumers Power plants meet air standards		KG	09/10/1987 B,016:3
Palisades report called 'old'		KG	09/08/1987 B,005:4
Consumers names managers		KG	08/31/1987 B,006:1
Passing on Palisades costs opposed		KG	08/27/1987 B,011:3
Consumers Power gets bank help to convert		KG	08/20/1987 B,014:2
Consumers sets new staff, buys back stock		KG	08/14/1987 B,004:3
Ruling on power plant fish kills lures praise		KG	08/13/1987 B,011:1
Palisades gets credit for decisive action		KG	08/12/1987 A,001:1
Consumers Power told to end plant's fish kills		KG	08/12/1987 A,008:1
Consumers Power appeals refund order from PSC		KG	08/05/1987 E,003:1
PSC orders Consumers Power to lower rates		KG	08/04/1987 B,007:1
Consumers Power pulls plug on local headquarters	*	KG	07/30/1987 A,001:4
Consumers Power Co. faces state cynicism		KG	07/26/1987 E,008:1
Consumers Power will cut back staff by 450		KG	07/20/1987 B,006:1
Consumers Power rebate ordered		KG	07/17/1987 B,007:1
Palisades called 'as good as ever'		KG	07/06/1987 A,001:1
Editorial: Consumers' wise course		KG	06/16/1987 A,006:1
Cartoon: Land sales to Michigan	*	KG	06/15/1987 A,006:1
Utility agrees to discuss land sale and fish kills	*	KG	06/12/1987 A,005:1
New Palisades plant manager digs in	*	KG	06/07/1987 E,001:1
Hoffman is central Michigan native		KG	06/07/1987 E,002:3
Citizens Lobby warns bill to boost electric rates		KG	06/02/1987 B,007:1
Consumers refuses to sell state 13,000 acres		KG	05/26/1987 A,001:1
Consumers Power has new parent firm		KG	05/26/1987 B,006:3
Fish kills at Ludington plant prompt gov't. action		KG	05/20/1987 E,001:1
Consumers Power rate hike not bright idea		KG	05/14/1987 A,001:1
Hubbard re-elected to Consumers Power Co. board	*	KG	05/07/1987 B,015:1
McCormick: Restructuring of utility will be done		KG	05/07/1987 B,015:5
Consumers Power will reorganize		KG	05/06/1987 A,001:5
Palisades gets new manager	*	KG	04/30/1987 B,001:1
Finally, help for entering 'the real world'		KG	04/29/1987 C,001:5
Palisades nuclear plant gets a restart		KG	04/20/1987 B,006:1
Nuclear plant hopes tours will make it less scary	*	KG	04/17/1987 C,001:1
Palisades plant could restart in 'several days'		KG	04/14/1987 B,006:1
Palisades plant faces warm water woes		KG	04/08/1987 E,001:2
Palisades plant starts up again		KG	04/06/1987 B,006:1
Consumers Power unsure when Palisades will restart		KG	04/02/1987 B,013:3
Consumers Power reaches settlement		KG	04/01/1987 E,001:5
Faulty gauge won't hinder nuke start-up		KG	03/30/1987 B,001:1
Palisades readings still unclear		KG	03/29/1987 B,001:6
Puzzling readings stall Palisades startup		KG	03/28/1987 A,001:1
Palisades gets NRC go-ahead		KG	03/27/1987 B,001:4
Bonuses paid in Consumers deal		KG	03/24/1987 E,003:1
'Bad attitude' at Consumers blamed for Palisades		KG	03/21/1987 A,001:1
Consumers Power wants to restructure		KG	02/27/1987 E,001:4
$500,000 stolen from Consumers Power		KG	02/24/1987 E,001:3
PSC rejects rate formula urged by Consumers Power		KG	02/19/1987 B,013:1
Palisades ready for restart if NRC gives approval	*	KG	02/15/1987 A,001:2
Utility lines up Midland partners		KG	02/05/1987 B,001:4
Midland, Consumers Power feeling good about pact		KG	01/29/1987 B,013:1
Critics worry about Midland power cost	*	KG	01/28/1987 E,001:1
Consumers Power, Dow reach agreement		KG	01/27/1987 E,001:5
Palisades plant restart debated		KG	01/15/1987 B,013:4
Newspapers lose bid for access		KG	01/12/1987 B,005:2
Consumers Power rebounds		KG	01/01/1987 C,001:5
U.S. buys Consumers Power land		KG	01/01/1987 C,003:1
Consumers Power is top-rated by Forbes		KG	12/30/1986 A,001:6
Environmental group says Midland elec. unnecessary		KG	12/11/1986 B,015:1
Nuke shutdown plan increases utility bill		KG	12/03/1986 E,001:1
PSC's Midland decision draws little reaction		KG	10/23/1986 B,017:1
Midland switch gets PSC support		KG	10/22/1986 A,001:5
Consumers Power: the comeback trail?		KG	10/07/1986 E,002:1
Kelley says he could support Consumer Power-Dow		KG	09/23/1986 E,003:1
Midland pact could turn liability into plus		KG	09/18/1986 B,015:3
Consumers, Dow reach accord		KG	09/17/1986 A,001:2

CONSUMERS POWER COMPANY

Palisades gets high marks in 'disaster' test		KG	09/16/1986 A,001:5
Utility threatens to close plant		KG	09/11/1986 B,015:1
Consumers Power to refund $27 million		KG	09/09/1986 B,009:1
State sues utilities over plant fish kill		KG	09/04/1986 B,017:1
Group questions Midland plant need		KG	08/28/1986 E,001:4
Palisades drug testing OK'd in federal court		KG	08/21/1986 E,001:5
Mock Palisades disaster tests response	*	KG	08/20/1986 A,001:1
NRC to test plant's disaster plan	*	KG	08/17/1986 B,001:1
State's economy tied to rate hike, aide says	*	KG	08/12/1986 B,001:1
Utility rate dispute moves to appeals court		KG	07/21/1986 B,006:1
$50,000 fine levied against Palisades		KG	07/10/1986 A,001:1
NRC hits Palisades repair procedures		KG	07/08/1986 E,001:1
Utility ready to fund engineering for conversion		KG	07/08/1986 E,004:1
Palisades shutdown extended		KG	07/04/1986 B,002:1
Utility disputes attorney general's plant study		KG	07/01/1986 B,007:4
Report hits management of Palisades nuclear plant		KG	06/22/1986 A,001:5
Consumers Power still wants to convert nuke plant		KG	06/19/1986 B,014:1
PSC delays nuclear plant conversion		KG	06/17/1986 A,001:1
Kelley, utility battling over Midland plant again		KG	06/06/1986 B,005:1
Reports come out against nuke plant conversion		KG	06/05/1986 B,011:1
Palisades shutdown sparks NRC check		KG	05/23/1986 A,001:1
Midland plant conversion backed		KG	05/16/1986 A,001:4
Sides taken in nuke plant conversion		KG	05/15/1986 D,013:1
Consumers begins feasibility study		KG	04/17/1986 E,001:4
Top lawmakers endorse plan for Midland plant		KG	04/16/1986 E,002:1
For Consumers Power, the easy part is over		KG	04/16/1986 E,003:1
Citizens Lobby head: Consumers' Midland option		KG	04/14/1986 B,006:1
Utility requests rate hike for Midland conversion		KG	04/09/1986 E,001:1
Utility's Midland plan faces battle	*	KG	04/08/1986 A,001:1
Much of Midland would be abandoned	*	KG	04/08/1986 E,001:1
Midland rescue to cost $434 million		KG	04/07/1986 A,001:1
Editorial: Finding the key to Midland revival		KG	03/30/1986 A,018:1
Experts expect Consumers to seek gas conversion		KG	03/27/1986 B,015:3
Consumers Power's drug testing begins		KG	03/16/1986 E,009:1
Palisades shuts down again		KG	03/13/1986 B,015:1
Union contests utility drug-test plan		KG	03/13/1986 B,015:3
Utility boosts economy, exec says	*	KG	03/06/1986 B,002:1
Palisades resumes operation, gets mixed report		KG	03/05/1986 B,013:1
Consumers Power seeks to redeem more bonds		KG	03/05/1986 B,014:1
Palisades wins safety award		KG	03/02/1986 E,003:1
Palisades wins safety award		KG	03/02/1986 E,003:1
Energy program to generate help		KG	02/26/1986 B,002:1
Palisades start-up delayed because of hydrogen		KG	02/18/1986 B,006:2
Editorial: Consumers should push on at Midland		KG	02/09/1986 A,014:1
April report holds key to Consumers' Midland plant	*	KG	02/06/1986 A,001:1
Judge OKs $30-million utility refund		KG	02/06/1986 B,012:2
Power company's 'Eyes & Ears' will be watching	*	KG	02/01/1986 A,004:1
Consumers hopes reduced power rates will spark		KG	01/22/1986 A,001:3
Street lights studied		KG	01/21/1986 B,003:3
Local firms spurn request for streetlight study		KG	01/19/1986 B,001:6
For a switch, Consumers is selling to Canadians		KG	01/12/1986 E,004:1
Consumers may trade ownership in nuclear plant		KG	01/11/1986 A,010:4
Palisades gets a tuneup	*	KG	12/29/1985 G,001:1
City wants local help in street-light study		KG	12/24/1985 B,003:1
City hopes to save money by taking over system		KG	12/20/1985 B,001:1
Consumers cuts planned rate increase		KG	12/19/1985 B,012:1
Utility to swallow Midland loss		KG	12/10/1985 C,009:1
Beach washout no threat to Palisades power plant		KG	12/08/1985 B,008:1
Official says Consumers plans to reduce request		KG	12/07/1985 A,010:1
Consumers Power natural gas users getting refunds		KG	12/04/1985 B,013:1
Palisades nuclear plant shut down for refueling		KG	12/02/1985 B,008:1
Closing sought of 'largest fish killer on lakes'		KG	11/22/1985 B,004:4
Utility's gas customers may receive refund		KG	11/21/1985 B,014:1
Midland plant may convert to gas		KG	11/10/1985 E,011:1
Consumers Power on threshold of a new era	*	KG	11/03/1985 D,001:1
Citizens group files suit over surcharges		KG	11/02/1985 A,010:1
Kelley still trying to overturn rate hike		KG	11/02/1985 A,010:3
New utility head will move quickly to make changes		KG	11/01/1985 B,007:1
Nuke plant to shut down temporarily		KG	10/27/1985 E,001:1
Palisades officials say exodus not hurting	*	KG	10/27/1985 E,001:1
More impressive than atom splitting is security	*	KG	10/27/1985 E,001:3

CONSUMERS POWER COMPANY

Consumers phone service for deaf		KG	10/17/1985 C,003:3
PSC nixes Midland nuke study		KG	10/15/1985 B,011:1
Consumers to take a new look at Midland plant		KG	10/13/1985 A,001:2
Consumers begins dismantling nuke plant		KG	10/01/1985 B,007:1
"It's going to be tight"	*	KG	09/30/1985 C,007:1
New Consumers head hopes for better relations	*	KG	09/27/1985 E,003:1
Detroit utility executive to head Consumers Power		KG	09/25/1985 A,001:3
Blanchard pulls plug on PSC head		KG	09/10/1985 A,001:1
Court will not unseal papers		KG	09/05/1985 B,013:2
Closer monitoring ordered for Palisades plant		KG	08/31/1985 A,010:4
Consumers Power to give refunds		KG	08/28/1985 B,007:1
Consumers Power rate hike wins court hurdle		KG	08/24/1985 A,001:4
Consumers must refund		KG	08/21/1985 E,001:5
Judge to decide quickly on rate hike		KG	08/16/1985 E,001:1
Palisades to stage 'accident'		KG	08/13/1985 B,001:3
Palisades A-plant shut down		KG	08/13/1985 E,001:4
SEC probes Consumers Power Co.		KG	08/02/1985 B,006:1
Sible calls it quits at Consumers	*	KG	07/27/1985 A,003:1
Attorney General files suit to block rate boost		KG	07/25/1985 B,015:3
PSC grants rate hike to Consumers		KG	07/24/1985 E,001:1
Utility could be forced into bankruptcy		KG	07/19/1985 E,001:3
One year later: Midland plant controversy	*	KG	07/14/1985 E,001:1
Lessons of Midland diverse		KG	07/14/1985 E,002:5
PSC alters Consumers Power's electric rates		KG	07/12/1985 E,001:3
PSC staff endorses rate hike		KG	06/27/1985 B,015:1
Utility gives refund, seeks rate-hike OK		KG	06/21/1985 B,008:2
Selby projects state's future power needs	*	KG	06/13/1985 B,002:1
Consumers Power cuts staff, regions		KG	06/11/1985 E,001:1
PSC short-circuits Consumers rate hike		KG	06/07/1985 E,001:5
Utility closer to $99 million hike		KG	06/04/1985 A,001:3
Consumers Power Co. shuffles managers		KG	06/02/1985 E,007:1
Consumers Power reaches agreement with creditors		KG	05/31/1985 E,001:1
Utility readies deals on debt		KG	05/26/1985 G,008:5
Editorial: Coal to be the fuel of Midland's future		KG	05/21/1985 A,006:1
Selby: 50% chance one unit of nuke plant finished		KG	05/16/1985 B,015:1
Consumers Power begins crackdown on rip-off scheme		KG	04/28/1985 G,001:1
PSC chief explains rate hike, stable utility bills	*	KG	04/27/1985 A,003:1
Utility directors vote to make 'diligent effort'		KG	04/18/1985 B,015:1
Consumers Power expected to OK bank repayments		KG	04/17/1985 B,007:1
Palisades breaks record		KG	04/14/1985 F,003:1
Consumers Power ready to assist customers	*	KG	04/13/1985 A,003:3
A better way to pay power plant bills		KG	04/12/1985 A,006:1
Utility hopes to lure Saturn by offering cut		KG	04/10/1985 B,013:1
Editorial: Rate hike a step back from the brink		KG	04/09/1985 A,008:1
Utility, creditors close in on refinancing		KG	04/09/1985 B,008:2
Consumers selling 450 acres of scenic forest land		KG	04/03/1985 B,005:2
PSC attaches conditions to 6.4 percent hike		KG	03/30/1985 A,001:3
Consumers to cut gas price		KG	03/26/1985 B,005:1
Atomic energy ranks second as electrical source		KG	03/26/1985 B,007:4
Consumers will live, Selby says		KG	03/23/1985 A,011:3
Consumers president to receive $120,000		KG	03/09/1985 A,011:4
Selby's resignation sparks call for purge	*	KG	03/07/1985 B,013:1
Official says $30 million Consumer dividend		KG	03/02/1985 A,002:5
Consumers hopes to sell Grand Rapids plant		KG	03/01/1985 B,007:1
Consumers customers said facing costly service		KG	02/28/1985 B,008:1
Consumers Power says it will appeal assessment		KG	02/27/1985 B,007:5
Nuke plant shutdown raises tax questions		KG	02/19/1985 B,005:3
PSC staff calls for rejection of utility rate hike		KG	02/16/1985 A,001:1
Newspaper files suit seeking access to documents		KG	02/15/1985 B,007:1
Program to aid low-income people renewed here	*	KG	02/08/1985 B,003:1
Consumers will attempt to block class action suit		KG	02/08/1985 B,006:1
Utility proposes charging for facilites before		KG	02/08/1985 B,007:1
Palisades' emergency plan wins federal OK		KG	01/27/1985 D,012:3
Release of documents requested		KG	01/24/1985 B,013:1
Save Midland plant, says task force chief		KG	01/18/1985 B,006:1
Palisades nuclear plant sets production record		KG	01/13/1985 G,007:1
Consumers resumes talks about debt repayment		KG	01/10/1985 B,011:3
Consumers loan pegged to rate hike		KG	01/04/1985 B,004:3
Bechtel breaks silence on Midland		KG	12/27/1984 B,011:1
Midland-plant closing top news story		KG	12/23/1984 B,010:3
Shut-off protection for elderly		KG	12/20/1984 B,005:2

CONSUMERS POWER COMPANY

Editorial: Kelley should back off on rate issue		KG	12/13/1984 A,014:1
Consumers has ally on rates		KG	12/12/1984 C,010:4
Consumers needs no rate hike, Kelley told		KG	12/10/1984 A,001:1
Consumers may limit customer use of energy		KG	12/06/1984 A,001:1
Consumers pays dividend		KG	12/06/1984 B,017:2
'Headhunters' find fertile ground at Consumers	*	KG	12/02/1984 F,001:1
$2 increase in monthly bill could help save CP		KG	12/01/1984 A,011:1
Consumers Power request undercut		KG	11/30/1984 A,002:1
Banks' cooperation needed, CP head says	*	KG	11/29/1984 C,015:1
Utility urged to sell gas exploration unit		KG	11/29/1984 C,015:1
Consumers Power rate hike faces PSC challenge		KG	11/28/1984 D,011:1
Palisades gets Consumers' nuke operation	*	KG	11/27/1984 B,011:3
PSC chairman won't disqualify himself		KG	11/21/1984 B,009:1
Governor backs fast Consumers Power bailout		KG	11/20/1984 B,008:1
Coover raps firm's bid for rate hike	*	KG	11/15/1984 B,001:4
Consumers Power denies claim of defaulting loans		KG	11/10/1984 A,003:1
Midland nuclear plant still alive		KG	11/07/1984 B,011:1
Consumers hopes to find nuke plant buyer by 1987		KG	11/06/1984 B,007:4
Consumers Power continues rate hike bill		KG	11/01/1984 D,012:3
Trial papers secrecy denied		KG	10/30/1984 B,005:4
Bechtel asks to close parts of Midland trial		KG	10/29/1984 C,005:1
PSC chairman getting pressure		KG	10/26/1984 B,005:5
Dow disavows official's statement on nuke case		KG	10/26/1984 B,007:1
Firms in Midland plant suit may settle		KG	10/25/1984 B,011:1
Newspaper bid to have Midland documents revealed		KG	10/25/1984 B,011:1
Consumers Power supplier reaches costly settlement		KG	10/25/1984 B,011:4
Palisades to get new manager		KG	10/21/1984 G,003:1
Papers in Midland trial reveal working of firms		KG	10/21/1984 G,010:4
Bankruptcy would not offer protection from hikes		KG	10/18/1984 B,010:1
Consumers Power ranks high in fuel efficiency		KG	10/18/1984 B,015:1
GM agrees to help utility by paying bills early		KG	10/16/1984 B,005:5
Completion schedules were public knowledge		KG	10/12/1984 B,005:1
Utility asks emergency rate hike by February		KG	10/12/1984 B,005:1
Attorneys say Consumers Power failed for years		KG	10/11/1984 B,010:1
Blanchard aid says governor agrees with Kelley		KG	10/10/1984 B,009:2
Judge stays on case; opening arguments begin		KG	10/10/1984 B,009:2
Billions at stake in Midland Nuclear trial		KG	10/09/1984 B,005:3
Dow, Consumers lawsuit to begin		KG	10/07/1984 G,009:1
Kelley consultant suggests plants be upgraded		KG	10/05/1984 B,004:1
Rate-hike talks said to be in offing		KG	10/04/1984 B,010:1
Ex-employee may best deal with utility woes		KG	10/04/1984 B,010:5
Consumers Power scraps dividend		KG	10/04/1984 B,014:1
Kelley wants PSC chairman excluded from hearings		KG	10/03/1984 A,001:5
Consumers Power sues city for $70,027		KG	09/30/1984 D,001:3
Dow asks high court to postpone trial start		KG	09/30/1984 D,013:6
PSC hearing officer speeds Consumers Power hearing		KG	09/28/1984 B,005:1
PSC staff urges speedup in ruling on rate request		KG	09/27/1984 B,011:1
Final financing step by utility should assure		KG	09/25/1984 B,005:1
Dow suit start ordered Oct. 9; newspapers' request		KG	09/24/1984 C,006:1
Consumers Power president tells governor stalled		KG	09/21/1984 B,005:1
Return to bargaining table still uncertain		KG	09/20/1984 B,010:1
Utility considers reduction in request		KG	09/19/1984 B,013:6
Utility cutting salaries, wages and benefits		KG	09/18/1984 B,008:3
State panels to begin probing Consumers Power		KG	09/12/1984 B,009:1
Judge OKs account in place of bond		KG	09/09/1984 D,015:1
Critics angered by plans to save Midland project		KG	09/08/1984 A,001:1
Plaisades plant resumes service		KG	09/07/1984 B,004:1
Consumers has not 'abandoned' Midland plant	*	KG	09/06/1984 B,001:5
PSC chairman urges utility to cut expenses		KG	09/06/1984 B,010:1
Utility urged to adopt cost-cutting measures		KG	09/05/1984 B,009:1
Nuclear regulatory panel OKs request to expand		KG	09/05/1984 B,009:3
Consumers Power rates seen as low		KG	09/05/1984 B,009:5
Talent Drain		KG	08/29/1984 E,004:2
Wood-burning plant may signal new trend		KG	08/28/1984 B,005:5
No forced testimony by ex-PSC head		KG	08/27/1984 B,005:3
Consumers Power, gas supplier strike deal		KG	08/23/1984 B,010:1
Ex-PSC chairman's role with utility investigated		KG	08/23/1984 B,010:1
Dow asks appellate court to delay suit against		KG	08/23/1984 B,010:5
Appellate court to hear newspapers' request		KG	08/22/1984 D,005:3
Information suggests Consumers Power knew		KG	08/22/1984 D,005:3
Plan ensures utility will provide gas		KG	08/21/1984 B,008:2

CONSUMERS POWER COMPANY

Contractor may become part of nuclear-plant suits		KG	08/20/1984 C,006:1
They're already cutting costs		KG	08/18/1984 A,006:2
Consumers Power gets rate hike		KG	08/17/1984 A,001:1
Consumers Power, Dow document-suppression case		KG	08/17/1984 B,006:1
Blanchard: Utility should get enough to run		KG	08/16/1984 B,011:1
Editorial: Midland editorial galled Consumers		KG	08/15/1984 A,007:1
Programs expanded		KG	08/14/1984 C,005:4
Judge won't forbid newspapers from publishing		KG	08/14/1984 C,005:5
Wall Street sees Consumers Power a prime candidate		KG	08/12/1984 A,001:5
Newspaper group will appeal judge's rejection		KG	08/09/1984 B,011:1
Bechtel attorney trying to keep list out of paper		KG	08/08/1984 B,009:1
Consumers Power, Dow lawyers in harsh exchange		KG	08/08/1984 B,009:1
Midland: Did they 'bet the company'?		KG	08/05/1984 A,001:3
Atom plant called victim of system		KG	08/05/1984 D,014:1
Edison succeeding where Consumers failed		KG	08/05/1984 G,005:3
Editorial: Consumers Power's monumental gall		KG	08/03/1984 A,006:1
Consumers Power changes needed, PSC official says		KG	08/03/1984 B,005:1
Utility's request would hike bills 35 percent		KG	08/02/1984 A,001:3
Consumers asks $3.5 billion to pay plant debt		KG	08/01/1984 A,001:1
Oct 1 trial set for massive Consumers, Dow lawsuit		KG	08/01/1984 B,009:1
Consumers Power asks increase in negotiators		KG	07/31/1984 B,008:3
Hearing on suit to provide public access		KG	07/28/1984 A,006:4
Energy secretary cancels Wednesday talks		KG	07/27/1984 B,005:1
Consumers profit down; effort to revive talks		KG	07/27/1984 B,006:1
Talks next week aimed at reviving nuclear plant		KG	07/26/1984 B,010:1
Consumers Power nears natural gas supply		KG	07/24/1984 B,005:1
Wanted: Nuclear engineers, technicians		KG	07/23/1984 B,005:1
Case bigger than one following Three Mile Island		KG	07/23/1984 B,005:5
Sealed: Judge in nuclear plant case locks up	*	KG	07/22/1984 A,001:2
Governor's staff eyes ways to assist Consumers		KG	07/21/1984 A,006:1
Kelley urges denial of rate request		KG	07/21/1984 A,006:4
Blanchard to ask for advance authority for PSC		KG	07/19/1984 B,009:1
Industries believed plant not necessary		KG	07/19/1984 B,009:1
Editorial: Consumers Power cuts cord to Midland		KG	07/18/1984 A,006:1
No immediate threat of bankruptcy		KG	07/18/1984 B,007:3
Recreation Center?		KG	07/18/1984 B,007:3
Congressmen rule out assistance		KG	07/18/1984 B,007:4
Consumers Power stock plummets to all-time low		KG	07/18/1984 B,009:5
Consumers abandons Midland nuclear plant	*	KG	07/17/1984 A,001:1
Economic cost -- $1 billion		KG	07/17/1984 A,001:1
Consequences of rush to use nuclear power	*	KG	07/17/1984 B,003:1
A chronology of major events		KG	07/17/1984 B,003:5
Nuclear plant deadline passes; talks continue		KG	07/16/1984 C,006:3
Consumers Power offers concessions		KG	07/14/1984 A,011:1
Negotiations continue over atom-plant fate		KG	07/13/1984 B,005:4
Better rates for industry are discussed		KG	07/13/1984 B,005:6
Editorial: Recall over Midland plant misdirected		KG	07/12/1984 A,008:1
Industrial customers turn tables on utility		KG	07/12/1984 B,010:1
Consumers Power rejects proposal		KG	07/11/1984 B,005:3
Consumers Power loses initiative		KG	07/09/1984 B,009:1
Industries still reacting to plan for Midland		KG	07/07/1984 A,006:1
Attorney general's call for gas-storage study		KG	07/06/1984 B,009:1
Industrial users preparing to pull plug on offer		KG	07/06/1984 B,009:1
Michigan regulators, politicians hold key		KG	07/06/1984 B,009:1
'Final offer' needs more support		KG	07/05/1984 B,006:4
Utility willing to swallow loss of $1.2 billion?		KG	07/03/1984 D,006:1
Nuclear-plant talks intense; negotiators		KG	06/30/1984 A,006:1
Utility stockholders left singing the blues		KG	06/29/1984 A,001:1
Consumers Power faces $101 million deficit		KG	06/28/1984 A,001:1
Editorial: Utility must give a little to save lot		KG	06/28/1984 A,012:1
Consumers Power sends 1,500 workers home		KG	06/28/1984 B,010:1
Attempt to recover $3.6 billion may be illegal		KG	06/28/1984 B,010:5
Midland shutdown ordered		KG	06/27/1984 A,001:2
Rejection of Consumers Power plan expected today		KG	06/26/1984 B,005:1
Kelley asked to save nuclear plant		KG	06/23/1984 A,006:1
Negotiators unlikely to accept 'final offer'		KG	06/21/1984 B,012:1
Blanchard's arbitration proposal 'too late'		KG	06/19/1984 B,005:3
Request to burn high-sulfur coal near Holland OK'd		KG	06/19/1984 B,005:3
Debate rages over power plant's use of high-sulfur		KG	06/18/1984 C,005:2
Nuke plant construction remains alive		KG	06/16/1984 A,001:1
Blanchard won't enter nuclear plant discussions		KG	06/15/1984 B,007:5

CONSUMERS POWER COMPANY

Utility prepares for Friday decision		KG	06/13/1984	B,009:3
Stage is set for abandoning nuclear plant		KG	06/12/1984	A,001:1
Consumers Power likely to reject PSC plan		KG	06/08/1984	B,005:1
Ending deadlock goal of PSC plan		KG	06/07/1984	B,010:1
Kelley sees no conflict in PSC official's role		KG	06/07/1984	B,010:2
Editorial: Midland negotiators must find solution		KG	06/03/1984	A,008:1
Consumers Power to fight order cutting bills		KG	06/02/1984	A,007:1
Negotiators still at odds over nuclear plant		KG	06/02/1984	A,007:3
Consultant hired by Kelley says rates may rise	*	KG	06/01/1984	B,004:3
After amnesty, utility to crack down on thieves		KG	05/27/1984	G,001:1
Midland Nuclear Plant talks sputter	*	KG	05/24/1984	B,010:1
Bechtel denies it ordered incorrect tests		KG	05/23/1984	B,008:1
Nuclear-plant talks continue; progress unlikely		KG	05/23/1984	B,008:1
Utility offering Midland cuts		KG	05/18/1984	A,001:5
Incentives to stop atom plant sweetened		KG	05/17/1984	A,001:1
'Peoplecare' gifts decrease this year		KG	05/17/1984	C,003:5
Utility industry begins drive to keep local firms		KG	05/17/1984	C,011:2
Kelley asks freeze on $47 million owed		KG	05/16/1984	C,005:1
Consumers reportedly got nuclear-plant funds		KG	05/14/1984	B,006:3
Midland-area leaders in Lansing to counter	*	KG	05/10/1984	B,011:1
Plan to complete nuclear plants offered		KG	05/09/1984	B,007:1
Charges against Consumers to be probed		KG	05/09/1984	B,007:2
Consumers shareholders stump for completion		KG	05/09/1984	B,007:5
Blanchard avoiding role in Midland plant crisis		KG	05/05/1984	A,006:1
Consumers Power not fearing audit		KG	05/05/1984	A,006:1
Plant's construction schedule reasonable		KG	05/04/1984	B,005:1
Consumers Power has new plan for locating problems		KG	05/02/1984	B,004:5
Banker says Consumers Power may not get some loans		KG	05/02/1984	B,011:1
NRC to question Consumer Power		KG	05/01/1984	B,011:1
Kelley, Selby discussing Midland		KG	05/01/1984	B,011:2
Solution may be close in nuclear-plant talks		KG	04/30/1984	C,007:4
Consumers Power rapped by attorney general		KG	04/29/1984	D,016:1
Uncertain future a real concern in Midland	*	KG	04/29/1984	D,016:3
NRC probes Dow charges of falsification of records		KG	04/27/1984	B,005:1
Midland nuclear plant wins narrow support		KG	04/26/1984	A,001:2
Viewpoint: Nuclear power should have a place	*	KG	04/26/1984	A,013:3
Michigan getting no guidance from others		KG	04/26/1984	B,010:1
Air Force to end simulated B-52 bombings		KG	04/26/1984	B,013:1
Consumer Power officials stump for Midland plant	*	KG	04/24/1984	B,007:1
Consumer Power official says short-run outlook OK		KG	04/19/1984	B,008:1
Antagonists: Longtime foes Kelley and Selby		KG	04/18/1984	B,007:1
Bankruptcy judge cannot raise rates		KG	04/17/1984	B,005:3
Selby says rate hike is 'alternative'	*	KG	04/17/1984	B,005:6
Consumers Power facing state audit over nuke plant		KG	04/16/1984	C,006:1
Consumers offers to desert plant		KG	04/13/1984	A,001:3
Selby: 'Bankruptcy is an option...'		KG	04/12/1984	A,001:3
Utility to increase rate-hike request	*	KG	04/11/1984	A,001:3
Consumers Power to finish one reactor		KG	04/10/1984	B,005:1
Midland plant's history		KG	04/10/1984	B,005:2
Stockholders may set nuclear plant's future		KG	04/09/1984	A,001:1
Deadline urged in negotiations on nuclear plant		KG	04/07/1984	A,006:1
PSC official pushes for coal-fired plant		KG	04/05/1984	A,001:3
Editorial: Consumers should give up at Midland		KG	04/01/1984	A,010:1
Utility looks at scaled-down plan		KG	03/30/1984	C,007:1
Consumers fights pressure to abandon plant		KG	03/29/1984	B,013:1
Consumers Power under fire to abandon nuke plant		KG	03/28/1984	B,010:1
State power report says Midland plant unneeded		KG	03/26/1984	A,001:1
State energy official says Midland nuclear plant		KG	03/16/1984	A,001:2
Nuclear plant fate to be negotiated		KG	03/15/1984	A,001:3
Power company calls plant boom to local economy		KG	03/04/1984	D,011:1
At least for now, Consumers Power among least cost		KG	02/19/1984	G,001:1
Kelley to Consumers: Halt Midland nuke plant		KG	01/20/1984	C,005:3
Editorial: Blown Fuse		KG	01/19/1984	A,006:1
Climax voters OK power franchise		KG	01/10/1984	D,001:1
Viewpoint: Perspective to Midland nuclear plant		KG	01/08/1984	A,005:1
Consumers to refund $23 million		KG	12/30/1983	A,001:3
Algerian gas shutoff cuts heat bills		KG	12/29/1983	A,001:1
Blanchard: Midland plant study group not needed		KG	12/21/1983	A,001:4
PSC examining possibility of Consumers bankruptcy	*	KG	12/19/1983	A,001:4
New plant to convert water's energy to electricity	*	KG	12/14/1983	A,003:1
New hydroelectric plant planned for Morrow Lake		KG	12/13/1983	A,001:4

CONSUMERS POWER COMPANY

Editorial: A jolt (Midland plant)		KG	12/11/1983 A,006:1
Consumers Power Co. to sell Morrow plant		KG	12/10/1983 A,003:1
Consumers Power set to lay off 24 in area		KG	12/08/1983 A,003:5
Consumers asks rate hike of $776 million		KG	11/19/1983 A,001:1
Editorial: Coal's cost		KG	11/16/1983 A,006:1
Utility wants to burn 'dirty coal'		KG	11/15/1983 B,003:2
Consumers ready to ask $500 million rate hike		KG	11/08/1983 B,003:1
Winter gas bill figures wrong		KG	11/05/1983 A,002:4
'Lifeline' surcharges rejected		KG	11/02/1983 B,003:1
Consumers loses money on Clinch River		KG	10/28/1983 B,003:1
Power firm disputes ranking on fuel bills		KG	10/23/1983 A,008:4
PCB-laced distribution equipment to be phased out	*	KG	10/01/1983 A,003:1
Average gas user will get $26 credit		KG	09/28/1983 A,001:1
Electrical 'stew' draws ingredients from all over		KG	09/21/1983 S,004:2
Nader group rates managers of state nuclear plants		KG	09/20/1983 B,003:1
Palisades receives good 'report card'		KG	09/17/1983 A,001:3
Palisades part of Green Beret security check		KG	09/13/1983 A,003:5
Linemen taught how to get on top of things	*	KG	09/04/1983 A,008:1
Consumers Power union in agreement		KG	09/02/1983 A,003:3
Strike deadline extended by Consumers Power union		KG	09/01/1983 A,003:5
Palisades n-plant record 'best'		KG	09/01/1983 A,011:1
Consumers Power readies for strike		KG	08/31/1983 B,006:1
Consumers Power seeking lower rates to help		KG	08/16/1983 B,003:1
Increasing electricity use boosting output		KG	08/15/1983 A,003:3
Consumer's plant called 'one of worst-managed'		KG	08/13/1983 A,002:5
Consumers may resume construction		KG	08/12/1983 B,005:1
Portage gas leak sealed		KG	08/09/1983 A,003:6
Auger hits gas main in Portage	*	KG	08/08/1983 A,003:1
History of Dow, Consumers relations - stormy		KG	07/23/1983 A,002:1
Consumers' rating threatened		KG	07/17/1983 G,006:1
Dow may come back, Consumers say		KG	07/16/1983 A,002:1
Analysts concerned, but bankruptcy unlikely		KG	07/15/1983 B,004:1
Dow deals severe blow to Consumers		KG	07/15/1983 B,004:1
Pact to lower fuel prices		KG	07/12/1983 C,007:1
Consumers 'optimistic'		KG	06/30/1983 B,005:5
Consumers announces stock sale		KG	06/22/1983 C,005:1
Customers may get refunds		KG	06/22/1983 D,003:2
Petition drive planned to block charges		KG	06/19/1983 A,005:1
NRC won't license Midland plant until sure is safe		KG	06/17/1983 B,005:1
Firms turning to oil may hike home gas costs		KG	06/08/1983 A,001:1
HO HUM, Portage voters stay away in droves		KG	06/01/1983 A,003:5
Few voters showing up in Portage		KG	05/31/1983 A,003:6
Portage to vote Tuesday on Consumers Power		KG	05/29/1983 A,003:2
Palisades 'critique' set Friday morning		KG	05/26/1983 E,001:2
Energy audits injuring businesses?		KG	05/20/1983 A,006:1
Morrow plant trash-to-electricity plan	*	KG	05/19/1983 A,003:1
Michigan Bell, Consumers react to rate hikes		KG	05/19/1983 B,003:1
Natural gas rates were region's lowest		KG	05/18/1983 A,001:1
Electric, phone bills will reflect rate hikes		KG	05/18/1983 A,001:3
U.S. energy panel rule won't affect Consumers		KG	05/17/1983 D,003:3
Teams to react to mock crisis at Palisades	*	KG	05/12/1983 D,001:2
Consumers high-wire crews making a major move	*	KG	05/03/1983 A,003:5
PeopleCare project aids 247 in area		KG	04/30/1983 A,006:1
PeopleCare is helping area needy		KG	04/28/1983 E,007:1
Consumers to make refund		KG	04/26/1983 B,003:1
Michigan construction unchanged		KG	04/21/1983 A,011:1
Editorial: Midland plant: Up, up and delay		KG	04/20/1983 A,004:1
Utilities may pay for fish kills at Ludington		KG	04/16/1983 A,002:2
Electric bills could rise 30 percent		KG	04/13/1983 C,005:4
Consumers says price rising on nuclear plant		KG	04/12/1983 B,002:1
PSC grants Consumers $16.7 million increase		KG	04/12/1983 D,004:1
Consumers Power to ask for major boost in rates		KG	04/10/1983 D,012:1
Election May 31 on power firm franchise		KG	03/30/1983 A,010:5
Utility shareholders schedule vote to unite		KG	03/28/1983 C,009:1
Consumers helps pay for pro-nuclear campaign		KG	03/23/1983 A,001:2
Agreement will save average Consumers customer $60		KG	03/18/1983 B,003:3
Palisades warned to test part		KG	03/12/1983 A,001:4
Consumers to delay hike for Algerian gas		KG	03/05/1983 A,001:3
State may bar delivery of high price gas		KG	02/24/1983 A,001:5
Natural gas contract decision anticipated		KG	02/23/1983 B,003:5
$5 million price tag on Morrow Lake	*	KG	02/10/1983 A,004:1

CONSUMERS POWER COMPANY

Kelley eyes appeal of purchased power ruling		KG	02/10/1983 E,003:1
Consumers Power seeks buyer for Morrow Lake		KG	02/04/1983 A,001:1
Panel freezes part of utility firms' rates		KG	01/31/1983 D,006:5
Power firm to fight gas price increase		KG	01/29/1983 A,003:1
Consumers bonds downrated, Midland plant blamed		KG	01/22/1983 A,002:5
Huge gas price bid affects Consumers		KG	01/15/1983 A,002:1
Museum center's journey begins	*	KG	01/04/1983 D,001:1
Gas customers to get $57.5 million		KG	12/21/1982 B,003:1
Pressure mounting to reimpose controls on prices		KG	12/19/1982 A,004:1
Low-income people won't be left in the cold		KG	12/14/1982 A,006:3
Comstock Park couple loses battle with Consumers		KG	12/08/1982 D,004:3
Palisades nuclear plant safety systems need		KG	12/06/1982 D,003:1
Consumers Power turns off program on heating bill		KG	12/05/1982 A,003:5
Cost of gas heat to rise; how much is uncertain	*	KG	11/28/1982 G,001:1
Electric rates will drop a bit		KG	11/24/1982 A,007:1
Consumers 'sells' building to South Haven museum	*	KG	11/21/1982 B,009:1
Gas line which failed tests repaired		KG	11/16/1982 D,010:1
South Haven maritime museum may get visitor's ctr.		KG	11/02/1982 D,001:3
Palisades praised for safety record by NRC		KG	10/29/1982 A,001:5
Federal action blocks Algerian gas heating hikes		KG	10/29/1982 A,003:1
Consumers electric rates to rise		KG	10/26/1982 B,005:4
Plant shutdown jolts Comstock	*	KG	09/29/1982 A,001:3
Consumers Power cool to air conditioner salesman		KG	08/29/1982 B,012:1
Consumer Power uses credits, pays no tax on income		KG	08/22/1982 G,003:1
Nuclear safety ratings put Palisades below average		KG	08/19/1982 D,007:1
Consumers Power has a safe year		KG	08/16/1982 A,008:2
Power firm sets $500 reward for information		KG	08/02/1982 A,003:5
Consumers gets OK to lower bills in August		KG	07/31/1982 A,003:5
Citizens' group trying to block expensive gas		KG	07/04/1982 F,001:1
Consumers Power engineer earns patent		KG	06/27/1982 G,006:1
Need for taller power poles delays work on bridge		KG	06/19/1982 A,003:5
Consumers cleared in suit		KG	06/15/1982 C,009:5
Kelley sues to halt Consumers hike		KG	06/12/1982 A,002:3
Morrow power plant to close	*	KG	06/02/1982 A,003:2
PSC ruling will trim June residential elec. bills		KG	05/27/1982 A,003:1
Consumers has 13 'hydros'	*	KG	05/16/1982 B,001:4
Consumers Power expansion 'stops' with Midland		KG	05/16/1982 B,005:1
Consumers to pay $16,000 NRC fine		KG	05/14/1982 B,003:1
PSC approves rate increase in electricity		KG	05/13/1982 B,005:1
Palisades safety improvement eyed		KG	05/11/1982 B,007:1
Nuclear watchdog says Palisades' safety better		KG	05/08/1982 A,002:1
Palisades down, and rates up		KG	04/28/1982 A,001:6
NRC gives Consumers low grades		KG	04/27/1982 C,007:2
Radioactivity tests show little effect		KG	04/18/1982 B,003:1
Palisades nuclear plant gets "improved" rating		KG	04/14/1982 D,011:1
Electric rates are adjusted		KG	03/31/1982 D,002:2
Man files suit in explosion at Palisades plant		KG	03/25/1982 D,001:5
Generator tube leak shuts down Palisades plant		KG	03/24/1982 C,008:1
Kelley charges Consumers with waste		KG	03/19/1982 A,001:1
Official asks for "realistic" utility regulations	*	KG	03/10/1982 A,003:1
Editorial: For $10, Consumers Power might save you	*	KG	03/05/1982 A,004:1
Palisades starts service		KG	03/05/1982 D,003:6
Palisades holds emergency drill		KG	02/23/1982 A,009:3
Electric rates in Kalamazoo to rise in March		KG	02/18/1982 A,001:1
Nuclear plant has NRC approval		KG	02/17/1982 B,003:2
Repairs continuing at Palisades		KG	02/16/1982 B,003:3
Palisades could restart operation in two weeks	*	KG	02/09/1982 D,001:1
Hurt worker: 'Right place, wrong time'		KG	02/08/1982 A,003:1
Consumers Power hoping to hurry Palisades restart		KG	02/06/1982 B,012:1
Palisades facing long shutdown	*	KG	02/05/1982 A,001:3
Explosion in Palisades generator injures 1		KG	02/04/1982 A,001:4
Palisades' neighbors get emergency info		KG	02/03/1982 D,001:5
Consumers Power earnings off almost 25%		KG	01/29/1982 C,005:5
Palisades siren system to sound off		KG	01/28/1982 A,001:3
Court upholds bond sale		KG	01/27/1982 D,012:1
Consumers wins rate hike OK on PSC split vote		KG	01/26/1982 B,003:1
Proposed fine would set a record		KG	01/25/1982 A,003:5
Consumers atomic plants set record		KG	01/23/1982 A,003:4
Palisades's nuclear warning system to be tested		KG	01/17/1982 B,008:1
Nuclear plant costs up by $290 million		KG	01/07/1982 B,003:1
Consumers accused of deception		KG	12/29/1981 B,003:1

CONSUMERS POWER COMPANY

Consumers encourages retirement		KG	12/27/1981 G,012:1
Consumers Power electric bills to drop next month		KG	12/23/1981 D,003:4
Utility plans carefully for winter		KG	12/20/1981 G,001:6
No more gas cost cuts expected from utility		KG	12/16/1981 A,011:3
Energy in motion	*	KG	12/10/1981 A,014:6
Paw Paw family sues Consumers Power Co.		KG	12/05/1981 A,010:1
December electric rate to rise for customers		KG	12/03/1981 B,006:1
Editorial: Consumer Power misled public and press		KG	11/18/1981 A,006:1
Viewpoint: Consumers Power caught in deception	*	KG	11/18/1981 A,007:1
Consumers Power halts work, hits attorney general		KG	11/18/1981 B,009:3
Kelley hits Consumers letter writing tactics		KG	11/16/1981 D,011:2
Consumers Power stock on sale		KG	11/13/1981 C,006:5
Shot-out insulators plague electric utility		KG	11/11/1981 B,007:1
Second phase of Palisades warning system	*	KG	11/09/1981 C,007:1
Palisades shutdown extended		KG	11/07/1981 A,002:5
Palisades outage extended		KG	10/28/1981 C,003:5
Consumers Power earnings off 3.4%		KG	10/23/1981 C,007:5
Consumers Power says some gas bills to be reduced		KG	10/22/1981 A,004:1
Delay seen in hike in natural gas costs		KG	10/20/1981 A,001:3
Consumers Power set to sell Midland bonds		KG	10/17/1981 A,002:1
Supreme Court OKS bond sales by utilities		KG	10/16/1981 B,011:1
Utility hails home energy audits	*	KG	10/11/1981 G,001:1
Electric bills are on the rise		KG	10/02/1981 B,009:1
New Consumers power plant in Ottawa Co. open		KG	10/01/1981 D,001:1
'Lifeline' electric rates to take effect		KG	09/27/1981 G,001:3
Corrosion tests under way at Palisades plant		KG	09/22/1981 B,002:1
Ferency vows to win suit against Consumers Power		KG	09/22/1981 B,003:4
Palisades says NRC report 'dated'		KG	09/21/1981 B,003:1
4,000 may lose jobs		KG	09/16/1981 C,003:1
PSC division head defends Consumers gas purchase		KG	09/15/1981 B,003:1
Rating list old, Palisades officials say		KG	09/14/1981 D,005:1
Consumers Power says 'lifeline' could save		KG	09/10/1981 B,002:1
'Lifeline' rates established by PSC	*	KG	09/09/1981 A,001:1
Palisades can't laugh at fears of terrorism		KG	08/30/1981 B,012:1
Palisades down for refueling		KG	08/29/1981 A,002:1
Nuclear agency gives Palisades safety OK		KG	08/28/1981 D,001:3
Algerian gas deal 'not bad'--Selby		KG	08/26/1981 C,003:1
Customers get reprieve on gas bills		KG	08/26/1981 C,006:4
Utility's van offers tips on saving energy		KG	08/23/1981 B,003:1
Consumers not getting rate increase reward		KG	08/13/1981 B,003:3
Palisades back in operation		KG	08/11/1981 C,009:2
Fight over gas prices taken to federal level		KG	08/07/1981 B,010:1
Kelley to block Consumers bond sale		KG	08/05/1981 C,003:1
Consumers given OK to sell bonds		KG	08/04/1981 B,002:1
Consumers Power names area public affairs director	*	KG	07/31/1981 B,009:1
New repairs stall return of Palisades plant		KG	07/29/1981 D,003:2
Michigan to fight hike in Algerian natural gas		KG	07/25/1981 A,001:5
Consumers bills to go up again in August		KG	07/23/1981 A,001:3
Shazam] This van really hums	*	KG	07/23/1981 D,011:4
Consumers Power: Rate hikes a hedge against future		KG	07/19/1981 C,011:1
Natural gas from Algeria costly		KG	07/19/1981 C,015:1
Groothuis ends career at Consumers	*	KG	07/17/1981 A,003:1
Consumers criticized on Midland site		KG	07/17/1981 A,004:1
PSC gets an earful on gas rates	*	KG	07/14/1981 B,003:1
Consumers to foot bill in plan to monitor cavern		KG	07/13/1981 B,003:1
Palisades plant repairs to end operating record		KG	07/11/1981 A,002:3
Ferency jumps into Consumers gas rate fray		KG	07/10/1981 A,004:1
Gas bill totals can't be predicted accurately now		KG	07/08/1981 A,001:1
Gas decontrol would send bills soaring--Consumers		KG	07/07/1981 B,003:3
Officials probe cause of false alarm at Palisades		KG	07/06/1981 A,004:1
Consumers seeks major increase in electric rates		KG	07/03/1981 B,003:1
Consumers' fine cut in open-valve case		KG	07/01/1981 B,008:1
Home energy plan ready		KG	06/28/1981 C,020:1
Consumers fined for coal dumping		KG	06/27/1981 A,004:2
Consumers wins two rate increases		KG	06/25/1981 A,001:5
NRC team to visit Palisades plant		KG	06/23/1981 B,003:5
Testing sirens' song	*	KG	06/19/1981 D,001:5
Energy-saving plan to begin July 1		KG	06/16/1981 A,008:1
Consumers bills to rise 70 percent, Kelley says		KG	06/16/1981 C,012:1
Editorial: Exorbitant natural gas prices		KG	06/15/1981 A,004:1
'No way to block' higher costs		KG	06/11/1981 B,011:1

CONSUMERS POWER COMPANY

'Deal' with Algeria hiked gas prices		KG	06/11/1981 C,009:5
Consumers 'welcomes' hearing on rates		KG	06/10/1981 B,007:1
Kelley to fight gas price hike		KG	06/03/1981 B,003:1
Gas deal means higher prices for customers		KG	06/02/1981 D,003:1
Consumers ordered to give 'lifeline' rates to poor		KG	05/28/1981 B,004:1
Michigan could get refunds		KG	05/27/1981 A,010:1
Morrow plant to remain open	*	KG	05/17/1981 C,015:4
Economic zap on nuclear power		KG	05/11/1981 A,003:5
Consumers Power gas bills to increase up to 50%		KG	05/06/1981 A,001:3
'Beaks' put the bite on 400-ton transformer	*	KG	04/29/1981 A,003:1
Consumers' spokeman says strike shows nuclear need		KG	04/25/1981 A,003:5
Insulation loan plan OK'd by PSC		KG	04/21/1981 B,003:1
Home insulation loan program nears		KG	04/20/1981 A,001:3
Consumers Power to ask rate hike		KG	04/16/1981 B,003:5
Thieves posing as repairment steal man's money		KG	04/16/1981 B,004:2
Pickets protest rates at Consumers Power		KG	04/10/1981 D,001:1
Power customers get cutback in bill totals		KG	04/01/1981 D,004:3
Consumers criticized for Palisades errors		KG	03/14/1981 A,002:5
Natural gas bills jump this month		KG	03/11/1981 A,001:1
Consumers plans $40 million control center		KG	02/23/1981 A,009:1
A safe, clean source of power, advocates contend	*	KG	02/22/1981 C,015:1
Michigan natural gas prices could take huge jump		KG	02/20/1981 A,006:4
Consumer Power subleases ISB 'white elephant'	*	KG	02/19/1981 A,008:1
Consumers finds PCB in gas line unit		KG	02/17/1981 C,010:3
NRC issues new order on Palisades		KG	01/16/1981 D,005:4
Consumers says survey shows its gas prices low		KG	01/15/1981 B,002:1
Protests convinced utility to alter plan	*	KG	01/13/1981 A,001:5
Consumers to reopen some offices		KG	01/12/1981 A,008:4
Consumers to detail dock proposed for Palisades		KG	01/10/1981 A,005:5
Utility sued in electric line accident		KG	01/09/1981 A,012:3
NRC proposes $38,000 fine against Consumers		KG	01/08/1981 B,003:5
Dosimeters track radiation dangers at Palisades		KG	01/02/1981 B,002:1
Consumers given power rate hike, will make refunds		KG	12/31/1980 A,007:4
Consumers wants local governments to share cost		KG	12/21/1980 B,016:1
U.S. agency criticizes safety record at Palisades		KG	12/18/1980 D,001:1
Palisades nuclear plant back in service		KG	12/18/1980 D,001:3
Accident-response drill for Palisades		KG	12/11/1980 D,001:1
Offices needed, but not by Consumers	*	KG	12/04/1980 A,003:1
NRC rates Palisades below average for Midwest		KG	12/03/1980 B,002:1
Preparing for mishap at Palisades	*	KG	11/30/1980 B,014:1
Consumers to close 26 pay stations		KG	11/29/1980 A,003:1
Palisades gets health physicist		KG	11/19/1980 A,005:6
OK warning system for Palisades		KG	11/18/1980 B,002:2
Consumers' Midland plant expense revised		KG	10/17/1980 A,010:5
Consumer pays Palisades fines		KG	10/14/1980 D,012:3
Power company's tests had mixed results	*	KG	10/08/1980 E,006:1
Consumers nuke plant opposed		KG	10/02/1980 A,007:3
NRC proposes $5000 fine against utility		KG	09/29/1980 D,005:1
Consumers says Palisades incidents no area threat		KG	09/19/1980 A,009:5
Consumers fined again for Palisades violations		KG	09/18/1980 B,012:1
Palisades workers stage brief walkout		KG	09/12/1980 D,004:1
Palisades plant back in operation		KG	09/03/1980 B,002:3
Palisades plant down again		KG	08/27/1980 A,013:1
Nuclear power called 'safe'	*	KG	08/14/1980 A,003:1
Corrosion slows, Consumers delays Palisades		KG	08/10/1980 A,004:1
Consumers granted rate hike		KG	08/09/1980 A,010:1
Electrical rate hike approved	*	KG	08/08/1980 A,001:6
Probe of gas leak set		KG	08/04/1980 B,005:4
Radioactive gas accidentally released at Palisades		KG	08/03/1980 A,001:1
Palisades reports foulup with control room switch	*	KG	07/30/1980 D,001:1
Consumers ordered to shave electric rates		KG	07/26/1980 B,005:1
'Gotta get lights back on'	*	KG	07/22/1980 A,001:1
Upset Forest St. residents still lack electricity	*	KG	07/21/1980 D,003:1
'Bureaucratic mess' blamed for mess on Forest St.	*	KG	07/19/1980 A,003:1
Record power loss spurs ice sales		KG	07/18/1980 A,001:1
Thousands without power	*	KG	07/17/1980 A,001:1
Ice sells like hotcakes		KG	07/17/1980 D,001:3
Consumers' mothballing of plant hit		KG	07/10/1980 B,003:4
Consumers sets dates for Midland units		KG	07/04/1980 A,005:4
Palisades power plant down for maintenance		KG	07/04/1980 D,002:1
Consumers won't trade him even		KG	06/22/1980 C,011:1

CONSUMERS POWER COMPANY

Faults discovered in nuclear design		KG	05/30/1980 B,003:5
Modified Palisades back in service		KG	05/29/1980 B,002:1
Consumers Power bills down in June		KG	05/29/1980 B,003:5
2,500 of 16,000 homes still without power	*	KG	05/14/1980 B,001:3
Consumers Power crews work to restore electricity		KG	05/14/1980 X,010:1
Nuclear plant cost problems aired		KG	05/08/1980 A,001:5
Consumers wants hike of $129 million		KG	05/06/1980 A,009:1
Consumers' rate increase bid slashed		KG	04/25/1980 B,006:6
Kelley, citizens lose fight for financial data		KG	04/16/1980 A,014:1
Viewpoint: Insulation financing plan		KG	04/13/1980 A,007:1
NRC halts duct contractor at Midland project		KG	04/03/1980 C,015:1
Second fire hits Midland nuclear site		KG	03/26/1980 B,010:3
Vandals cause blackout	*	KG	03/20/1980 A,003:1
NRC aware of Palisades turbine cracks		KG	03/11/1980 A,009:1
Editorial: Decision illustrates national dilemma		KG	03/09/1980 A,006:1
Power firm faces rocky road		KG	03/09/1980 C,015:2
Consumers Power says it wouldn't go nuclear now		KG	03/07/1980 A,004:1
Consumers to complete Midland plant		KG	03/06/1980 A,009:1
Consumers weighs fate of nuclear plant at Midland		KG	03/04/1980 B,003:1
Big Rock nuclear plant safety needs evaluated		KG	02/29/1980 A,004:3
Consumers Power loses tax decision		KG	02/22/1980 B,006:4
Big Rock protest group appeals conviction		KG	02/16/1980 B,010:1
Nuclear moratorium would be diasastrous		KG	02/12/1980 B,010:1
Radiation leak probed at Big Rock		KG	02/08/1980 D,012:4
Settlement ends gas explosion case		KG	02/06/1980 A,005:1
Utility seeks $1 billion for nuclear plant closing		KG	02/04/1980 B,005:1
Palisades may be shut down until spring		KG	01/31/1980 A,008:4
Portage, Consumers agree to settlement		KG	01/31/1980 A,020:3
Power customers may have to pay cost overruns		KG	01/31/1980 B,003:5
Consumers' power rate to go down		KG	01/31/1980 B,003:6
Costs soar on Midland nuclear plant		KG	01/29/1980 B,003:3
Consumers Power asks gas rate hike		KG	01/26/1980 A,004:5
Insulation loan plan 'up in air'		KG	01/25/1980 D,012:5
Consumers improving its gas network		KG	01/23/1980 C,014:6
Nuclear plant shutdown cost claimed $1 billion		KG	01/22/1980 C,012:1
Big Rock nuclear plant 'experiments' protested		KG	01/09/1980 B,002:4
Citizen group fights power rate hike		KG	01/08/1980 B,003:1
Big Rock nuclear plant shut down		KG	12/31/1979 A,005:1
Weather warmer but bills continue to climb		KG	12/29/1979 A,007:1
Possible hazard cited at Midland nuclear plant		KG	12/27/1979 A,011:4
Consumers asks hearing on NRC order		KG	12/27/1979 B,011:4
Consumers has 20 days to appeal Palisades fine		KG	12/21/1979 C,008:2
Palisades plant down until next year		KG	12/18/1979 B,003:1
Big Rock plant to be shut down		KG	12/11/1979 C,012:3
NRC orders Consumers to halt Midland work		KG	12/07/1979 A,008:5
Consumers Power jacks up reward for gun vandals		KG	12/07/1979 C,010:3
Your electric bill is in line for a boost		KG	12/06/1979 A,001:2
Low-income customers can get aid for power bills	*	KG	12/06/1979 A,003:1
Consumers seeks new rate hike		KG	12/05/1979 D,004:6
Nuclear protester 'guilty'	*	KG	12/01/1979 A,003:3
Consumers Power expert disputes anti-nuke stats		KG	11/30/1979 A,007:1
Trespass trial starts	*	KG	11/30/1979 A,010:1
Consumers protests Palisades fine		KG	11/30/1979 B,008:1
Consumers bills to take double jump		KG	11/28/1979 B,006:1
Consumers fights $450,000 Palisades fine		KG	11/28/1979 B,006:1
PSC grants Consumers rate hike		KG	11/27/1979 C,022:4
Inefficiency kills Consumers' plea to hike returns		KG	11/21/1979 A,009:1
Consumers rate hike ruling near		KG	11/21/1979 A,009:4
Editorial: NRC against Consumers Power?		KG	11/13/1979 A,004:1
Consumers hit with stiff fine	*	KG	11/10/1979 A,001:5
Big Rock radioactive water leak corrected		KG	11/08/1979 B,003:1
New shielding devices studied for Big Rock		KG	11/08/1979 B,012:3
Worker contaminated		KG	11/02/1979 A,001:2
Consumers electric bills to drop		KG	10/24/1979 D,006:3
Palisades gets a physical	*	KG	10/21/1979 D,001:1
Reactor is plant's heart	*	KG	10/21/1979 D,001:1
Dow, Consumers won't be fined for 'coverup'		KG	10/16/1979 B,002:1
NRC gives Palisades low mark		KG	10/16/1979 B,003:3
Challenge upheld to utility's films		KG	10/10/1979 B,011:5
New personnel director for Consumers here	*	KG	10/09/1979 C,006:1
Microscopic cracks found in Palisades pipes		KG	10/06/1979 B,017:4

CONSUMERS POWER COMPANY

Nuclear wastes finally buried		KG	10/04/1979	A,003:3
Executive changes made	*	KG	10/04/1979	D,006:3
PSC order slashes gas rate		KG	10/03/1979	B,014:5
Utility energy firm under fire		KG	09/28/1979	A,009:3
Consumers Power rate slash urged		KG	09/26/1979	B,016:4
Gas plant shutdown savings cited		KG	09/22/1979	A,004:3
Using more electricity? Ask why	*	KG	09/16/1979	E,001:1
Judge blocks gas rate hike		KG	09/07/1979	B,005:1
Costly gas plant to be mothballed		KG	09/06/1979	B,003:5
Final OK given gas pipeline		KG	08/29/1979	C,007:4
PSC ruling awaited on pipeline route		KG	08/28/1979	A,019:3
Dredging, barge slip installation planned		KG	08/26/1979	B,022:1
Consumers adjustment clause revised		KG	08/22/1979	B,003:3
Consumers' Big Rock plant is target of N-power foe		KG	08/16/1979	B,003:4
Delays in licensing costly, says Selby		KG	08/16/1979	B,003:5
DNR may buy land on rivers		KG	08/02/1979	C,010:1
Utilities must reveal documents		KG	08/01/1979	D,012:5
Consumers drops plans for tax appeal		KG	07/31/1979	C,020:5
Second Consumers Power refund ordered by PSC		KG	07/20/1979	A,009:1
Palisades waste sent to lab for analysis		KG	07/19/1979	D,014:5
Consumers to pay huge gas refund		KG	07/18/1979	A,001:1
James G. Lewis named Palisades general manager	*	KG	07/14/1979	A,003:3
Inspection set for Palisades wastes		KG	07/13/1979	B,006:1
Consumers may face fines for leakage		KG	07/10/1979	E,004:1
Utility reviews reports on leak of reactor wastes		KG	07/09/1979	A,003:1
Nevada miffed at leakage		KG	07/07/1979	A,001:1
Nevada is blaming Consumers for leak		KG	07/06/1979	A,002:5
Leak found in truck hauling wastes from plant		KG	07/04/1979	B,001:1
Consumers says waste leak cause unknown		KG	07/04/1979	B,002:2
Consumers asks to expand storage of nuclear waste		KG	07/03/1979	A,009:4
Consumers Power Gas rate hike OKd		KG	06/28/1979	B,010:1
Consumers faces probe of Midland plant permit		KG	06/28/1979	B,011:1
Consumers Power gas rate hike request before PSC		KG	06/27/1979	B,009:4
No radioactivity found in Palisades resin waste		KG	06/22/1979	B,005:2
Consumers Power safety costs asked		KG	06/20/1979	D,001:1
Radioactive material leaks from Palisades		KG	06/12/1979	E,003:3
Citizens Lobby claims 'coverup' by Consumers		KG	06/06/1979	B,004:1
'Equal payments' rise		KG	06/03/1979	D,016:1
Consumers, Edison may escape fines for pollution		KG	05/24/1979	A,008:3
Palisades back on line, Big Rock, Cook 1, 2 down		KG	05/22/1979	B,003:1
Palisades plant back in business		KG	05/21/1979	A,003:3
Group urges closing of Palisades plant		KG	05/18/1979	B,007:5
Nuclear protestor faces trial		KG	05/18/1979	B,013:1
Nuclear disaster training upgraded		KG	05/17/1979	B,003:1
Palisades changes argued		KG	05/10/1979	A,001:2
Big Rock leak repair studied		KG	05/09/1979	B,014:1
Citizen groups lose PSC bid in Consumers rate hike		KG	05/08/1979	B,015:1
Big Rock Generator faces long shutdown		KG	05/05/1979	A,002:4
Consumers wants Palisades' costs passed on		KG	05/03/1979	A,003:1
Palisades installing earthquake guards		KG	05/03/1979	B,003:1
Palisades plant down for two weeks		KG	05/02/1979	B,006:1
Problem in restarting plant in South Haven		KG	05/01/1979	A,003:3
Palisades needs OK to shut down generators		KG	05/01/1979	A,004:1
Palisades back on line		KG	04/27/1979	B,008:3
Palisades plant closed		KG	04/26/1979	B,010:1
Consumers Power bills lower than average		KG	04/25/1979	A,008:5
Palisades plant has a problem		KG	04/25/1979	D,011:3
State asks delay on rate request by Consumers		KG	04/24/1979	A,012:1
State redrafting nuclear report rules after leak		KG	04/24/1979	A,012:1
Nuclear plant to be shut down for indefinite time		KG	04/23/1979	A,008:4
Big Rock reactor in cold shutdown		KG	04/22/1979	A,001:5
Consumers offers assurance		KG	04/21/1979	A,004:4
Company taking 'prudent steps'		KG	04/20/1979	A,003:1
Consumers Power Co.'s income up 37 percent		KG	04/20/1979	B,006:1
Midland nuclear plant target of Saturday protest		KG	04/19/1979	A,001:2
Utility accused of rushing 4 rate hike requests		KG	04/19/1979	A,010:1
Consumers Power asks Charlevoix enlarged storage		KG	04/17/1979	A,005:2
Nuclear power 'death specters' arraigned		KG	04/17/1979	C,007:1
Arraignment of protesters scheduled		KG	04/16/1979	B,024:3
Aymond details power future	*	KG	04/13/1979	A,001:1
Electricity rate hike fight OK'd		KG	04/10/1979	C,020:4

CONSUMERS POWER COMPANY

Palisades disaster?		KG	04/06/1979 A,013:1
Utility officials in state term leaks possible		KG	03/29/1979 A,001:4
Morrow plant will stop 2 generators		KG	03/04/1979 A,001:3
Once-popular recreation site	*	KG	03/04/1979 E,001:1
Age catching up with power plant	*	KG	03/04/1979 E,001:4
Record amount of gas used		KG	02/16/1979 B,010:2
Power plant sites located	*	KG	02/04/1979 C,022:1
Consumers details planning		KG	02/01/1979 A,001:4
Electric rate hike sought		KG	01/29/1979 A,001:3
Cost of electricity goes up 'significantly' here		KG	01/26/1979 A,014:1
Consumers Power faces suit for dumping coal		KG	12/22/1978 B,012:5
Higher utility rates approved		KG	11/30/1978 A,010:1
Consumers Power won't start new nuclear plant		KG	11/01/1978 B,011:1
Environmentalists cool to Palisades plan		KG	10/19/1978 C,001:1
Awesome power plant won't be No. 1 very long		KG	10/10/1978 C,009:1
Palisades plant closed by seal leak		KG	10/04/1978 D,007:1
Palisades plant back in operation		KG	09/13/1978 D,005:1
Leak to keep Palisades power plant shut down		KG	09/06/1978 D,001:6
Senior citizens go for electricity discount		KG	09/03/1978 D,019:1
Kelley fights Consumers rate hike		KG	08/31/1978 A,005:1
Palisades shut down; seals blamed		KG	08/31/1978 D,001:5
Five violations cited at Palisades		KG	08/22/1978 C,008:1
Nuclear core may never need replacing		KG	08/21/1978 B,010:1
Consumers bills are going up		KG	08/17/1978 D,008:1
Consumers works on electricity plan		KG	08/14/1978 C,006:1
State sues Consumers on rate hike		KG	08/10/1978 D,006:1
Palisades plant generates a 1st	*	KG	08/08/1978 D,001:1
He updates the nuclear message		KG	08/02/1978 C,011:1
Rates to be tied to U.S. price index		KG	08/01/1978 A,008:1
PSC grants Consumers rate boost		KG	07/31/1978 A,001:5
Masked intruder darkens city		KG	07/20/1978 A,001:3
Consumers given gas rate hike		KG	07/11/1978 B,004:3
Finding of violations unlikely at Palisades		KG	07/07/1978 D,003:2
20 anti-nuclear protesters march at Midland		KG	07/05/1978 B,005:6
N.R.C. to check Palisades		KG	06/27/1978 B,004:4
PSC orders gas rebates by Consumers		KG	06/06/1978 A,003:4
Rate hike upheld		KG	05/27/1978 A,026:4
Consumers gets OK on electric hike		KG	05/23/1978 A,001:5
Powerful big plant	*	KG	05/17/1978 E,001:1
Consumers vows to stop radiation mishaps		KG	05/06/1978 A,001:2
PSC hunts way to halt overcharges		KG	05/02/1978 B,003:1
New plant to increase power rates		KG	04/22/1978 A,004:1
'Ripple' could be wave of the future		KG	04/20/1978 C,009:1
Palisades nuclear plant operation		KG	04/20/1978 D,005:3
Consumers seeks okay for refund		KG	04/17/1978 A,001:2
Palisades nears restart		KG	04/13/1978 A,001:2
New chief elected		KG	04/13/1978 D,005:4
Utility to sell land holdings along rivers		KG	04/12/1978 B,004:5
Kelley moves to block gas rate increase		KG	04/11/1978 B,003:3
Court clears way for Midland plant		KG	04/04/1978 C,010:1
Attorney general sues to block increase		KG	04/04/1978 C,018:4
Way clear for early startup at Palisades		KG	03/22/1978 A,001:4
Overcharges may total $30 million		KG	03/21/1978 A,017:1
Consumers, cities study plant sharing		KG	03/18/1978 A,012:4
Nuclear refueling shortcut sought		KG	03/16/1978 D,005:2
Asks another gas rate hike		KG	03/14/1978 C,008:5
Restarting Palisades could ease coal demand		KG	03/13/1978 A,003:1
Blackouts? At least a month away		KG	03/10/1978 A,003:1
Ohio, Indiana decline offer of Michigan Power		KG	03/08/1978 B,006:1
Consumers Power rate hike okayed		KG	03/03/1978 D,010:5
Small dip in utility's coal piles		KG	02/27/1978 B,016:4
Power costing more		KG	02/23/1978 A,001:2
Gains made with power cuts		KG	02/18/1978 A,001:3
Consumers given OK to continue on Midland plant		KG	02/16/1978 B,010:4
Palisades nuclear plant no help during strike		KG	02/16/1978 C,001:5
Electric power cuts planned in area		KG	02/15/1978 A,001:1
Kelley asks new rebate by Consumers		KG	02/14/1978 D,001:3
Palisades ordered to tighten security		KG	02/14/1978 D,001:5
Radiation fear ends in demotion		KG	02/10/1978 A,001:5
Some utility payments won't show on new bills		KG	02/09/1978 A,003:5
Clean air rules may cost utility customers		KG	02/07/1978 C,010:3

CONSUMERS POWER COMPANY

Consumers Power lists 1977 earnings		KG	02/03/1978 B,018:4
Error pares natural gas rate increase		KG	02/01/1978 B,011:4
Palisades security reviewed		KG	01/31/1978 A,013:1
Consumers may act on coal needs		KG	01/31/1978 B,011:1
Consumers Power to list land leasees		KG	01/30/1978 A,004:3
Palisades pauses for refreshment	*	KG	01/29/1978 A,014:1
Oil import fee protested		KG	01/25/1978 C,012:1
Utilities say hikes too small		KG	01/24/1978 A,009:4
PSC OKs phone, gas hikes		KG	01/23/1978 A,001:2
Power plant to cost $1 billion		KG	01/19/1978 E,001:1
Refunds to be delayed		KG	01/18/1978 D,007:1
5% electricity drop		KG	01/11/1978 E,005:4
Replies to pollution accusation		KG	01/11/1978 E,005:6
2 state utilities rated high among polluters		KG	01/09/1978 B,008:1
Palisades plant refueling planned		KG	01/07/1978 A,024:4
Ruling says Consumers Power must cease monopoly		KG	01/04/1978 B,006:1
Consumers Power must sell share of plant		KG	01/03/1978 A,008:1
Consumers' customers get break		KG	12/29/1977 B,007:1
Palisades settlement halts lawsuit		KG	12/10/1977 A,001:5
Utility loses appeal of Ottawa tax level		KG	12/07/1977 A,003:5
Consumers wins rate case		KG	12/06/1977 A,001:2
Review set on Midland nuclear plant		KG	12/06/1977 D,001:6
1 injured in planned blackout		KG	12/02/1977 A,001:2
Consumers Power hits PSC impasse		KG	12/02/1977 A,008:5
Production resumes at power plant		KG	11/29/1977 A,003:2
Palisades power fails		KG	11/26/1977 A,003:4
Consumers locals OK new pact		KG	09/30/1977 C,010:1
Bills go up $1.33		KG	09/27/1977 D,004:3
Consumers Power given go-ahead on Midland plant		KG	09/24/1977 A,008:3
Consumers to open more gas pipes		KG	09/07/1977 A,003:5
Utility workers and power firm settle		KG	09/02/1977 B,009:1
Consumers, utility worker talks continue		KG	09/01/1977 A,003:5
Power firms to borrow idea from cavemen		KG	08/30/1977 D,001:4
More nuclear rods to be stored at Palisades		KG	08/23/1977 B,004:5
Action allows mobile homes at power plant site		KG	08/17/1977 D,016:4
Change in habits could trim bills		KG	08/16/1977 A,005:1
Consumers Power denies allegations by columnist		KG	08/12/1977 C,007:1
Consumers to clean up water		KG	08/05/1977 A,007:1
Consumers eyes gas conservation		KG	07/28/1977 D,005:1
Power lost during rain in Cadillac		KG	07/19/1977 B,009:3
4,730 acres for sale by utility		KG	07/17/1977 B,023:1
But not here they hope		KG	07/15/1977 A,001:1
Pipeline testing is a big job		KG	07/15/1977 A,003:5
Spent fuel rods piling up	*	KG	07/03/1977 A,010:1
City, power co. on EPA's action list		KG	07/02/1977 A,003:2
Claims record profits are inadequate		KG	06/26/1977 F,001:1
Nuclear millstone?	*	KG	06/26/1977 F,001:1
Consumers electric bills to go down		KG	06/22/1977 B,010:3
Consumers told to make refund		KG	06/06/1977 A,003:5
$14 million settlement in Palisades suit		KG	05/21/1977 A,001:1
Consumers receives settlement		KG	05/20/1977 D,014:6
Accused of giving incorrect data about project		KG	05/11/1977 E,007:1
Consumers profits show 41% increase		KG	04/29/1977 D,003:4
'No' city tells Kelley		KG	04/19/1977 B,012:1
Record earnings for Consumers Power Co.		KG	04/15/1977 A,003:2
Stock dividend increased		KG	04/14/1977 D,004:2
Consumers earnings hit high		KG	04/13/1977 A,003:4
City officials hear Consumers story		KG	04/12/1977 B,003:1
Palisades operating extension requested		KG	04/09/1977 A,007:1
Kelley asks dismissal of rate bid		KG	04/07/1977 D,004:4
Changing electrical use goal of project		KG	04/06/1977 A,003:1
Kelley seeks help to fight utility		KG	04/05/1977 A,004:3
Law crucial to nuclear power		KG	04/02/1977 A,003:1
Consumers awaits okay on nuclear rod storage		KG	03/24/1977 D,001:1
Discharge into lake sought	*	KG	03/23/1977 A,003:1
Consumers Power rebate urged		KG	03/23/1977 A,012:1
Consumers gas users to pay more		KG	03/23/1977 B,009:2
Question mark in energy crisis	*	KG	03/06/1977 F,001:1
Consumers asks halt on Midland hearings		KG	03/05/1977 A,013:1
Customers will pay for security		KG	02/25/1977 B,007:3
Marysville plant called foresight	*	KG	02/25/1977 B,008:3

CONSUMERS POWER COMPANY

Court will review nuclear waste issue		KG	02/23/1977 D,001:5
Consumers seeks continued saving efforts		KG	02/22/1977 A,008:2
Dow casts doubts about nuclear plant		KG	02/03/1977 A,010:1
Spent fuel limited at Palisades		KG	02/03/1977 A,010:3
Consumers requests increase		KG	02/01/1977 B,012:3
Comstock faces tax appeal battle alone		KG	01/31/1977 B,016:4
Gas customers asked to lower thermostats		KG	01/29/1977 A,003:1
Consumers' theme: poor public utility	*	KG	01/28/1977 A,007:1
Consumers in another rate bid		KG	01/27/1977 A,001:5
Your gripe squad is waiting	*	KG	01/23/1977 B,001:1
Consumers fills customer-service post		KG	01/23/1977 B,020:3
Consumer seeks fees from meter tamperers		KG	01/19/1977 C,001:5
Comstock preparing for utility-tax fight		KG	01/18/1977 C,008:2
Help with tax lawsuit eyed by Comstock		KG	01/16/1977 A,004:6
All things must pass (smokestack)	*	KG	12/29/1976 B,003:1
Midland reactor capped	*	KG	12/21/1976 C,001:1
Rates up slightly		KG	12/21/1976 C,004:4
Palisades power plant may close for 1981-82		KG	12/10/1976 D,001:4
Dow claims threat by Consumers		KG	12/04/1976 A,022:4
Short shutdown for Palisades repairs		KG	12/02/1976 A,003:1
Letters: Involvement in Oregon		KG	11/25/1976 A,007:1
Gas bills up		KG	11/19/1976 C,007:3
Smokestack's last puff	*	KG	11/15/1976 A,001:1
More nuclear power for Consumers		KG	11/12/1976 A,009:3
Standing tall, but ready to fall	*	KG	11/10/1976 A,001:1
Money back		KG	11/09/1976 A,001:2
Consumers mails overcharge checks		KG	11/01/1976 D,005:1
Consumers refund checks to be mailed		KG	10/30/1976 A,006:4
Consumers says suspension costly at Midland		KG	10/29/1976 D,001:4
Consumers Power to refund $35 million		KG	10/27/1976 C,001:1
PSC orders lower bills		KG	10/26/1976 A,001:3
NRC backs safety of nuclear plants		KG	10/22/1976 A,013:5
Nuclear plant at Palisades shut		KG	10/21/1976 D,001:3
Hardy Dam tax ruling appealed		KG	10/19/1976 D,005:3
Consumers plans higher gas prices		KG	10/08/1976 A,001:4
Consumers announces bond issue		KG	10/07/1976 D,001:4
Tax tribunal in unfamiliar water		KG	10/03/1976 A,007:1
Rate hike approved		KG	09/30/1976 D,006:5
State tax tribunal asserts new power		KG	09/30/1976 D,007:1
Utilities fight Wolpe bill		KG	09/24/1976 D,001:1
Nuclear plant accident kills second man		KG	09/21/1976 D,005:2
Sensitive dummy soaks up rays	*	KG	09/20/1976 A,010:1
Gas blamed in nuclear plant death		KG	09/18/1976 A,004:3
Consumers, city clash over rates		KG	09/08/1976 A,010:5
City to get rate proposal		KG	09/07/1976 A,003:1
Notice of rate increase hearing		KG	09/01/1976 A,004:3
Consumers Power electric charges down		KG	08/31/1976 A,001:1
Power struggle	*	KG	08/29/1976 A,007:1
Consumers Power to seek appeal		KG	08/26/1976 C,005:6
Power shortage affects 6,000		KG	08/18/1976 A,003:1
Exhibit here deals with energy	*	KG	08/12/1976 A,003:2
Midland plant work resumes		KG	08/12/1976 E,003:1
City continues rate boost fight		KG	08/10/1976 A,007:1
Consumers Power hikes natural gas rate bid		KG	07/31/1976 A,009:1
First nuclear plant back in operation		KG	07/31/1976 A,011:1
Customers have powerless feeling		KG	07/30/1976 A,001:4
To the electric customers of Consumers Power Co.		KG	07/30/1976 B,002:1
Utility refund checks coming		KG	07/29/1976 C,009:1
They'd rather pay than switch		KG	07/29/1976 C,009:3
Work halted again	*	KG	07/28/1976 D,001:1
Consumer, Edison adjustments OK'd		KG	07/27/1976 B,010:5
Consumers to continue work on new plant		KG	07/24/1976 A,002:3
Consumers asks addition to gas rate hike		KG	07/23/1976 B,002:4
Federal judge orders review of nuclear project		KG	07/23/1976 B,002:4
Plant surveillance stepped up		KG	07/21/1976 D,001:1
Storm closes Palisades plant		KG	07/21/1976 D,004:3
Electric rate hike OK'd		KG	07/20/1976 A,001:4
Nuclear plant declared safe		KG	07/17/1976 A,011:4
Michigan's utility rates right in the middle		KG	07/06/1976 D,003:1
Palisades shut down for check		KG	07/04/1976 A,003:4
Power rate 'pancaking' is rejected		KG	06/29/1976 A,003:6

CONSUMERS POWER COMPANY

PSC orders cutback in July electric rate		KG	06/28/1976 A,001:3
Court rules against electric rate boost		KG	06/24/1976 A,003:5
Notice of hearing		KG	06/23/1976 A,013:4
Consumers' electric demand up		KG	06/20/1976 B,018:3
Palisades radiation survey set		KG	06/07/1976 A,017:4
Consumers seeking hike in gas rate		KG	05/28/1976 D,004:3
Public notice: rate increase hearings		KG	05/27/1976 A,007:5
Consumers aides named		KG	05/23/1976 F,004:3
'Miss Dig' wins award		KG	05/20/1976 B,013:5
'Black Journey' display in Portage		KG	05/19/1976 C,007:2
Consumers alters management	*	KG	05/18/1976 B,009:4
Consumers Power files rate suit		KG	05/13/1976 A,009:1
Palisades plant running again		KG	05/12/1976 B,014:1
Consumers Power picks Macintosh	*	KG	05/07/1976 A,004:6
Consumers Power hike nation's second highest		KG	05/04/1976 B,001:5
U-M environmentalist charges deception		KG	05/03/1976 A,007:5
Consumers Power revenue, income for year increase		KG	04/29/1976 D,004:2
Palisades out for two more weeks		KG	04/27/1976 A,013:4
Palisades start-up scheduled this week		KG	04/26/1976 B,008:3
College denies pressure from Consumers Power Co.		KG	04/22/1976 C,012:5
Palisades plant ready to start operating again		KG	04/16/1976 A,003:1
Consumers to ask new rate hike		KG	04/14/1976 B,004:5
PSC criticized for cutting Palisades output		KG	04/13/1976 D,001:1
Consumers gets partial rate boost		KG	04/12/1976 A,001:5
Consumers' rate decision Monday		KG	04/11/1976 A,001:4
Consumers Power denied new hearing		KG	04/03/1976 A,015:4
Court won't hear appeal on refunds		KG	04/02/1976 D,001:3
Consumers ordered to pay refund		KG	03/22/1976 A,001:5
Palisades power plant due for April restart	*	KG	03/19/1976 A,003:3
Report of radiation-linked injury denied		KG	03/17/1976 D,001:1
Utility's head decries radiation danger claim		KG	03/16/1976 A,017:1
Four refuse Palisades work		KG	03/15/1976 A,001:1
Look who's on solar-energy bandwagon		KG	03/14/1976 F,001:3
Consumers and Edison to refund $3.3 million		KG	03/13/1976 A,002:5
Powerless list whittled		KG	03/12/1976 A,003:2
PSC action draws blast		KG	03/09/1976 A,001:5
Consumers rate boost is rejected		KG	03/08/1976 A,001:5
Proposed law may hit gas supplies		KG	03/04/1976 A,008:1
Consumers rate hike gets support		KG	03/02/1976 A,001:4
Consumers Power chief attacks critics		KG	02/27/1976 B,008:3
Earnings up		KG	02/27/1976 B,008:6
Kelley will press fuel refund hikesuit		KG	02/24/1976 A,001:5
PSC hit for permitting Consumers rate practice		KG	02/21/1976 B,004:5
Impact of Canadian oil rationing play eyed		KG	02/12/1976 C,008:4
Bell, Consumers rate hikes denied		KG	02/09/1976 A,001:4
Snow means gastimates by utility		KG	02/05/1976 A,003:1
Consumers Power tax hearing set		KG	01/27/1976 D,001:1
Consumers Power denies overbilling		KG	01/15/1976 A,008:5
Kelley to seek rebates		KG	01/15/1976 A,008:5
Marysville decision near		KG	01/13/1976 B,003:4
Vandals are blamed for power failure in area		KG	01/12/1976 A,001:1
Canada's oil cutback to affect Consumers		KG	01/08/1976 A,010:4
Hearing on metering and reselling of service		KG	01/07/1976 A,002:1
Consumers' expansion plans told		KG	12/24/1975 A,003:6
$22 million water softener for Palisades		KG	12/03/1975 A,001:4
Consumers to clean power plant smoke		KG	11/21/1975 B,009:1
Consumers plant back in service		KG	11/18/1975 A,009:6
Probe planned of rate of return		KG	11/18/1975 D,004:1
Gas bills going up		KG	11/13/1975 B,001:1
Judge recommends gas customers pay		KG	11/13/1975 C,003:3
Consumers Power cuts back on latest request		KG	11/11/1975 C,008:1
Consumers appeals rate refund order		KG	11/05/1975 A,001:1
Palisades plant reopens after maintenance work		KG	11/04/1975 A,003:5
Consumers Power defends fuel adjustment clause		KG	11/01/1975 B,006:1
Court backs dismissal of nuclear plant suit		KG	10/28/1975 D,001:1
Consumers Power's earnings increase		KG	10/22/1975 D,012:2
Palisades plant faces another 3-month shutdown		KG	10/19/1975 A,012:1
Black history exhibit to open		KG	10/19/1975 A,018:3
Consumers told to refund part of boost		KG	10/15/1975 A,003:5
Gun pointed at Michigan's head		KG	10/15/1975 C,007:4
Lesser rate hike set for Consumers		KG	10/11/1975 A,001:4

CONSUMERS POWER COMPANY

Prosecutor continues battle against ex-head of PSC	*	KG	09/24/1975 B,004:4
Palisades' discharge exceeded limits twice		KG	09/17/1975 C,001:5
Consumers denies Rosenberg influence		KG	09/09/1975 D,001:1
Pressure denied on power rate		KG	09/05/1975 A,009:1
Palisades plant back in operation		KG	08/26/1975 A,016:6
Kelley says Consumers overbilled its customers		KG	08/21/1975 D,004:2
Palisades plant again shut down		KG	08/19/1975 D,001:4
Statewide 'dig' program launched	*	KG	08/13/1975 C,006:3
May need outside power		KG	08/07/1975 B,013:1
Power out 40 minutes		KG	08/05/1975 D,005:1
Homestead restoration runs into problems		KG	08/04/1975 B,001:1
Wave buffer proposed at Palisades		KG	07/31/1975 D,001:6
Palisades plant back in service		KG	07/29/1975 D,001:4
Consumers Power says profits rise sharply		KG	07/24/1975 B,002:3
Radioactive discharge reported		KG	07/23/1975 D,001:6
Consumers Power wins Midland plant ruling		KG	07/19/1975 B,005:1
PSC chief's role in gas rate proceedings question		KG	07/08/1975 D,001:1
Marysville plant construction costs were disputed		KG	07/03/1975 D,004:1
Palisades plant back in service		KG	07/01/1975 E,012:4
Palisades back in service		KG	06/30/1975 A,014:3
Big Rock plant restarted		KG	06/27/1975 C,008:4
Racoon again cuts power at Consumers		KG	06/24/1975 B,001:1
Electricity boost		KG	06/24/1975 B,012:3
Palisades shut down		KG	06/22/1975 A,001:5
Consultant denies pressure on report		KG	06/21/1975 B,004:4
To recommend customers pay gas plant costs		KG	06/19/1975 D,007:1
Fuel shortage contingency plan OK'd		KG	06/11/1975 B,001:1
Adequate electric power supplies seen		KG	06/11/1975 D,008:1
Consumers Power adjusts earnings		KG	06/04/1975 D,004:4
PSC okays rate boost		KG	06/02/1975 A,001:3
Legislation needed?		KG	05/30/1975 A,003:3
Loan lesson to cost public		KG	05/29/1975 A,006:3
$118 million rate hike sought		KG	05/27/1975 A,001:4
Will seek $100 million rate hike		KG	05/21/1975 E,004:4
Power plant work slowed at Midland		KG	05/16/1975 D,001:3
Upjohn and Brown face gas cutback		KG	05/15/1975 D,017:1
$5 million a month saved by Palisades		KG	05/14/1975 B,017:1
Livonia suing Consumers		KG	05/08/1975 C,014:6
Consumers Power expected to make rate request		KG	04/24/1975 B,001:1
City facilities on gas waiting list		KG	04/23/1975 A,015:2
Cost probe upholds Consumers		KG	04/23/1975 A,016:3
Jobs linked to power growth		KG	04/23/1975 A,016:4
Palisades verbally blasted		KG	04/14/1975 B,001:1
Midland plant cost zooms to $1.4 billion		KG	04/12/1975 A,010:1
Covert continuing Palisades tax suit		KG	04/07/1975 A,004:1
Utilities planning to seek new rate hikes		KG	04/07/1975 A,017:2
Consumers Power backs gas charge proposal		KG	04/02/1975 C,008:5
Palisades plant to reopen		KG	04/01/1975 C,001:3
Palisades' safeguards unlike TVA's N-plant		KG	04/01/1975 C,001:4
Another plant back in service		KG	04/01/1975 C,001:6
Consumers hearing rescheduled		KG	03/18/1975 B,001:6
City officials told about cost of utility rate		KG	03/04/1975 B,006:5
Consumers' letter campaign questioned		KG	03/03/1975 B,020:4
The race for utility rate hikes		KG	03/02/1975 D,008:1
Consumers Power to seek new rate boost		KG	03/01/1975 A,001:2
Editorial: Building trust and power plants	*	KG	02/27/1975 A,004:1
Consumers, Covert agree to continue tax suit		KG	02/26/1975 D,001:4
Viewpoint: Consumers Power defended	*	KG	02/24/1975 A,007:3
Problems at Palisades facing president of CPC		KG	02/22/1975 B,006:1
Name new president of Consumers Power	*	KG	02/21/1975 A,003:3
Mc Divitt quitting Consumers Power	*	KG	02/20/1975 A,003:1
Midland plant will cost $1.1 billion		KG	02/15/1975 A,010:1
Consumers Power Co. has $1 billion year		KG	02/12/1975 D,005:5
Customers to pay half of $13.7 million loss		KG	02/11/1975 B,014:5
Consumers to charge plans' cost		KG	02/10/1975 A,013:1
Consumers Power Co. tells financial bind		KG	02/04/1975 A,001:4
Rates based on cost would mean healthy utility		KG	02/04/1975 B,001:1
Municipal pump rate hike still target		KG	01/31/1975 B,007:1
Extend Palisades plant shutdown		KG	01/31/1975 D,001:7
Consumers Power electrical rate increase OK'd		KG	01/24/1975 A,001:1
Cities protest Consumers request		KG	01/23/1975 A,004:4

CONSUMERS POWER COMPANY

Michigan heat bills to zoom?	*	KG	01/22/1975	A,003:4
Power rate hike ruling awaited		KG	01/21/1975	D,001:1
PSC sets hearings on rate hikes		KG	01/17/1975	A,010:6
Power company might recover $13.7 million		KG	01/16/1975	C,002:7
Consumers rates protested		KG	01/11/1975	A,008:6
Consumers to refund $941,000		KG	01/07/1975	A,008:1
Otsego joins power rate hike fight		KG	01/07/1975	C,001:6
Consumers rate bid gets boost		KG	12/24/1974	A,008:3
Consumers cites loss on abandoned project		KG	12/20/1974	E,004:1
Consumers Power splits gas operation		KG	12/18/1974	A,014:7
Consumers makes management shifts		KG	12/10/1974	C,008:4
Major overhaul at Palisades		KG	12/05/1974	A,011:1
Gas discharge reported		KG	12/04/1974	C,010:1
Consumers asks gas rate hike		KG	11/28/1974	A,001:1
Power firms lose bid		KG	11/21/1974	C,007:4
Residential gas users get break		KG	11/20/1974	A,003:1
Residential gas users due cut?		KG	11/19/1974	A,003:1
New hearings asked on Consumers plant		KG	11/19/1974	C,001:5
Consumers seeking another rate boost		KG	11/15/1974	A,001:5
PSC questions nuclear construction quality		KG	11/12/1974	D,001:1
Palisades shutdown: down the (7,000) tubes		KG	11/12/1974	D,003:4
Palisades plant shut down again		KG	11/09/1974	A,005:6
Report backs Consumers' decision on gas plant		KG	10/17/1974	C,001:1
Consumers Power asked about insulation ads		KG	10/15/1974	E,004:1
PSC to intervene in lawsuit		KG	10/15/1974	E,004:4
Nuclear plant has go-ahead		KG	10/12/1974	B,004:5
Consumers denies monopoly charges		KG	10/11/1974	B,005:5
Consumers Power monopoly attacked		KG	10/10/1974	B,002:5
Utility refunds to customers urged		KG	10/08/1974	B,006:2
Testing resumed at Palisades plant		KG	10/03/1974	C,001:5
Consumers hits Kelley		KG	09/28/1974	A,005:1
A.E.C. OK's Midland A-plant		KG	09/28/1974	B,004:1
Consumers rebates $1.3 million		KG	09/25/1974	B,001:3
Editorial: Power rate boost		KG	09/18/1974	A,006:1
Electric rate increase OK'd		KG	09/17/1974	A,001:5
Consumers may get electric rate boost		KG	09/16/1974	A,001:4
Kelley hits billing plan		KG	09/12/1974	C,004:2
Consumers pays fine, but defends Palisades		KG	09/11/1974	D,001:1
Turbine trouble halts Palisades start-up		KG	09/07/1974	A,001:2
Consumers Power Co. fires up Palisades plant		KG	09/05/1974	B,001:2
UAW raps utility 'scare' campaign		KG	09/05/1974	D,003:1
Palisades plant gets 90-day 'OK'		KG	09/04/1974	A,003:2
8 operations listed as affecting river quality	*	KG	09/02/1974	C,001:1
Funds in state treasury help utilities sell bonds		KG	09/02/1974	C,001:1
Consumers dissolves program		KG	09/01/1974	B,013:3
Palisades plant suppliers sued for $300 million		KG	08/29/1974	A,003:5
Natural gas sale OK; 'windfall' is charged		KG	08/27/1974	D,003:5
Consumers makes plea for electric rate hike		KG	08/26/1974	A,013:3
Report disappoints consumers		KG	08/21/1974	A,004:6
A.E.C. proposes fines for Palisades plant		KG	08/15/1974	C,001:1
Justice drops consumers case		KG	08/10/1974	B,012:5
Consumers Power complains of crippling costs		KG	08/06/1974	D,001:4
Interim utility hikes seen by November		KG	08/03/1974	A,001:1
Consumers drops plan for plant		KG	08/03/1974	B,003:3
Cities expect to try again for rate hike		KG	07/28/1974	F,004:1
Contribution plan shelved		KG	07/23/1974	C,008:4
AEC dismisses Palisades charges		KG	07/22/1974	A,010:1
Earnings in plunge		KG	07/19/1974	D,004:1
AEC reports Consumers complying		KG	07/17/1974	A,015:3
National credit rating drops		KG	07/12/1974	D,004:1
Consumers pursues AEC okay		KG	07/12/1974	D,004:2
Consumers asks new rate hike		KG	07/10/1974	A,003:6
Utility eyes gas supply boost		KG	07/04/1974	B,001:5
Nuclear plant plans canceled by Consumers		KG	06/29/1974	B,003:6
Austerity plan announced by Consumers Power Co.		KG	06/27/1974	D,001:1
No summer brownouts seen		KG	06/16/1974	B,001:3
Palisades center to close	*	KG	06/14/1974	B,003:6
Palisades shutdown could cause shortage here		KG	06/06/1974	B,001:5
Utility planning layoffs		KG	06/04/1974	D,001:1
Palisades plant remains closed		KG	05/29/1974	B,001:1
Consumers gets okay to accept customers		KG	05/24/1974	C,010:6

CONSUMERS POWER COMPANY

Mc Divitt blasts rate hike critics	KG	05/15/1974 B,004:6
Cities fight request to boost electrical rates	KG	05/14/1974 D,003:3
AEC asks procedural changes for Palisades	* KG	05/10/1974 D,004:1
Palisades investigated by justice department	KG	05/09/1974 C,001:1
Palisades plant still closed	KG	05/08/1974 A,003:1
Palisades tax suit returned	KG	05/04/1974 B,012:5
Delay start of A-plants	KG	05/02/1974 A,014:3
Power plant opposed	KG	05/01/1974 C,001:4
Consumers management practices hit	KG	04/30/1974 A,017:1
Palisades prepares for tests	KG	04/27/1974 A,005:2
Rate hike battle set in Lansing	KG	04/24/1974 A,001:4
2 utilities ask new rate hikes	KG	04/23/1974 A,001:1
Consumers gas boost approved	KG	04/19/1974 A,003:6
Mc Divitt viewed as future Consumers president	KG	04/14/1974 A,016:1
Consumers Power set to ask boosts for utilities	KG	04/10/1974 A,003:5
Palisades plant reopening near	KG	04/08/1974 A,001:4
Consumers rapped for power plant infractions	KG	04/03/1974 E,001:1
Utility rebate ordered	KG	03/30/1974 A,013:4
PSC okays Consumers $77 million rate hike	KG	03/28/1974 A,001:2
Consumers Power ruling attacked by Rep. Wolpe	KG	03/28/1974 D,006:1
Rate case ruling due Wednesday	KG	03/26/1974 A,004:1
Nuclear plants out of service	KG	03/23/1974 A,007:7
Gas, electricity rates attacked	KG	03/16/1974 A,001:4
Wolpe praise	KG	03/12/1974 A,012:7
Union vote March 19 at Consumers	KG	03/10/1974 D,007:1
Hearing on higher rates set	KG	03/05/1974 E,005:3
City to fight proposed power rate hike	KG	02/26/1974 A,010:2
TV commercial is honored	* KG	02/24/1974 A,018:3
Electricity, gas rates are topics	KG	02/24/1974 B,014:6
Kelley fighting rate increases	KG	02/21/1974 D,005:3
Big profit seen from gas sale	KG	02/10/1974 B,019:3
A.E.C. probing Palisades charges	KG	02/09/1974 A,001:2
State, U.S. agencies rap Consumers Power Co.	KG	02/05/1974 B,001:1
More bad news for utility customers	KG	02/01/1974 A,003:1
Resolution filed on rate hike	KG	01/31/1974 B,016:4
Consumers plant costs scrutinized	KG	01/29/1974 A,004:7
Curtail new gas sales: PSC	KG	01/24/1974 A,012:4
Palisades license asked	KG	01/24/1974 D,001:4
Report on coal heat clarified	KG	01/24/1974 D,005:4
Wolpe calls rate hikes 'exorbitant'	KG	01/21/1974 B,018:6
Consumers gets rate increase	KG	01/18/1974 A,001:1
Consumers' plan OK'd	KG	01/18/1974 A,019:1
Union fights job cuts by Consumers	KG	12/27/1973 A,010:4
Big Rock plant still shut down	KG	12/22/1973 A,011:5
New head named at Palisades	KG	12/20/1973 C,001:5
Nuclear power is waiting in wings	* KG	12/16/1973 F,001:1
Utility facing fight	KG	12/15/1973 A,005:4
Consumers film tells of energy challenge	KG	12/13/1973 D,013:1
Agency rules CPC can look for gas legally	KG	12/12/1973 A,011:1
CPC official gives opinion on reasons for crises	KG	12/12/1973 A,011:1
Natural gas source sought	KG	12/12/1973 A,011:1
Consumers advertising is called misleading	KG	12/11/1973 D,006:1
Big Rock repairs scheduled	KG	12/10/1973 A,011:5
Should utility have power to share?	KG	12/09/1973 F,002:1
2nd nuclear plant closed by leak	KG	12/08/1973 A,001:5
Consumers lax, DNR charges	KG	12/08/1973 A,011:4
Consumers Power asked plant data	KG	12/04/1973 B,013:8
Consumers Power denies it has monopoly power	KG	11/28/1973 B,008:1
Home installation plan approved	KG	11/15/1973 C,016:1
Gas, power hikes OK'd	KG	11/10/1973 A,001:3
Radioactive material escaped	KG	11/09/1973 B,003:4
Consumers asks priorities	KG	11/02/1973 B,010:1
Palisades: a $3 million a month millstone?	KG	10/28/1973 B,018:1
Ruling against Consumers Power	KG	10/24/1973 C,009:6
Woes at Palisades nuclear plant mount	KG	10/20/1973 A,001:5
Palisades tax break protested	KG	10/04/1973 B,011:1
Consumers to reduce pollution	KG	09/19/1973 B,003:4
Consumers seeks to pay more for gas	KG	09/16/1973 A,009:1
Consumers aiming at improving insulation	KG	09/10/1973 B,008:4
Consumers is criticized	KG	09/08/1973 A,011:2
Palisades shutdown reported costly	KG	09/07/1973 A,001:1

CONSUMERS POWER COMPANY

'Waterwheel' power plant in operation	*	KG	09/02/1973	A,007:1
Rate hike asked for gas plant		KG	08/16/1973	C,011:6
Prompt rate hikes to residential users OK'd		KG	08/14/1973	A,008:2
Consumers gets okay to purchase gas		KG	08/08/1973	D,009:1
Intervention in rate hike bid is OK'd		KG	07/10/1973	B,010:4
Utility's ads protested		KG	07/04/1973	A,013:1
Palisades plant's license extended		KG	07/03/1973	A,010:3
Effects of Palisades plant shutdown told		KG	06/06/1973	F,001:1
Consumers denies Nader's charges		KG	06/01/1973	B,012:1
Midland plant given go ahead		KG	05/19/1973	A,009:1
Power rate prehearing scheduled		KG	05/19/1973	A,009:2
Rate pledged by Consumers		KG	05/08/1973	C,006:1
Palisades cooling towers	*	KG	05/02/1973	A,004:1
MPSC accepts Consumers rate applications		KG	04/20/1973	B,014:1
Natural gas sale approved		KG	04/20/1973	B,014:3
CPC tries again on rate hike		KG	04/19/1973	A,012:4
Gas priority issue heats up		KG	04/11/1973	B,006:2
Power rate bid lowered		KG	04/11/1973	D,002:1
Rejection of power rate hike applauded		KG	04/07/1973	B,003:4
Consumers rate hikes rejected		KG	04/06/1973	A,001:1
Consumers Power asks $142 million rate hike		KG	03/31/1973	B,004:1
Midland atom plant safety hit		KG	03/31/1973	B,004:6
Palisades given full power okay		KG	03/27/1973	A,010:8
City to sell remaining ornamental street lights		KG	03/27/1973	B,001:5
WRC recommends tax exemption for towers		KG	03/24/1973	A,005:5
Plutonium okayed for Big Rock Power Plant		KG	03/17/1973	A,005:3
Delay in Midland atom plant claimed		KG	03/16/1973	A,015:2
Consumers Power tells of its financial needs		KG	03/14/1973	A,002:1
Court hearing on nuclear fuel set		KG	03/10/1973	A,012:1
Covert sells bonds to aid power plant		KG	03/07/1973	A,009:4
Palisades plant back in service		KG	03/06/1973	A,010:4
Palisades plant modifications nearly complete		KG	03/01/1973	B,012:5
Plutonium to fuel Big Rock nuclear plant		KG	02/19/1973	A,004:6
Former steam plant sold		KG	02/16/1973	B,001:4
Power plant hearing set		KG	02/16/1973	B,011:5
Consumers bid on rate hike plan bogs down		KG	02/13/1973	A,010:3
Waste system delay seen at Palisades plant		KG	02/13/1973	B,014:4
Another utility involved		KG	02/08/1973	A,004:1
Consumers Power defends service cutoff		KG	02/08/1973	A,004:1
Consumers plans to expand Holland area power plant	*	KG	02/04/1973	A,015:5
Book on Consumers Power	*	KG	02/04/1973	C,013:3
Nuclear plant being repaired		KG	02/03/1973	A,005:7
Gas sales to new customers shut off		KG	02/01/1973	A,001:4
Radiation release not an accident, Consumers says		KG	01/29/1973	A,010:1
Palisades leaks don't mean future disaster		KG	01/28/1973	F,007:5
Environmentalist raps Palisades plant 'leaks'		KG	01/27/1973	A,005:4
'No danger' in radioactive leak		KG	01/26/1973	B,001:1
No immediate threat facing power supplies		KG	01/26/1973	B,001:1
Bill policy defended by utility		KG	01/25/1973	C,013:8
Consumers cuts new customers		KG	01/22/1973	B,013:1
Sunday shutdown for Consumers facility here	*	KG	12/29/1972	B,001:4
Consumers wins power rate hike		KG	11/25/1972	A,001:6
Palisades key to air quality plans		KG	11/22/1972	B,002:7
Palisades tax break contested		KG	10/24/1972	A,014:1
Palisades gets full power okay		KG	10/18/1972	A,015:3
GOP hits Kelley's power rate deal		KG	10/14/1972	B,004:6
Agree on rate hike		KG	09/26/1972	A,001:6
That powerless feeling		KG	09/03/1972	D,004:6
The Palisades hearing		KG	08/06/1972	C,013:1
Consumers Power asks for home rate boost		KG	08/03/1972	A,009:5
Consumers Power buys Alpena tract		KG	08/02/1972	A,008:1
Palisades plant hearings closed		KG	08/02/1972	C,015:4
Full-power okay not likely yet		KG	08/01/1972	B,001:4
Fuel rod 'damage' report adds new threat		KG	07/28/1972	A,005:1
Consumers has decline in earnings		KG	07/28/1972	C,005:4
Power shortage priorities okayed		KG	07/15/1972	A,001:6
Palisades license hearing set in Kalamazoo		KG	07/10/1972	B,001:3
Way cleared for issuing full Palisades license		KG	07/01/1972	B,003:4
A.E.C. staff urges Palisades license for power		KG	06/30/1972	C,007:3
Utility explains expansion plans		KG	06/01/1972	B,011:3
Consumers gas rate hike OK'd		KG	05/25/1972	C,004:1

CONSUMERS POWER COMPANY

Interest rate adjustment OK'd	KG	05/24/1972	C,006:3
Hearings on energy needs scheduled	KG	04/27/1972	C,008:3
Consumers views rates as too low	KG	04/12/1972	C,014:4
Full power urged for Palisades plant	KG	03/17/1972	B,004:4
Palisades plant gets 60% power okay	KG	03/11/1972	A,001:4
Rate hike denied	KG	03/11/1972	B,001:6
Ads stress electrical need	KG	02/25/1972	B,012:4
$40 million for improved facilities in area	KG	02/08/1972	B,002:5
Aymond is president	KG	02/02/1972	C,007:1
Palisades 60% license hearing ends	KG	01/26/1972	B,001:1
Palisades wins initial approval	KG	01/25/1972	B,014:4
Consumers seeks rate hike	KG	01/25/1972	B,015:1
Plans $383 million construction	KG	01/24/1972	B,009:1
Palisades hearing to begin Jan. 25	KG	01/16/1972	A,012:1
A.E.C. to resume hearing	KG	01/15/1972	A,005:1
Consumers asks rehearing	KG	01/12/1972	A,010:1
Electricity produced at Palisades	KG	01/03/1972	A,001:4
Licensing for Palisades still stalled	KG	01/02/1972	B,012:1

Say Yes to Michigan,
Say No to the "Plutonium State Park"

Backgrounder
on Big Rock
Nuclear Power Plant

November 30, 2006

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Time Capsule

Table of Contents

Tables

Figures

[Note to readers: brackets denote reference documentation, as well as questions or comments upon Consumers Energy or government agency assertions discussed throughout this briefing paper. All references are available from the author or his sources, upon request. ***Also, any passages italicized and in bold represent the emphasis added by the author.***]

[The author wishes to acknowledge the following persons for their research contributions: Michael Keegan, Chair, Coalition for a Nuclear-Free Great Lakes; Kay Cumbow, Director, Citizens for Alternatives to Chemical Contamination; Kay Drey, NIRS Board Secretary; and Hugh McDiarmid Jr., Communications Director, Michigan Environmental Council. The author is responsible for any errors of omission or commission, however.]

The Big Rock Nuclear Plant on the shores of Lake Michigan near Charlevoix was permanently shut in 1997 after 35 years of atomic power production and radioactive waste generation. But the site continues to be haunted by high-level radioactive waste storage on-site, as well as soil, groundwater, shoreline, and very likely Lake Michigan sediment radiological contamination. The health risks of exposure and bio-accumulation of radioactive poisons in plants, animals, the food chain, and people should be of great concern. The hazards to human health, safety, and security will persist indefinitely.

Radioactive Waste: Terrorist Bull's Eye

"Electricity is but the fleeting byproduct from atomic reactors. The actual product is forever deadly radioactive waste." ---Michael Keegan, Coalition for a Nuclear-Free Great Lakes

Despite the permanent shutdown of the Big Rock reactor nearly a decade ago, and its subsequent dismantlement and decommissioning, risks still abound at the site. This is emphasized by the presence of 441 bundles (nearly 64 tons) of highly radioactive nuclear fuel rods stored in 8 concrete and steel silos on a concrete pad surrounded by fencing, heavily armed security personnel, and guard dogs. [Description of site visit by Lana Pollack, President, MEC; radioactive waste inventory from U.S. Department of Energy, "Final Environmental Impact Statement for Yucca Mountain," Feb. 14, 2002, Table A-7, "Proposed Action spent nuclear fuel inventory," page A-15; U.S. Nuclear Regulatory Commission, "Cask Registration Data for General Licensees," Nov. 11, 2006, emailed to author by NRC Spent Fuel Project Office on 11/27/06.]

The casks – BNFL FuelSolutions W150 casks, about 20 feet tall, 10 feet in diameter, sitting out in full view in the open air -- represent a radioactive bull's eye on the shore of Lake Michigan, the source of drinking water for millions.

Even the security measures in place at Big Rock, however, are of questionable efficacy against airborne, or remotely launched land-based and waterborne, attack scenarios. Remotely fired missiles, high explosives, and shaped charges could break open the containers and release

the radioactivity into the environment. In April, 2006 the investigative arm of the U.S. Congress, the Government Accountability Office, chastised the NRC for giving priority to the nuclear industry's bottom line over needed security upgrades at nuclear power plants.
[http://www.nirs.org/reactorwatch/security/sec04042006gaorpt.pdf]

A 1998 test at the U.S. Army's Aberdeen Proving Ground in Maryland showed that radioactive waste storage casks are vulnerable to anti-tanks missiles. The first missile obliterated the concrete shielding around the cask, and the second missile punched a hole through the cask wall to the inner waste chamber. Combined with incendiaries, the resulting fire could release catastrophic amounts of radioactivity into the environment. Each of the 8 casks at Big Rock contains about 240 times the long-lasting radioactivity released by the Hiroshima atomic bomb. Release of even a fraction of the contents of a single cask would be disastrous.

The 9/11 Commission report documented that Al Qaida had originally planned to hijack 10 jets on 9/11/2001. Two of the jets were going to be crashed into nuclear power plants. Al Qaida commanders, interviewed in Pakistan after the attacks, explained that the attack on nuclear facilities was called off for fear that the radiation release might "get out of hand," but that such attacks had not been ruled out in the future.

[http://www.nirs.org/factsheets/nirsfctshtdrycaskvulnerable.pdf ; "240 times Hiroshima" calculation done by Dr. Marvin Resnikoff, Radioactive Waste Management Associates, New York City, a conservative figure, because it only accounts for the five radio-isotopes of cesium, but not the hundreds of other radioactive poisons in the waste; http://www.9-11commission.gov/; Giles Tremlett, The Guardian, "Al-Qaida leaders say nuclear power stations were original targets," Sept. 9, 2002; Curt Anderson, "Sept. 11 Commission: Al-Qaida Planned 10 Hijackings: White House, CIA and FBI headquarters, nuclear plants originally targeted," June 17, 2004, page 1.]

These wastes will remain stored on-site for at least a decade. The U.S. Department of Energy is now saying that 2017 is the earliest possible date that the proposed national dumpsite at Yucca Mountain, Nevada can be opened. However, this estimate assumes that no litigation will delay the schedule even longer, but the State of Nevada and environmental organizations – adamantly opposed to the proposed dump due to the site's geologic unsuitability – are likely to file further legal interventions.
[http://www.ocrwm.doe.gov/info_library/newsroom/documents/ym-schedule-2006.pdf]

If and when the dumpsite opens, however, it would still take many additional years to transport Big Rock's wastes there. [DOE Yucca FEIS] Michigan law forbids the transfer of Big Rock's wastes to another site ("Spent fuel rods shall not be transported from a nuclear power generating facility for storage at any other nuclear power generating facility."), such as to the Palisades nuclear plant in southwest Michigan. [RADIOACTIVE WASTE,
Act 113 of 1978, Amended 1989, Section 325.491 Radioactive waste; depositing or storing in state prohibited; exceptions.] Thus, high-level radioactive waste will remain in storage at Big Rock for many years or even decades to come.

Consumers has even gotten permission from NRC to only inspect the casks once every two weeks. The casks do not have radiation or heat monitors directly installed upon them. Thus,

it would be possible for a radiation release or overheating incident to unfold for two weeks before being detected by the company.

A national coalition of environmental organizations, including groups in Michigan, has petitioned the U.S. Congress to fortify radioactive waste storage such as at Big Rock against terrorist attacks, as well as to safeguard it against accidents, as by requiring radiation and heat monitoring equipment on each cask. [See "Principles for Safeguarding Nuclear Waste at Reactors," http://www.citizen.org/documents/PrinciplesSafeguardingIrradiatedFuel.pdf]

In the meantime, the radioactive rods at Big Rock raise obvious questions about public health, safety, and security risks, especially in regards to their susceptibility to terrorism or sabotage. The development of a state park is incongruous with a potentially catastrophic terrorist target. Inviting large numbers of families and children into close proximity to high-level radioactive waste for public recreation makes no sense.

The U.S. Environmental Protection Agency is due, by the end of the year, to publish its radiation release regulations for the proposed high-level radioactive waste dump at Yucca Mountain, Nevada. EPA has proposed, and will enact in its regulations, a one million year regulatory compliance period for high-level radioactive waste management at Yucca. This shows how long these wastes will remain hazardous to human health and the environment.
[http://www.epa.gov/radiation/yucca/index.html]

Radioactive Contamination

Radiation Releases into the Environment

Ironically, despite its small size (it was a 75 megawatt-electric reactor, compared to a more typical 1,000 megawatt reactor), Big Rock released among the largest amounts of radioactivity of any single atomic reactor in the country. Many millions of curies of radioactivity were released into the air, soil, and groundwater, as well as into Lake Michigan's waters and sediments, risking concentration in flora, fauna, and the food chain.

By way of comparison, a large university medical center, with as many as 1,000 labs in which radioactive materials are used for research, diagnosis, and treatment, may have a combined radiological inventory of only about two curies, which are not spewed into the environment as at Big Rock, but rather carefully handled and managed. [see http://www.nirs.org/factsheets/greatlakespamp.pdf]

To give a sense of the levels of radioactivity that Big Rock generated, the company hired to decommission the site reported: "BNG America removed and disposed the 280-ton reactor vessel at Big Rock Point – ***the most radioactive reactor vessel removed in the US to date.***"

Consumers admits that the large-scale radiation releases from Big Rock were due in large part to ***"significant [nuclear] fuel failures"*** in the operating core, as well as to scores of radioactive waste and material leaks, spills, overflows, floods, and sloppy handling over the decades. [Big Rock Point Restoration Project LICENSE TERMINATION PLAN, Revision 1, July 1, 2004, Prepared by Consumers Energy Company: "Environmental Impact of Historical Fuel Failures," Page 2-5; "Radiological Event History," Page 2B-1.]

British Nuclear Group (BNG) America (formerly British Nuclear Fuels, Ltd., BNFL) went on to report: ***"Because the reactor had been used for experimental purposes, it had elevated radiation levels and workers performing the decommissioning and the environment required more protection than is required when decommissioning reactors used solely for commercial electricity generation."*** [see http://www.bngamerica.com/ under Projects/Commercial Work/Big Rock; accessed 11/28/2006]

The following tables, containing data provided by Consumers Energy to NRC, show that many millions of curies of radioactivity were spewed into the environment from Big Rock atomic reactor over the four decades of its operations.

These figures are taken from "Radioactive Materials Released from Nuclear Power Plants," NUREG/CR-2907, by Brookhaven National Laboratory, Upton, NY 11973, prepared for Office of Information Resources Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 (NRC FIN B2234)

Table I. Airborne Effluents Comparisons by Year

Fission and Activation Gases (Total Curies)

1965	132,000
1966	705,000
1967	284,000
1968	232,000
1969	290,000
1970	280,000
1971	284,000
1972	258,000
1973	230,000
1974	188,000
1975	50,600
1976	15,200
1977	13,400
1978	18,900
1979	6,670
1980	21,500
1981	19,700
1982	12,900

1983	11,000
1984	141,000
1985	62,600
1986	67,900
1987	8,350
1988	7,770
1989	7,080
1990	5,550
1991	4,500
Total:	3,357,620

Table II. Airborne Effluents Comparison by Year

I-131 and Particulates (Curies)

(Half-Life Equal To or Greater Than 8 Days)

1970	0.13
1971	0.61
1972	0.15
1973	4.60
1974	0.16
1975	0.12
1976	0.05
1977	0.01
1978	0.00891
1979	0.0019
1980	0.0294
1981	0.0061
1982	0.00471
1983	0.00335
1984	0.132
1985	0.0825
1986	0.0756
1987	0.0294
1988	0.0507
1989	0.00487
1990	0.00571
1991	0.00307
Total	6.27

Table III. Liquid Effluents Comparison By Year

Tritium (Curies)

1970	54.0
1971	10.3
1972	10.4
1973	19.7
1974	5.10
1975	5.73
1976	2.41
1977	8.83
1978	4.05
1979	5.45
1980	6.18
1981	3.13
1982	2.98
1983	22.2
1984	1.11
1985	1.27
1986	0.351
1987	0.585
1988	0.347
1989	0.639
1990	0.589
1991	0.251
Total	166

[The figure for 1984 is questionable, because Consumers admits in its License Termination Plan that a 20,000 gallon spill of tritiated water into soil and groundwater took place, yet its admitted tritium release for that year appears low.]

Table IV. Liquid Effluents Comparison by Year

Mixed Fission and Activation Products (Curies)

1970	4.70
1971	3.50
1972	1.10
1973	2.70
1974	1.10
1975	2.02
1976	0.77
1977	0.392
1978	0.274

1979 0.903
1980 0.782
1981 0.391
1982 0.260
1983 0.0782
1984 0.148
1985 0.153
1986 0.0709
1987 0.273
1988 0.218
1989 0.232
1990 0.0364
1991 0.122
Total 20.2

Table V. Solid Waste Comparison by Year

Activity (Curies)

1977 968
1978 25.6
1979 277
1980 30.9
1981 317
1982 4.33
1983 274
1984 2.13
1985 114
1986 252
1987 2,300
1988 728
1989 371
1990 126
1991 On-site storage
Total 5,790

[Consumers admits in its License Termination Plan, Rev. 1, July 1, 2004 that it operated an open air, makeshift cement block “incinerator” pit from 1965 to 1978. Due to the presence of radioactive ash, and the admitted potential for radioactive contamination of the soil there, it appears that radioactive solid trash was burned in the incinerator. Thus, an unknown fraction of the curies listed above in the solid radioactive waste category could have been emitted into the air, to fallout onto the soil and surface waters downwind.]

Please note that the 3,357,812.47 curies of radioactivity that Consumers Energy reported to NRC was emitted into the environment by Big Rock is not an exhaustive figure. Fission

and activation gas emissions for the years 1962 to 1964 (likely very high, given the experimentation with nuclear fuels taking place at Big Rock then), as well as 1992 to 1997, still need to be added, once the necessary NRC documentation can be obtained by the author. Missing years for other radioactive release categories also have to be obtained. Regardless, even the radioactive releases that can be documented show that Big Rock was among the worst emitters of radioactivity of any single nuclear power plant in the country. This is all the more troubling, in that Big Rock was a small reactor (75 megawatts-electric) compared to others (typical reactors are 1,000 megawatts-electric).

Scores of Radiological Incidents Admitted

The company's ***"Radiological Event History"*** in its July 1, 2004 revised "License Termination Plan" lists ***63 radiation spills, leaks, overflows, and floods***, as well as ***sloppy handling of radioactive wastes and radioactively contaminated materials across the site***. (LTP, Page 2B-1)

In just one of these incidents, on May 31, 1984 ***Consumers leaked 20,000 gallons of tritium (radioactive hydrogen) into the soil and groundwater. It requested – and obtained – permission from the NRC for "on-site disposal" – that is, not cleaning up the spill, but rather leaving it in the soil and groundwater.*** The company and NRC admit that this and other tritium spills violated the Safe Drinking Water Act from 1984 to 2000, in terms of the concentration of tritium in the site's groundwater.

Consumers holds that the tritium is flowing into Lake Michigan over time, and that dilution lowers the risk to public health and the environment. But this amounts to treating the land as a radioactive septic field, and regarding Lake Michigan as an industrial sewer or atomic cesspool for radioactive discharges. This contradicts the U.S.-Canadian International Joint Commission's call for virtual elimination of toxic chemical and radioactive discharges into the Great Lakes.

It must be pointed out that tritium can bind into the human biological system at the most intimate level, including in DNA, for decades, causing cellular and genetic damage to this and future generations. And radioactive hydrogen is simply the first radioactive poison to enter the groundwater and Lake Michigan. Others will inevitably follow. Just recently, breakthroughs in the scientific understanding of plutonium's solubility in groundwater have shown this most dangerous of radioactive poisons can relatively quickly travel great distances in the environment, threatening human health. In fact, plutonium contamination has been documented in groundwater samples taken at Big Rock.

[see: http://www.nirs.org/radiation/tritium/tritiumhome.htm; http://www.nirs.org/press/02-04-2000/1; http://www.sciam.com/article.cfm?chanID=sa003&articleID=000D842E-0C4E-1541-8B6B83414B7F0000&ref=rss ; Dale Condra, ORISE Table 4, "Concentrations of Plutonium Radionuclides in Water Samples, Big Rock," in "Analytical Results for Water Samples Collected December 2, 2003 at Big Rock Point Nuclear Power Plant, Charlevoix, Michigan," Inspection Report Number 050-00155/2003-07)[RFTA 04-001], Oak Ridge Institute for Science and Education (ORISE), Jan. 27, 2004]

NRC has allowed Consumers to release the Big Rock site for "unrestricted use" so long as radiation doses are no higher than 25 millirems per year. But the Safe Drinking Water Act limits radiation in drinking water to only 4 millirems per year, calling into question the status of Big Rock's aquifers, which Consumers admits are contaminated with tritium. In a startling admission, ***Consumers indicates that its future radiation dose projections for residents on the site excludes the drinking water pathway.*** This seems to indicate that Consumers is not protecting future visitors or inhabitants of the Big Rock site who may be exposed to radioactivity through drinking the groundwater. (See page 19 for additional information.) [License Termination Plan (LTP), Rev. 1, July 1, 2004, page 2-18].

Other incidents listed in Consumers' "Radiological Event History" include:

[all passages are taken verbatim from Consumers LTP, unless otherwise indicated; author's clarifying comments within brackets]

1960's: Radwaste Tanks and Resin Disposal Tanks were overfilled on many occasions, often with water standing on the floor…

1960's: wooden pallets and paint chips from the "Protected Area" (radiologically contaminated) dumped along the Woods Road.[author abbreviation of longer passage]

12-1-62 Pipe Tunnel was flooded…water was from the Condensate System. Leaks of this type have occurred throughout the operational life of the plant. Some of this contaminated water may have entered…into the sand below the building.

8-8-63 It is likely that contaminated water may have entered the ground below the tanks…

8-6-64 Discharge Canal dredging…discharge canal is the effluent pathway for the radwaste batch release of contaminated water…dredging spoils may have been stored on the narrow strip of land north of the protected area and on the beach…

11-13-64 Contamination was identified on top of the Canal Process Monitor intake piping…source of contamination is believed to have originated from this licensed release pathway…

6-8-65 …the incinerator was a simple enclosure constructed of cement block. Some of the ashes that were removed from the incinerator have contained low levels of contamination. The incinerator was in operation between 1965 and 1978…There is a potential that contamination may be present in the soil at this location. [open air burning of radioactively contaminated solid wastes for 13 years, with unknown amounts of airborne radioactive emissions, and downwind fallout]

7-25-73 Contaminated material is discovered in a temporary shelter near the [smoke] stack base…The potential exists for soil and pavement in this area to be contaminated…

8-18-75 Uranylacetate was spilled in the Annex Building. The Public Affairs Department likely used this radioactive chemical during [public] presentations. [contamination dumped at Waters Township landfill?]

2-21-77 “The radwaste transfer cask liner was banged against the cask during the transfer of spent filters. Contaminated debris was spilled on the ground by the open air Radwaste Vault in the Radwaste Compound. The liner read 2.3 Rem/hr. Clean up efforts included the removal of contaminated snow. It is likely that contamination remained on the ground in this area.” [at 2.3 Rem/hr, a worker would receive his annual “allowable” dose in just two hours.]

8-20-78 “Contamination was found in demineralized water collected at the chemistry lab and Machine Shop sample location. The source of contamination is suspected to have originated from a remote piping cross connection that established demineralized water as an alternate source for spent fuel pool make-up. The cross connect was removed, and in later years this contamination was reduced to trace levels found only in sample locations at lower elevations in the sphere. Many plant systems that are connected to the demineralized water supply have drain connections that may have provided a contamination release pathway. The investigation following this event could not identify a radioactivity release to the environment. This system is now surveyed on a routine basis.”

9-28-78 The Waste Hold Tank was found overflowing to the asphalt below the tanks.

11-20-81 Approximately 10 cubic feet of contaminated resin were spilled at the north end of the Pipe Tunnel in the Turbine Building. The spill was an operational error resulting from improper valve line up. Clean up efforts included the removal of the top 3-5 inches of gravel from the expansion joint area between the Pipe Tunnel and the Sphere. Over the course of the next several days the area was decontaminated and resurveyed several times. Fields of 2-3 Rem/hr were recorded at contact with the floor. It is suspected that contamination remains in the sphere expansion area and may have also migrated through the floor expansion joints to the environment below. [at 2-3 Rem/hr, workers could have received their annual “allowable” radiation dose in just a couple of hours]

11-5-82 Contamination was identified in asphalt rubble located near the Stack Base. The following events have occurred in the vicinity of the Stack Base that could have resulted in the contamination of this area: temporary contaminated material storage area, resin sluicing and pumping, numerous Waste Hold Tank leaks and overflows, Condensate Storage Tank leaks. This area was also the transfer point for the movement of radwaste filters casks to the Radwaste Building.

11-16-82 A transport pathway was identified between the Chemistry Lab sink and the septic system. This sink was used for the disposal of non-contaminated water samples. Modifications were made to correct this situation in December 1982.

There is a potential that this sink may have been used for the disposal of contaminated waste. The septic tanks and drain field (liquid, sludge and soil) were sampled for suspected contamination. This and subsequent investigations and analyses have never identified radioactive contamination. The septic tanks are presently sampled and analyzed three times per year. [did this unauthorized dumping of radioactive liquids in a non-radiological drain system take place from 1962 to 1982?]

11-24-82 Contaminated blocks of cement from the radwaste vaults were moved to the northeast corner of the Contaminated Materials Warehouse. The cement had fixed contamination levels of 100 to 800 cpm. These blocks may have been stored along the power line at the time the contamination was discovered. [10 to 20 cpm, counts per minute, is considered a normal natural background radiation level]

5-31-84 Water was found weeping through the wall of the Radwaste Pump Room. The water originated from a leak in a two-inch aluminum line below the Turbine Building floor. It was calculated that approximately 20,000 gallons of condensate system water had leaked into the soil. A section of the floor in the southwestern comer of the turbine building was cut out and eight barrels of contaminated soil were removed and shipped as low-level radwaste. On August 16, 1985, Consumers Power requested NRC approval to retain the remaining contaminated soil. Total activity estimated at 1.4E-7 microCi/g; nuclides present in 1984 included Mn-54, Cs-137, Co-60 and Ag-110m. The NRC granted approval on May 8, 1986. Voids were replaced by clean fill and the concrete floor was repaired. It is estimated that 5300 cubic feet of contaminated soil remained at this location. The summary section of this engineering study made the following conclusion: "Retaining the contaminated soil on-site with approximately 8 inches of concrete covering (turbine building floor) would result in no discernable impact on either the environment or on occupational and public health. The total activity is expected to be undetectable within seven years." [use of site as radioactive septic field, of Lake Michigan as radioactive industrial sewer]

11-9-84 Concrete blocks from the radwaste vault were found with activity levels of 100 to 500cpm. These are likely from the storage location along the power line. [10 to 20 cpm considered normal natural background]

9-30-86 Contaminated sludge was found in the heating boiler during a maintenance evolution. The source of this activity is believed to have originated from contaminated demineralized water make-up… Frisking performed on samples of the sludge detected 160 cpm over background and gamma analysis identified measurable levels of Co-60, Cs-134 and Cs-137. The sludge was removed and the area was decontaminated. A pathway existed for liquid drains from this system to have reached the environment. A new heating boiler was installed in 1990 and system drains are now batched by licensed effluent release. [Consumers simply got permission from NRC for these leaks into the environment]

2-13-87 Approximately 25 gallons of water is estimated to have leaked from the #1 Waste Hold Tank vent line due to overfilling. Less than one gallon was estimated to have reached the environment. Soil samples taken after this event identified1.2E-5 xCi/gm (sic) of Co-60, 3.4E-5 xCi/gm (sic) of Cs-137, and 2.0E-6 xCi/gm of Mn-54. Two and a half fifty-five gallon drums of

soil were removed from the area below the tank. The pit was approximately 3 feet long and 2 1/2 feet deep when soil levels reached <100 cpm above background and the clean-up effort was terminated. [units of measurement are not clear in document]

3-17-87 The Discharge Canal was dredged. A direct frisk of dredge spoils identified only background activity levels. The refuse was likely placed on the elevated stretch of property between the beach and the protected area fence that is north of the Containment Building. [was radiation monitoring adequate?]

6-30-87 Maintenance removes sludge from the heating boiler water-box. Gamma isotopic analysis identified a Cs-137 activity of 1.60E-6 xCi/cc of sludge. During the process of clean-out approximately 500 gallons of heating boiler water was inadvertently released to the septic system. [Consumers has admitted that septic drain field has been left in place. What about radioactive contamination? Units of measurement again unclear.]

2-24-89 Drain line integrity is questioned in the floor drain of the Condensate Demineralizer Room (between cation and anion tanks). Maintenance personnel may have punctured the drain while attempting to unplug the line. Soil contamination is suspected below the concrete flooring.

9-19-91 A truckload of rip/rap and a concrete pad were frisked and released for storage along the power line behind the Swamp Warehouse. This material was likely from the canal dredging area.

8-13-93 The #1 Waste Hold Tank was overfilled and leaked to the ground. The area was boundaried off and decontaminated. [to what level of contamination?]

11-27-93 The overhead supply line to the Condensate Storage Tank was found leaking near the Turbine Building. A temporary cover was constructed to keep out rain and snow.

1-6-94 A leaking union was discovered on a section of the demineralized water transfer line located immediately west of the southern end of the Turbine Building. Snow and ice in the area below the piping leak was collected. The logbook entry gave no activity results for the samples. The leak was repaired on the same day as it occurred. [radiation levels were not reported, although contamination was clear]

6-27-94 Contractors removed asphalt and dirt from the Radwaste Compound in preparation for pouring a new cement slab in front of the loading bay. This asphalt and dirt were released to the power line storage area behind the Swamp Warehouse. This location from which these materials came was once a contamination area.

Area 1 - The edge of the asphalt directly west of the resin disposal tank plugs. Approximately 5-10 square meters. Nuclide activity levels in this area ranged from 4.7 to 13 pCi/gm of Co-60, and 2.8 to 100 pCi/gm of Cs-137. This is believed to have originated from the 1990 resin transfer work and the numerous spills and overflows of the Waste Hold Tanks that occurred over the years.

Area 2 - Approximately 5-10 square meters of soil west of the acid tank containment wall contained contamination levels up to 48 pCi/gm of Co-60 and 70 pCi/gm of Cs-137. This activity suspected to have originated from the 1984 Condensate Storage Tank leak and other spills and overflows of the Waste Hold Tanks. Clean up efforts were conducted at the completion of the Scoping Survey. [clean up to what levels of contamination?]

11-12-94 An activity analysis was performed on the storm drain effluent that empties into the west drainage ditch. Samples were taken from the eroded area near the drain and from nearby sediment and vegetation. The results of these analyses could not be located. However, it is known that radioactivity was limited to sediment passing through the drain and not to liquid effluent, and that a barrel was installed to collect sediment at the outfall of the drain. [but wouldn't radioactive particles, as well as dissolved radioactive substances, simply have flowed with the water through the barrel?]

6-6-95 Gravel containing Cs-137 was identified during repair of the Turbine Building roof. The gravel contained Cs-137 at soil background levels. The gravel is being stored under a tarp northwest of the sphere. [it appears, given the 2004 date on this document, and the use of the present tense, that radioactive gravel may have been stored under a tarp for nine years]

9-14-95 Heavy rains flooded an area below the [smoke] stack base. The storm drain at this location had been sealed due to ongoing resin transfer work and the seal was removed to allow flow to the west drainage ditch. A gamma analysis of the drain discharge to the drainage ditch identified radioactive contamination. No activity could be identified in additional samples taken of the sediment collection barrel and creek discharge to the lake. [was radiation detection adequate?]

8-23-96 Contamination was found (15 xCi/gm)[sic, prefix for unit of measurement unclear] in the collection barrel sediment of the storm drain discharge at the west drainage ditch. Samples were taken after a spent resin transfer evolution west of the Turbine Building. This location is the storm water collection source for the storm drain. An investigation identified the following known sources of contamination in this area:
* Spills or the migration of contamination during spent resin and filter cask transfer
* Waste Hold Tank overfills
* Contamination resulting from past leaks in area piping

9-16-96 Two loads of blacktop were removed from an area near the stack base. Both loads were frisked and identified no activity above background levels. These two loads were released to the storage area along the power line behind the Swamp Warehouse. An additional load evaluated on the following day contained numerous areas of surface contamination ranging from 1,000 to 10,000 cpm. The contaminated pieces were segregated and taken to the Radwaste Building. The remaining asphalt was released to the power line storage area. [normal natural background radiation is at 10 to 20 cpm]

11-18-96 Roof repair was performed on the Turbine Building…Gravel

from this location was removed and placed in the storage location northwest of the Containment Building. The average activity of the gravel stored in this area is 0.72 xCi/gm Cs-137, and 0.07 xCi/gm Co-60. [prefix on unit of measurement unclear]

3-13-97 Contamination was found in the soil below a cracked floor drain near the caustic tank in the Condensate Pump Room. This room is located in the Turbine Building north of Track Alley. Samples collected identified Cs-137, Mn-54, Sb-124, and Cs-134. Area clean up efforts were performed and the drain has been plugged to prevent further use. Soils in this location are expected to contain low levels of contamination. [Sb-124 was not listed in company or NRC documents of radioactive contaminants still on site. Why not, if "Soils in this location are expected to contain low levels of contamination"?]

3-98 An investigation of a system process monitor alarm event identified contamination (Co-60 and Mn-54) in the sediment of the east storm drain. For a brief period, radioactive contaminants were introduced into the Service Water System that provides supply water to many radiologically clean systems. The contaminants entered through an improperly seated condenser warming line and were the result of wave-suspended radioactivity that was previously discharged to the lake in permitted releases. The sediment radioactivity is likely to have originated from the condenser vacuum pump which uses sealing water from the Service Water System and discharges to the storm drain. Sediment activity levels in the drain piping were approximately 0.8 pCi/gm. No activity was identified in the samples taken from other connecting sections of drain system. The entire length of this drain line has been decontaminated and is now monitored on a routine basis by the Operational Health Physics Department. Any potential piping leaks in this system would have presented a release pathway to the environment. [backwash from Lake Michigan radioactive enough to sound radiation alarms in discharge canal six months after reactor shutdown]

No Date: Anti-Contamination clothing in a yellow radwaste disposal bag was found in a void under the asphalt near the Equipment Lock Area. No contaminated materials were present in the bag. This void may be the result of wash out that was caused by modifications that were made to the Alternate Shutdown Building drainage. No further information is known concerning the origin of the radwaste disposal bag. [are there other additional on-site burials of waste that ***do*** contain contamination that have been forgotten about?]

No Date: The integrity of all under ground piping is suspect due to inadequate cathodic protection. There is a potential of soil contamination in areas near underground piping carrying radioactive fluids.

No Date: Old steel from inside the sphere was stored in the area where the Swamp Warehouse is presently located. The steel was from plant modifications that were made over the years and is believed to contain low levels of contamination.

The following figure, from Consumers' July 1, 2004 revision to its License Termination Plan, shows the area of the Big Rock property that is likely the most contaminated – directly under and adjacent to the location of the nuclear power plant itself.

Figure 1. **Big Rock Point Industrial Area (next page)**

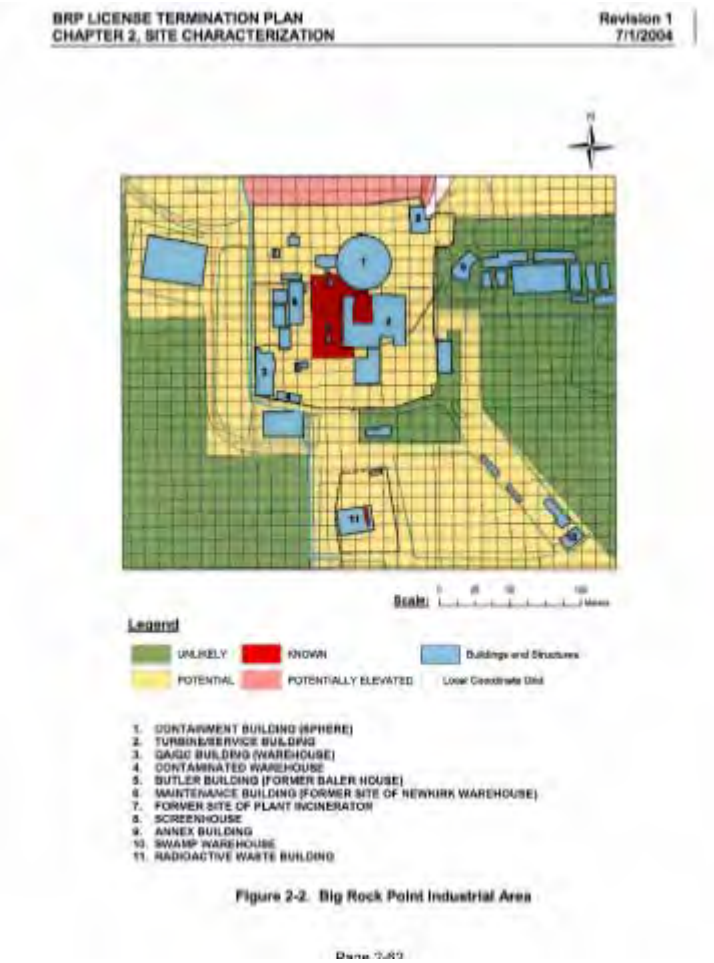

Figure 2-2. Big Rock Point Industrial Area

It should be mentioned, though, that due to airborne and waterborne releases, as well as sloppy handing and storage of radioactive wastes and materials, areas other than this concentrated one are also likely radioactively contaminated.

Environmental Clean Up, or Lack Thereof

The radioactivity that the Big Rock reactor routinely released over the decades of nuclear power operation (1962 to 1997) has not been completely removed from the land and waters.[see http://www.nirs.org/factsheets/greatlakespamp.pdf]

Consumers Energy and the U.S. Nuclear Regulatory Commission (NRC) admit that ***"residual radioactivity"*** continues to contaminate the soil and groundwater at Big Rock, specifically the following 24 "fission and activation products" (radioactive poisons): Hydrogen-3 (tritium); Carbon-14; Manganese-54; Iron-55; Nickel-59; Cobalt-60; Nickel-63; Zinc-65; Strontium-90; Technetium-99; Silver-110m; Iodine-129; Cesium-134; Cesium-137; Europium-152; Europium-154; Europium-155; Plutonium-238; Plutonium-239; Plutonium-240; Plutonium-241; Americium-241; Curium-243; Curium-244." [see NRC "Safety Evaluation" and "Environmental Assessment/Finding of No Significant Impact," March 2005; Consumers "License Termination Plan, Revision 1," July 1, 2004.]

Tritium (H-3, radioactive hydrogen) contaminates all three layers of groundwater at Big Rock, and has been -- and is likely still – flowing into Lake Michigan. Consumers states that "The groundwater flow in all three of these units [underground aquifers] is northerly into Lake Michigan." [LTP, Rev. 1, July 1, 2004, p. 2-26] Consumers goes on to state "any water carrying potential contamination would be at or beyond the northern limits of the site (at their discharge point to Lake Michigan) before mixing with upper portions of the bedrock aquifer…" [LTP, p. 2-28] Apparently, Consumers is untroubled by this projected tritium contamination of what it admits is potable groundwater, because it happens beyond the edge of its private property.

Consumers speaks of a "trapped subsurface source term of tritium," and acknowledges persistent tritium contamination in the bedrock aquifer of 900 to 1,000 picoCuries per liter. [LTP, p. 2-28] NRC mentions even higher levels of contamination, up to 2,900 picoCuries per liter. [NRC "Environmental Assessment," 3/11/2005, page 14]

Given that Consumers and NRC advocate "diluting" the radioactive contamination in Lake Michigan as an acceptable practice, this proposed recreation area could be called "Radioactive Septic Field State Park," and Lake Michigan a radioactive industrial sewer.

Up until the year 2000, Big Rock's groundwater contamination was one to two times higher than EPA's Safe Drinking Water Act limits. In a startling admission, ***Consumers indicates that its future radiation dose projections for residents on the site excludes the drinking water pathway*** [March, 2005 NRC "Safety Evaluation" and "Environmental Assessment/ Finding of No Significant Impact (FONSI);" http://www.nirs.org/radiation/tritium/tritiumhome.htm ; License Termination Plan (LTP), Rev. 1, July 1, 2004, page 2-18].

This is a dangerously non-conservative assumption, in that the groundwater is admitted to be contaminated, and it cannot be assumed that Big Rock's groundwater will not be used for drinking water in the future. In fact, in its LTP, Consumers admits that the bottom aquifer is potable water. Consumers assumes that the two upper aquifers are non-potable, but this assumes institutional controls will be maintained for as long as the radioactive poisons contaminate that groundwater – an unreasonably optimistic assumption.

Below are reproduced three figures from Consumers' July 1, 2004 revision to its License Termination Plan showing the theoretical flow paths for contamination via groundwater into Lake Michigan. "Figure 2-1" from the License Termination Plan, shown on page 25 below,

shows the extent of the “Impacted Area” (potentially radioactively contaminated) that Consumers will admit to.

Figure 2. Tritium Plume in Shallow Groundwater Zone. (next page)
Figure 3. Tritium Plume in Intermediate Groundwater Zone. (page 21)
Figure 4. Tritium Plume in Bedrock Groundwater Zone. (page 22)

Figure 2-13. Tritium Plume in Shallow Groundwater Zone

Figure 2-14. Tritium Plume in Intermediate Groundwater Zone

Figure 2-15. Tritium Plume in Bedrock Groundwater Zone

Lake Michigan, and Lake Michigan sediments, have very likely not been adequately investigated – if at all -- by the company or federal regulators for radioactive contamination emitted from Big Rock. NRC and Consumers Energy have assumed that so-called adequate dilution of the radioactive poisons has taken place, but what about bio-magnification of radioactivity in Great Lakes organisms, as documented by the International Joint Commission in its 1999 Nuclear Task Force's "REPORT ON BIOACCUMULATION OF ELEMENTS TO ACCOMPANY THE INVENTORY OF RADIONUCLIDES IN THE GREAT LAKES BASIN (http://www.ijc.org/rel/boards/nuclear/bio/index.html)? In 1998, six months after Big Rock had permanently shut down, radioactivity suspended in Lake Michigan water -- likely bio-magnified in algae – was backwashed up the discharge canal, causing radiation monitor alarms to sound. [See 3-98 incident report, above] Radioactive contamination in Lake Michigan sediments could wash back ashore over time, be picked up on the wind as particles, and be inhaled by visitors to the state park at Big Rock. Children could also ingest radioactive particles contaminating the surface of the soil and beach.

Referring to the area of the Discharge Canal, NRC indicates that Lake Michigan sediment radioactive contamination is quite likely: "Radioactivity originating from licensed liquid release

is present in this area; characterization surveys identified elevated levels of radioactivity concentrate in the sediment below the water's surface." Of course, where Consumer's "private property" ends at the Discharge Canal and where Lake Michigan begins makes little difference to the ecosystem, which is radioactively contaminated throughout. [NRC "Environmental Assessment," 3/11/2005, page 10]

Although Consumers asserts that the Big Rock site is a "Greenfield," their own words and documents indicate otherwise. The author attended a meeting in February, 2003 between Consumers representatives and U.S. Nuclear Regulatory Commission staff at NRC headquarters in Rockville, Maryland. At the meeting, Consumers proposed to walk away from much of the radioactive mess they've made on the site. Claiming they did not want to disturb the radioactive contamination in the sediment in a canal leading out into Lake Michigan, Consumers proposed to not even look at how badly or far out into Lake Michigan the contamination extended. However, the following figure from the License Termination Plan indicates that some level of assessment was carried out.

Figure 5. Discharge Canal Survey Unit.

At the meeting, Consumers representatives also said that the groundwater under the site would wash the radioactive contamination into Lake Michigan, and since that was off their

property, they needn't worry about it. NRC, the mission of which is supposedly to protect public health and safety and the environment, did not object to that twisted logic.
[http://www.record-eagle.com/2003/feb/22letter.htm : Kevin Kamps, “Profits over safety?”, Letters to the Editor, Traverse City Record Eagle, February 22, 2003]

Consumers' flippant, carefree attitude shouldn't be a surprise, however. The company that Consumers hired to "clean up" Big Rock - British Nuclear Fuels. Ltd. - has turned the Irish Sea into one of the most radioactively contaminated bodies of water on earth, due to the large-scale discharges of plutonium, technetium, and other radioactive poisons from its Sellafield nuclear facility in the U.K. BNFL has discharged over 1,000 pounds of plutonium into the Irish Sea, when a mere microscopic speck inhaled into the human lung can initiate lung cancer. Wave action has washed plutonium back ashore, throwing it back up into the air as sea spray. Plutonium contaminated dust has been documented in residences in neighboring villages. An entire yard had to be dug up and treated as radioactive waste, due to radioactive pigeon droppings under bird feeders there. Plutonium in children’s teeth has been documented hundreds of miles from Sellafied, with levels decreasing with distance from BNFL’s facility. Governments from Ireland to Scandanavia have objected to the radioactive contamination of the seafood supply, and have launched legal interventions at the European Union. Radioactivity from Sellafield has been detected as far away as Canadian Arctic waters. In April, 2005 BNFL suffered another major radioactive leak at Sellafield. A full 90% of the entire radioactive emissions and discharges from the British nuclear power industry (including all reactors) emanate from the single reprocessing site at Sellafield, run by BNFL. Parents who work at BNFL have elevated incidences of stillbirths, leukemia, and non-Hodgkin’s lymphoma in their children. ***This*** is the company that Consumers hired to “clean up” Big Rock, which hung a hand-made “BNFL, Ltd.” clapboard sign in front of its office in a quaint rented house on the main street of Charlevoix. The “Ltd.” stands for Limited, as in Liability. As in not responsible for any messes it makes.
[http://www.corecumbria.co.uk/ ; http://www.nirs.org/factsheets/rwreprocessfactsheet.pdf]

BNFL, now called BNG (British Nuclear Group) America, is now owned by EnergySolutions of Salt Lake City, Utah. Radioactive wastes from Big Rock have been buried at EnergySolutions’ “Envirocare” dump in Clive, Utah – including a train load that derailed in Clare County, Michigan in summer 2006 [http://www.nirs.org/press/06-20-2006/1]. Big Rock has also dumped radioactive wastes at the Barnwell dump in South Carolina, including its reactor pressure vessel, which also suffered numerous transport mishaps along the way.
[http://www.nirs.org/radwaste/hlwtransport/nukewatch122003.htm] As an indication of how much radioactivity Big Rock generated, BNG America reported that Big Rock’s reactor pressure vessel was the most radioactive one yet decommissioned in the U.S.
[http://www.bngamerica.com/index.php?load=projects&page=index&op=project_fetch&project_id=1]

Consumers also admits that “***the potential exists that residual radioactivity may be present in subsurface areas of the drainfield***,” but still intends to leave the drainfield in place. In its 2nd revision of the License Termination Plan, Consumers states:

All equipment, components and structures, including subsurface foundations, but ***excluding an onsite septic drainfield*** and the plant intake water pipe, will be removed rather than undergo remediation. ***The drainfield is being retained in place, with the concurrence from local and state health officials. The drainfield is in an impacted area, but characterization studies show that it will meet site release criteria without remediation.***

[License Termination Plans: Rev. 1, 2004, Page 2-37; Rev. 2, 2005, Page 4-2]

Thus, Consumers is knowingly leaving the radioactively contaminated drain field in place. How such abandonment of radioactively contaminated infrastructure comports with NRC's supposed requirement of ALARA (keeping radioactive doses As Low As Resonably Achievable) is unclear.

On Page 2B-10 of the LTP, Rev. 1, Consumers reports on 5-99 that "Trace levels of contamination were found in the east storm drain…" It goes on to state that "removal of storm drains will be a requirement for license termination." Are those storm drains somehow related to the drainfield mentioned above? Have they been removed, as promised?

Also of concern are the literally shallow requirements for nuclear power plant decommissioning and release of the site for "unrestricted use" under the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) subscribed to by the U.S. Environmental Protection Agency, the NRC, the U.S. Department of Defense, and the U.S. Department of Energy. Soil analysis and remediation only need take place to a depth of 15 centimeters (5.9 inches) under MARSSIM, a point echoed in Consumers' Big Rock decommissioning documents, despite clear evidence of contamination at deeper locations in the soil and groundwater. It is not clear that any other federal or state regulations required Consumers to investigate deeper than six inches down for evidence of radiological contamination, despite knowing that contamination extends much deeper than that at Big Rock in the soil, subsurface, and groundwater.

Since Big Rock dealt directly with NRC for regulation, as opposed to an "agreement state" state agency, NRC did not address toxic, hazardous chemicals during decommissioning. Consumers attempted to simply say that no such issues existed at Big Rock, but Michigan Department of Environmental Quality did not immediately agree with that.

A Memorandum of Understanding between EPA and NRC focuses upon 25 radioactive contaminants to address during site decommissioning. But what of the dozens, even hundreds, of additional radioactive poisons generated by nuclear fissioning at Big Rock, many of which also escaped into the environment? [MARSSIM, NUREG-1575, Rev. 1; EPA 402-R-97-016, Rev. 1; DOE/EH-0624, Rev. 1; August 2000]

Lakeshore Contaminated

Although the one and a half miles of "undisturbed" Lake Michigan shoreline is a major selling point for a state park at Big Rock, Consumers admits (in the figure below, from its July 1,

2004 revision to its License Termination Plan) that much of the shoreline is potentially contaminated with radioactivity.

Figure 6. Big Rock Point Owner-Controlled Area [showing "Impact Area," that is, potentially radioactively contaminated]

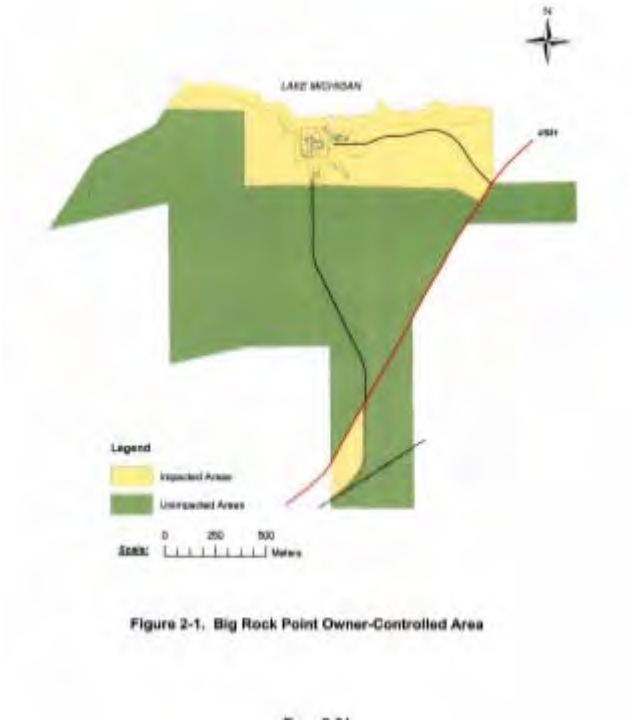

Figure 2-1. Big Rock Point Owner-Controlled Area

Duration of Radiological Hazards

Here is the list of other radioactive poisons Consumers Energy and the U.S. Nuclear Regulatory Commission admit are in the soil and ground water at Big Rock [from page 3 of the NRC "Safety Evaluation," March 24, 2005]:

"24 radionuclides present at the site: H-3; C-14; Mn-54; Fe-55; Ni-59; Co-60; Ni-63; Zn-65; Sr-90; Tc-99; Ag-110m; I-129; Cs-134; Cs-137; Eu-152; Eu-154; Eu-155; Pu-238; Pu-239/240; Pu-241; Am-241; Cm-243/244. These radionuclides contain fission and activation products…"

The NRC report goes on to state:

"the licensee identified…the following radionuclides as contributing to dose after license termination: H-3; Mn-54; Fe-55; Co-60; Sr-90; Cs-137; Eu-152; Eu-154; and Eu-155."

We question why such radioactive poisons as Pu-239, Sr-90, Tc-99, and others acknowledged as "present at the site" are excluded from the list "as contributing to dose after

license termination." They would contribute to dose far into the future, given their long hazardous persistence and biologically interactive properties.

Each radioactive poison has its distinctive hazardous persistence, some in the centuries, others in the millions of years. Certain radioactive poisons tend to target their risks at particular human organs: Sr-90 at bones, Cs-137 at muscles (including the heart), and Pu-239 at the lungs, for example. Please see the following two tables.

Table VI. **Hazardous persistence of radioactive contaminants at Big Rock.**

Radioactive Poison	Half-Life*	Hazardous-Life**
H-3, Tritium (radioactive hydrogen)	12 years	120 years
C-14, Carbon-14	5,730 yrs	57,300 yrs
Mn-54, Manganese-54	312 days	8.5 yrs
Fe-55, Iron-55	2.73 yrs	27 yrs
Ni-59, Nickel-59	76,000 yrs	760,000 yrs
Co-60, Cobalt-60	5.27 yrs	53 yrs
Ni-63, Nickel-63	100 yrs	1,000 yrs
Zn-65, Zinc-65	244 days	6 yrs 8 months
Sr-90, Strontium-90	28.8 yrs	290 yrs
Tc-99, Technetium-99	211,100 yrs	2,100,000 yrs
Ag-110m, Silver-110m	250 days	6 yrs, 10 months
I-129, Iodine-129	16 million yrs.	160 million yrs
Cs-134, Cesium-134	2 yrs	20 yrs
Cs-137, Cesium-137	30 yrs	300 yrs
Eu-152, Europium-152	13.5 yrs	135 yrs
Eu-154, Europium-154	8.6 yrs	86 yrs
Eu-155, Europium-155	4.8 yrs	48 yrs

(table continued, below)

Radioactive Poison	Half-Life*	Hazardous-Life**
Pu-238, Plutonium-238	88 yrs	880 yrs
Pu-239, Plutonium-239	24,110 yrs	241,100 yrs
Pu-240, Plutonium-240	6,563 yrs	65,630 yrs
Pu-241, Plutonium-241	14.4 yrs	144 yrs
Am-241, Americium-241	432 yrs	4,320 yrs
Cm-243, Curium-243	29 yrs	290 yrs
Cm-244, Curium-244	18 yrs	180 yrs

*The “half-life” of a radioactive substance is the time period it takes for half the material to radioactively decay into another material. Note that the decay product, or radioactive “daughter,” may itself also be radioactive and/or hazardous, with its own half-life.

**The “hazardous-life” of a radioactive substance is, at a minimum, ten times as long as its half-life. It could even be twenty half-lives long. Twenty half-lives would be twice as long as the “hazardous lives” reported in the table above, but would be a more conservative measure (as in requiring longer protective measures to safeguard human health)

[Half-lives taken from the Berkeley Laboratory Isotopes Project’s ‘Exploring the Table of Isotopes,’ May 22, 2000, downloaded on November 13, 2006]

Impacts on Human Health

Table VII. Radionuclides at Big Rock: Type of Radiation, Biological Effect

Radioactive Poison	Type of Radiation Emitted	Biological Effect/Organ Targeted
H-3, Tritium (radioactive H)	Beta particle	Goes anywhere in human body H goes, including DNA; can stay in body for 10 years or more
C-14, Carbon-14	Beta particle	Once ingested or inhaled, distributed and bound throughout human tissue just like non-radioactive carbon
Mn-54, Manganese-54	Gamma ray	Mn is essential for a broad range of enzymes, which are essential to cellular function; gonads

(table continued below)

Radioactive Poison	Type of Radiation Emitted	Biological Effect/Organ Targeted
Fe-55, Iron-55	X-ray; Auger electron emitter (travels like a drill in a swirling pattern)	Hemoglobin, liver and spleen
Ni-59, Nickel-59	Electron capture	Fairly ubiquitous in human system
Co-60, Cobalt-60	Beta, Gamma	Liver, kidney, bones, ovaries/testes
Ni-63, Nickel-63	Beta	Fairly ubiquitous in human system
Zn-65, Zinc-65	Gamma	Ubiquitous in human system; gonads
Sr-90, Strontium-90	Beta particle	Bone
Tc-99, Technetium-99	Beta	Kidney
Ag-110m, Silver-110m	Beta, Photon	Whole body (also liver, brain)
I-129, Iodine-129	Beta, Gamma	Thyroid Gland, ovaries
Cs-134, Cesium-134	Beta, electron capture	Muscle, including heart; ovaries/testes
Cs-137, Cesium-137	Beta, Gamma	Muscle, including heart; gonads
Eu-152, Europium-152	Gamma, electron capture, positron	effect unknown
Eu-154, Europium-154	Gamma, beta, electron capture	effect unknown
Eu-155, Europium-155	Beta, gamma	effect unknown
Pu-238, Plutonium-238	Alpha, Gamma	Skeleton, liver, lung
Pu-239, Plutonium-239	Alpha particle	Skeleton, liver, lung, ovaries/gonads
Pu-240, Plutonium-240	Alpha, gamma	Skeleton, liver, lung, ovaries/gonads
Pu-241, Plutonium-241	Beta, Alpha, Gamma	Skeleton, liver, lung, ovaries/gonads
Am-241, Americium-241	Alpha, Gamma	Bone, liver, muscle; Lungs when inhaled

(table continued below)

Radioactive Poison	Type of Radiation Emitted	Biological Effect/Organ Targeted
Cm-243, Curium-243	Alpha, Gamma	Bone marrow
Cm-244, Curium-244	Alpha, Gamma	Bone marrow

The reproductive organs are attacked by all radioactive isotopes emitting gamma radiation. In addition, the deadly Plutonium-239 is known to concentrate in the gonads. The radiation it emits can cause birth defects, mutations and miscarriages in the first generation after exposure and/or successive generations.

If you ingest alpha and beta particle emitters, they set up permanently next to the marrow of your bones, in your reproductive organs or elsewhere.

The effects of ionizing radiation are not necessarily immediate. Exposure to radiation can cause cancer many years later, after a prolonged latency period. Chronic exposure to even very low levels of radiation can be dangerous over time.

[Sources: Cindy Folkers, NIRS, email to author, 11/20/2006; "Ionizing Radiation" wall poster, based on a drawing by Susanna Natti and Candace Kaihlanen, on page 8 of "The Nuclear Fix: A Guide to Nuclear Activities in the Third World," by Thijs de la Court, Deborah Pick, and Daniel Nordquist, World Information Service on Energy (WISE), Amsterdam, the Netherlands, 1982. An earlier version is also available in "No Nukes," by Anna Gyorgy & Friends, South End Press, 1976, 1979. Also see "No Immediate Danger: Prognosis for a Radioactive Earth," by Dr. Rosalie Bertell, The Women's Press Ltd., London, 1985, particularly Part One, "The Problem: Nuclear Radiation and its Biological Effects."]

Given that Plutonium-239, the stuff of thermonuclear bombs, is probably the most-infamous of those very long lasting radioactive poisons listed above, opponents to Consumers Energy's proposed recreational area at Big Rock have dubbed it: "Plutonium State Park." Pu-239 will remain deadly, in even microscopic amounts, for hundreds of thousands of years. It is worth noting that Big Rock experimented with MOX fuel (mixed-oxide uranium/plutonium). From 1969 to 1977, Big Rock was licensed to use mixed-oxide fuel through a cooperative R&D program that included GE, Exxon, and Consumers Power and was sponsored by the Edison Electric Institute. Use of experimental fuels worsened Big Rock's radiation emissions, as documented above. Plutonium is also amongst the most hazardous of radioactive poisons when released into the environment, calling into question its use in experiments at Big Rock in the first place. [http://www.ans.org/pubs/magazines/nn/docs/2006-11-3.pdf]

Was Big Rock and its surrounding area regarded by nuclear establishment decision makers in industry and government as a "low use segment of the population"? This term was used by atomic weapons testing decision makers in the Atomic Energy Commission – forerunner to NRC -- for the Mormons, Native Americans, and ranchers of southwestern Utah, immediately

downwind of the Nevada Test Site, when it was decided to begin atmospheric weapons testing in 1951. Perhaps so, given the following remarks from NRC:

"Charlevoix is the closest urban center and does not currently nor foreseeably fall within the population center definition in 10 CFR Part 100 [this despite Charlevoix being less than four miles away from Big Rock!] The topic of Population Distribution was evaluated by the NRC as part of the Systematic Evaluation Program [SEP]…This review resulted in an assessment and evaluation…which found that based upon an examination of present and projected population data and on observations made during a visit to the site in July 1979, that neither Charlevoix nor any other city within 30 miles of the plant is now, or is likely to become in the foreseeable future, a population center, (more than 25,000 residents), as defined in 10 CFR Part 100. Further, the NRC concluded that the low population zone and population center distances specified for the Big Rock Point site remain valid and the site is in conformance with the distance requirements of 10 CFR Part 100 in that the population center distance is more than one and one third times the distance from the reactor to the outer boundary of the low population zone…This completed the evaluation of this SEP Topic. Since the plant conforms to current licensing criteria, no additional SEP review is required." [Part I of Rev. 10 to Big Rock Point Plant Updated Final Hazards Summary Report, Sept. 17, 2002]

23 years of population growth seem to have been disregarded by the above document – as if small rural populations are less deserving of protection from radioactivity than are large urban populations. Such an attitude on NRC's part amounts to environmental injustice.
[http://www.nirs.org/ejustice/ejustice.htm]

Tritium also has lessons to teach about radio-toxicity at Big Rock. Tritium is harmful to human DNA and cells, carcinogenic, mutagenic, etc. Water is in every cell of the human body. Therefore, water contaminated with radioactive hydrogen (tritium) can enter, contaminate, and bombard any cell in the body. A beta particle from a tritium atom travels at faster than the speed of a jet airplane, and can do tremendous damage to any cell that it contacts. [Kay Drey, NIRS Board Secretary, St. Louis, MO, telephone interview with author, 11/29/06; see also http://www.nirs.org/radiation/tritium/tritiumhome.htm]

It is scientifically established that every exposure to radiation increases the risk of damage to tissues, cells, DNA and other vital molecules. Each exposure potentially can cause cell death, genetic mutations, cancers, leukemia, birth defects, and reproductive, immune and endocrine system disorders. [http://www.nirs.org/factsheets/drey_usa_pamphlet.pdf, especially point #14]

In 2005, in its Seventh "Biological Effects of Ionizing Radiation" (BEIR) report, the National Academies of Science reported that any radiation dose, no matter how small, carries a health risk. In fact, low doses of radiation may carry a disproportionate risk, unit for unit, when compared to high doses of radioactivity. There is no such thing as a safe dose of radiation, despite NRC's assurance that radioactive contaminants at Big Rock are below "permissible" levels. "Permissible" or "allowable" radiation doses are not "safe," despite nuclear establishment assurances to the contrary.

[http://dels.nas.edu/dels/rpt_briefs/beir_vii_final.pdf ; “U.S. Radiation Panel: No Radiation Dose Safe,” WISE/NIRS Nuclear Monitor, July 15, 2005; http://www.nirs.org/factsheets/nosafedose.pdf]

Liability

A 351-acre tract (of the 563-acre property), with more than a mile of “undeveloped” -- but likely radiologically-impacted -- Lake Michigan shoreline, has been offered for sale by Consumers to the State of Michigan, in order to establish a public park or recreation area. Consumers is asking the state to pay it $20 million for the property that the company contaminated; ironically, this might shift future legal liability onto the state.

Given the ambiguity over transfer of liability, state taxpayers might assume the legal burden for contamination or problems discovered at this site in the future. Trust Fund board members should not agree to saddle residents with such a potential very long-lasting radioactive burden on the beaches and shores of a state park.

Among the most troublesome questions is the wisdom of the state’s taxpayers potentially assuming legal liability for land with a history of radioactive releases and dangerous nuclear waste that will be there indefinitely. Despite these long-term risks, state and federal officials have declined to conduct an environmental impact statement, settling instead for a lower level “environmental assessment.”

On November 30, 2006 the Associated Press reported that “ [Tim] Petrosky [Consumers Energy’s spokesman at Big Rock] would not comment on liability issues, saying they were a subject of negotiations with the state.” The article went on to report that:

> Petrosky said Big Rock Point emitted less than 1 percent of the radiation allowed under its federal permit during its 35 years of operation. "These releases were short-lived radioactivity that naturally dissipated," he said.
>
> The plant's decommissioning included extensive testing for residual contamination that showed the area was safe, he said. Recent groundwater tests turned up no detectable levels of tritium, he said.
>
> "Overwhelming scientific data proves that there would be no risk to anyone using the Big Rock Point property," Petrosky said.

[http://www.mlive.com/newsflash/michigan/index.ssf?/base/business-10/1164842989300200.xml&storylist=newsmichigan ; John Flesher, “Environmentalists debate recreation area at former nuclear site,” A.P. 11/29/2006.]

Petrosky's assurances beg the question, then, why would Consumers object to retaining liability, if the site is so clean and safe? What is there to negotiate with the state, unless Consumers is trying to offload the legal liability for the radioactive contamination it caused at Big Rock onto the backs of state taxpayers?

Petrosky claims that "Big Rock Point emitted less than 1 percent of the radiation allowed under its federal permit," yet NRC documents, based on company records and analyses, reveal that up until the year 2000, the tritium contamination in Big Rock's groundwater violated the Safe Drinking Water Act maximum contamination level of 20,000 picocuries per liter (in nature, tritium is present in water in concentrations of 25 picocuries per liter or less, due to cosmic radiation; see http://www.nirs.org/radiation/tritium/tritiumhome.htm .)

It must also be emphasized that "permissible" or "allowable" radiation doses, as Petrosky seems to be referring to above, are not necessarily "safe" doses. In fact, as discussed just above concerning the National Academies of Science BEIR VII report, no dose of radiation is "safe."

Petrosky also claimed that "Recent groundwater tests turned up no detectable levels of tritium..." But NRC documents admit that contamination up to 2,900 picocuries per liter of tritium was being detected in site groundwater. [[NRC "Environmental Assessment," 3/11/2005, page 14] Even 2,900 picocuries per liter is more than a hundred times higher than natural background, certainly detectable – and detected, recently.

Petrosky is also quoted in the A.P. article saying "These releases were short-lived radioactivity that naturally dissipated…" The vast amount of artificial radioactivity generated at Big Rock for forty years was not natural. In fact, certain radioactive poisons, such as plutonium, existed only in the most trace amounts in nature on Earth before the Atomic Age artificially generated them in large quantities. One percent or more of the 64 tons of high-level radioactive waste at Big Rock is plutonium – 1,280 pounds of plutonium. [percentage figure from Dr. Arjun Makhijani, Institute for Energy and Environmental Research, Takoma Park, MD] And certain radioactive poisons that both company and NRC documents admit are still present at Big Rock are anything but "short-lived." Tritium, for example, remains hazardous for 120 years. Cesium-137 and Strontium-90 remain hazardous for around 300 years, at a minimum. Plutonium-237 is deadly for 240,000 years; Iodine-129 for 160 million years. Hazardous lives are listed in the table above, on page 27.

A nuclear industry analyst warned that "a third party using more sensitive instrumentation" could identify "residual radioactivity on or in materials" at decommissioning sites such as Big Rock. Thus, better radiation detection tools and monitors could uncover presently unknown or undetected radioactive contamination in the soil, groundwater, plants and animals, Lake Michigan, and its sediments surrounding the Big Rock site. [Jas S. Devgun, Ph.D., Senior Project Engineer/Project Manager, Sargent & Lundy LLC, Chicago, IL, presentation entitled "Impact of Lack of Consistent Free Release Standards on Decommissioning Projects and Costs," at the Waste Management '02 Conference, Feb. 24-28, 2002, Tucson, AZ]

In short, the risks are too high, and the unknowns too great, for the State of Michigan to assume legal liability for the Big Rock site.

Opportunity Costs: Other Potential Park Sites

The bulk of the $20 million purchase price for the Big Rock site would come from the state's Natural Resources Trust Fund. This fund contains public money earned from oil and gas revenues and earmarked to enhance public recreational opportunities. Since this proposal competes for limited Trust Fund dollars with many other worthy projects, none of which have such a toxic legacy or security concerns, it requires a careful analysis of the drawbacks and risks.

There are more than 160 applicants for trust fund dollars, many for spectacular lands including sand dunes, wetlands, riverfront and lakefront property and forests – none of which have nuclear waste and radioactive contamination issues. The Trust Fund board members should not shortchange these applicants to invest in a site that will have dangerous radioactive waste for the foreseeable future, and that has a dubious environmental legacy of contamination.

The 351-acre tract would cost the state $3 million this year, and an additional $16.3 million in future years. The parkland at Big Rock would exclude a 100-acre "buffer zone" forbidden to the public because of its proximity to 64 tons of highly radioactive nuclear fuel rods patrolled by armed guards.

All told, the request is among $63 million worth of projects under consideration for the $35 million available.

Although Big Rock has been declared clean and open for "unrestricted use" by contractors for its owner, Consumers Energy Co., as well as the NRC, questions remain as to the residual contamination and radiation, and the thoroughness of the environmental assessment.

Conclusion

The many concerns and questions raised above remain unaddressed. The establishment of a state park (or residential development) at Big Rock is not prudent, in terms of public health, safety, and security. With many other applicants offering potential park sites without such complications, the state should not choose to favor this one. We urge the State of Michigan to reject this proposal.