

Oil Spill Response Log for the Indian Point Unit 2 #21 Main Transformer Oil Spill

The following is a chronological record of the activities performed at the Indian Point Energy Center in response to the transformer oil spill of 11/7/10. Note that where given product recovery volumes are estimates and are not yet final since the receiving frac tanks are still in service and have not fully settled.

Sunday, November 07, 2010

A catastrophic failure of the Unit 2 #21 Main Transformer occurred at 18:39. The transformer fault caused a fire. The transformer deluge system (rated at 1365 gpm) initiated at 18:43 suppressing the fire. A second explosion then occurred. Emergency personnel onsite then verified the fire was out, setup foam coverage on the affected area and secured the deluge system at 18:54.

The US Nuclear Regulatory Agency was then contacted at 19:07.

Monday, November 08, 2010

1. An initial review of the canal revealed oil in the discharge canal but not in the Hudson River. A call was made at 03:50 AM to the DEC hotline informing them of the oil spill from the #21 Main Transformer.
2. Oil Spill Response Organizations (OSROs) Miller Environmental Group (MEG) and Clean Harbors (CH) were called in to begin the spill response and site remediation.
3. A review of the transformer yard, discharge canal and Hudson River revealed that the transformer failure had resulted in a release of oil to the storm drain system, the discharge canal and subsequently the Hudson River. Assessment of Unit 2 Turbine Building areas revealed that the 5-ft and 12-ft elevations of the Unit 2 turbine building were contaminated with transformer dielectric fluid and water.
4. At 11:00 AM the presence of oil was confirmed to be in the discharge canal and was now observed to be in the Hudson River.
5. The National Response Center (Report # 959258), NYSDEC (Report #10- 08306), and USNRC were notified of the release made at 11:52, 12:10 & 12:28 respectively.
6. MEG and CH notified that additional resources would be required to respond at IPEC. CH establishes second shift for 24/7 coverage.

7. NYSDEC and the USCG responded to the spill at IPEC. A complete review of the transformer yard, 5-ft TH, 12-ft TH, Discharge Canal and Hudson River was performed. NYSDEC and USCG began onsite assessment of Entergy corrective actions.
8. A review of the Unit 2 #21 Main Transformer oil chemistry revealed that this transformer has been routinely tested as non-PCB.
9. 18-inch hard booms, absorbent booms and absorbent sweeps were deployed into the south end (Unit 3 area) of the Discharge Canal.
10. Circulating Water Pump operation at Unit 2 was reduced and the discharge canal weir gates closed down. This reduced the discharge canal flow rate which reduced the overall entrainment of oil through the gates.
11. Absorbent booms were deployed into the North end (Unit 2 area) of the Discharge Canal.
12. Clean up of the containment area surrounding the 21 Main Transformer was begun. This included the removal by vacuum truck of the standing oil and residual fire fighting foam.
13. The 12-ft and 5-ft elevations of the Unit 2 Turbine Building were cleaned of all standing oil and water. Additional clean up is required to remove residual oil.
14. Updates of recovery activities were provided to the USCG by both Miller Environmental and Clean Harbors.
15. Area stakeholders were contacted regarding the transformer fault and IPEC repairs plans.

Tuesday, November 09, 2010:

1. OSROs on site to continue remediation efforts (MEG and CH)
2. USCG and NYSDEC onsite for further review of corrective actions.
3. Clean up of the 5-ft and 12-ft elevations of the Unit 2 Turbine Building continues.
4. The amount of oil observed in the discharge canal and the Hudson River is noted to be considerably less than the preceding day.
5. The cleanup of the 12-ft area of the Unit 2 Turbine building is complete. A review of this area reveals at least one East wall penetration that allowed the oil/water to enter from the transformer yard.
6. The cleanup of the 5-ft elevation floor and sumps continues. The residual oil is being removed by the use of pressure washer, oil pads, squeegees and oil dispersant. The two sumps and their associated sump pumps have remained in the off position during this

clean up phase. All standing water and oil is being recovered into vacuum trucks and frac tanks as necessary.

7. 5-ft elevation Oil skimmers and recovery drums cleaned out.
8. Estimated volume of water/oil mixture collected by MEG & CH from turbine building 12-ft and 5-ft elevations is roughly estimated at 13,000 gallons. An oil only volume will not be known for several days while gravity separation occurs.
9. Draining of the faulted 21 transformer has begun. This included the main housing and the radiator.
10. Additional absorbent boom was installed south of the Unit 3 Backup Service Water Pumps.
11. Verification of the location of the 21 and 22 Main Transformer oil moat walls and the two 12" diameter pump-out casings was begun. The top of the moat walls were exposed by hand digging to determine exact location. This included review of area drawings and field walk downs conducted by Entergy Civil Engineers.

Wednesday, November 10, 2010:

1. Continuing to remediate the 5-ft elevation floor area including sumps. Water is still noted to be seeping in and lifting oil from horizontal surfaces.
2. A review of the two 12-inch pump out casings performed. East casing is dry; no product. South casing contains product. CH began removal of product from casing using vacuum truck. 2,100 gallons recovered. This may be revised because percent water/oil is not known at this time.
3. Standby at containment area while crane moves the transformer in case there should be any spills.
4. 21 Main Transformer has been completely drained. Some residual is being collected by hand from various petcocks and drain valves. Estimated collected volume from this evolution is 4,600 gallons.
5. The radiator has been disconnected from the 21 Main Transformer. All openings on the radiator have been sealed with fabricated flanges and rubber seals.

Thursday, November 11, 2010:

1. OSROs onsite: MEG and CH. Establishing 2nd shift beginning Friday. MEG & CH have second shift for 24/7 operations.

2. Pumping out manholes 3, 4, 6 and 19 (MH-3, MH-4, MH-6, MH-19). Absorbent boom is being placed into each storm drain and the covers replaced.
3. Continuing to remove product from the west 12" pup-out casing as recharge rate allows.
4. Continuing to power wash the Unit 2 5-ft elevation and associated sumps and recover water into a vacuum truck.
5. Removing soiled boom from discharge canal at northern, mid and southern end of the discharge canal. Adding and fortifying absorbent boom and sweeps in these same locations.
6. The Porta-Tank contains ~15,330 gals oil/water, the Baker Tank: contains ~2,795 gal oil/water for a total of 18,125 gallons of oil/water mixture. Of this total oil/water volume it is estimated that there is 7,147 gallons of actual transformer oil product.

Friday, November 12, 2010:

1. Vacuum out North and South pump out casings in transformer yard.
2. Cleaned the two small floor drains located in the 12-ft elevation.
3. Vacuumed manhole MH-4 located at the NE corner of the Turbine Building yard.
4. Continuing to clean the 5-ft elevation sumps. Floor and surrounding equipment are clean.
5. ~1,500 gallons of oil/water dumped to FRAC tank. Vacuum truck is almost full at 2,200 gallons.

Saturday, November 13, 2010:

1. Cleaned Transformer pad.
2. Pumped out Manhole 4 (MH-4)
3. Removing soiled boom from discharge canal at northern, mid and southern end of the discharge anal. Adding and fortifying absorbent boom and sweeps in these same locations.
4. Continuing to clean up minor areas in the 5-ft elevation including the sumps. Floor and surrounding equipment are clean.
5. OSRO crews are combing the beach immediately south of the IPEC Discharge Canal for contaminated jetsam and flotsam.
6. The Porta-Tank contains ~16,000 gals oil/water, the Baker Tank: contains ~2,795 gal oil/water for a total of 18,795 gallons of oil/water mixture. Of this total oil/water volume it is estimated that there is 7,147 gallons of actual transformer oil product. The MEG Vac truck contains an additional 379 gallons of oil. The CH Vac truck contains an additional 212 gallons of oil. Total estimated oil collected to date = 7,738 gallons of oil.

Sunday, November 14, 2010:

1. OSROS MEG and CH are onsite.
2. Removing soiled boom from discharge canal at northern, mid and southern end of the discharge anal. Adding and fortifying absorbent boom and sweeps in these same locations.
3. Cleaning out the Tube Withdrawal Pit manhole MH-4B and MH-4C, and the surrounding concrete.
4. Continuing to clean up minor areas in the 5-ft elevation including the sumps. Floor and surrounding equipment are clean.
5. Removing Bushings from the 21 Main Transformer. Unable to access transformer yard with vacuum truck.
6. Vacuumed and additional 700 gallons oil/water from 5-ft elevation.

Monday, November 15, 2010:

1. OSROS MEG and CH are onsite.
2. Unable to access transformer yard with vacuum truck due to other activities in the transformer area. Crews are standing by awaiting access.
3. Touching up 5-ft elevation including the sumps.

Tuesday, November 16, 2010:

1. OSROS MEG and CH are onsite.
2. Unable to access transformer yard with vacuum truck due to other activities in the transformer area. Crews are standing by awaiting access.
3. All areas of the Unit 2 Turbine Building 5-ft elevation including the sumps are decontaminated and ready for return to service.
4. Changing out absorbent boom along the length of the discharge canal.
5. Changing out the soiled absorbent boom and adding additional boom and absorbent sweep at the beach immediately south of the discharge canal at pipeline right-of-way. Any oily debris was picked up for appropriate disposal.

Wednesday, November 17, 2010:

1. OSROs MEG and CH are onsite.
2. Opened Unit 2 Turbine Building 12-ft elevation manway to review condition of the below-grade canal with respect to oil contamination. No issues were noted and the hatch was replaced.
3. The faulted transformer has been transported over site roadways to the spare transformer storage pad.

4. Absorbent boom was deployed onto the beach area south of the Indian Point discharge canal to address a sheen noted to be coming from this area.
5. Removed an additional 400 gallons of oil from the Unit 2 transformer yard via the pump out casing.

Thursday, November 18, 2010:

1. OSROs MEG and CH are onsite.
2. Deployed absorbent boom and sweeps onto the beach area south of the discharge canal (pipeline right-of-way) and used low-pressure water to irrigate resident oil towards oil absorbent boom.

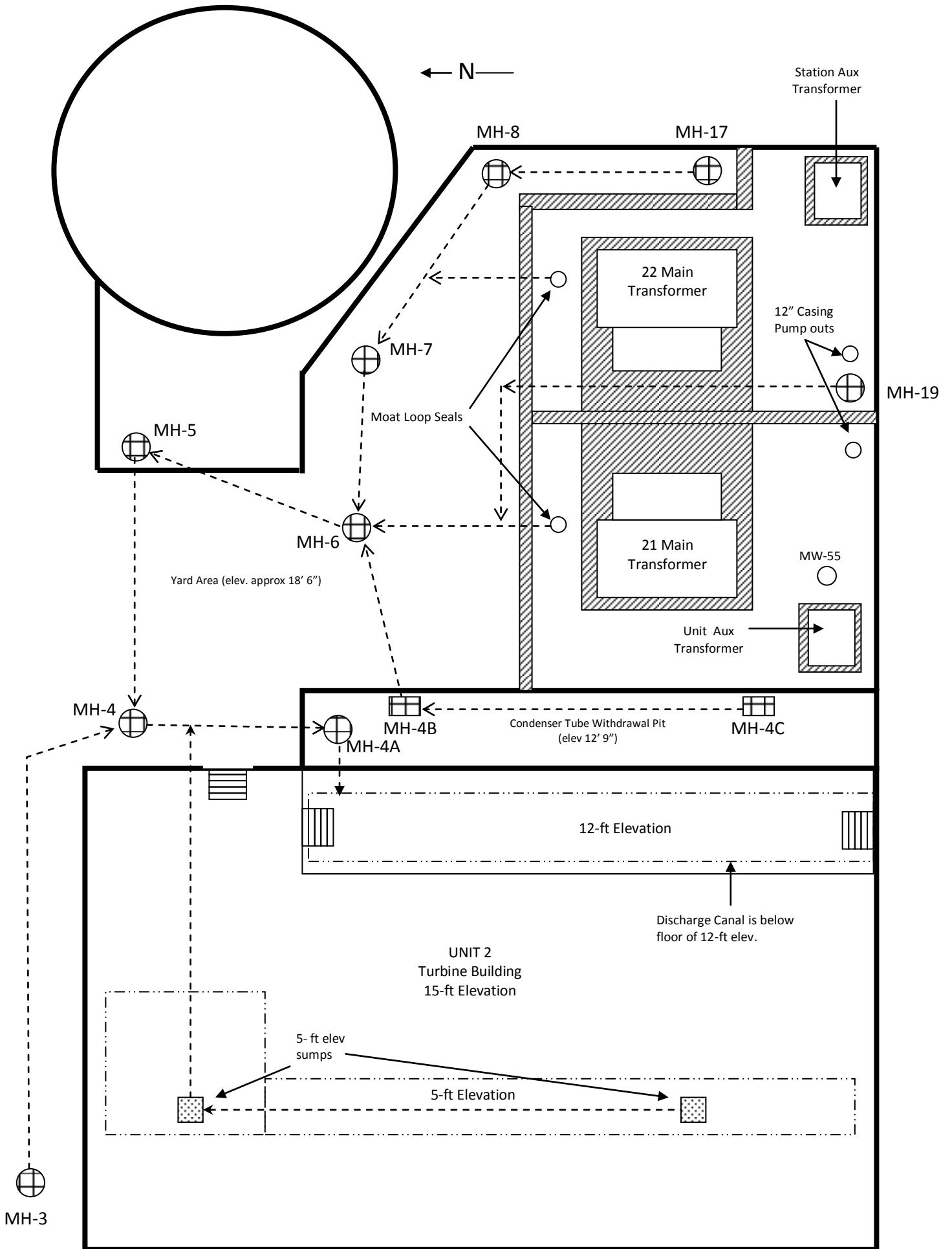
Friday, November 19, 2010:

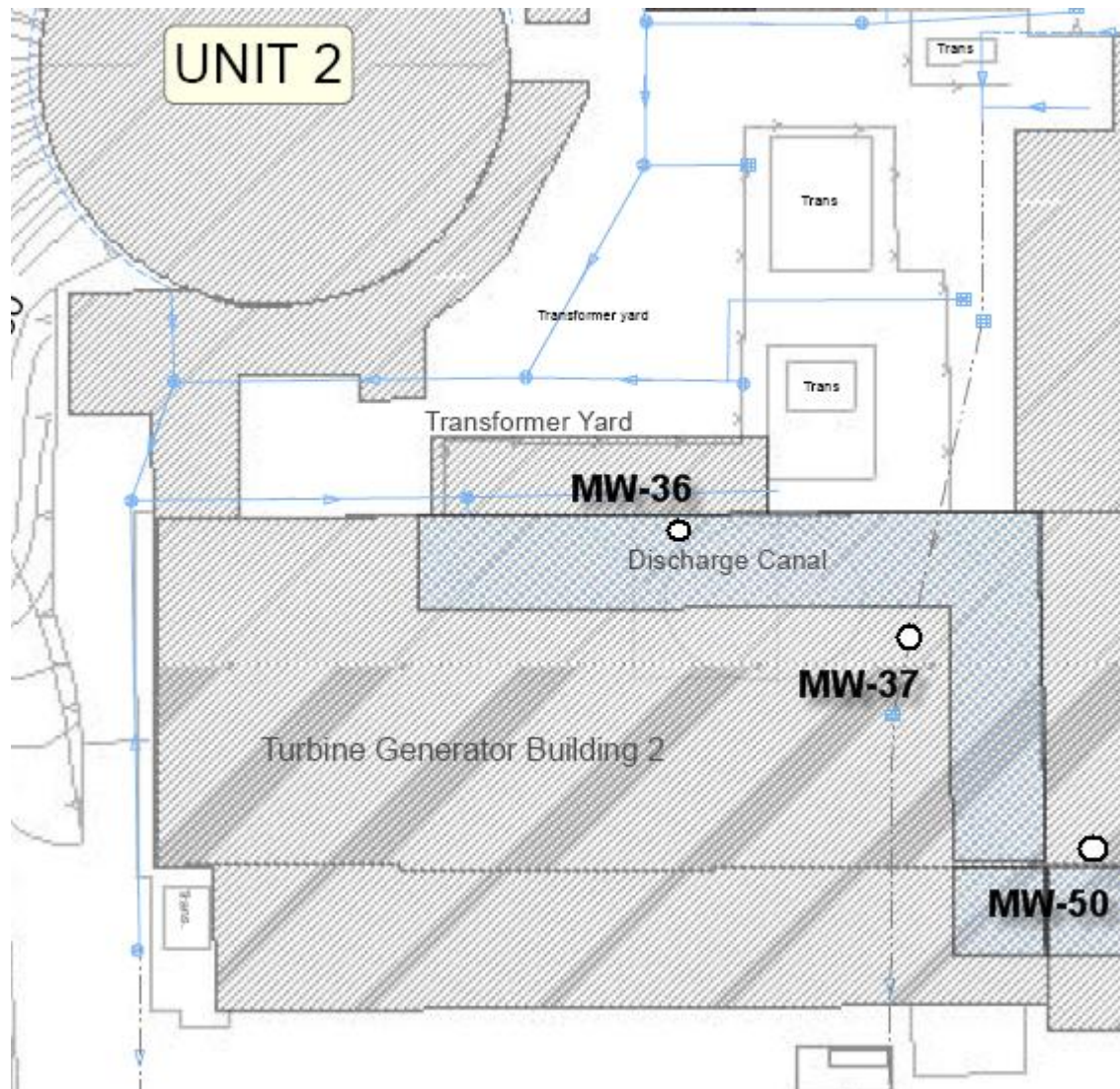
3. OSROs MEG and CH are onsite.
4. Cleaned out the two shallow sumps (MH-4Band MH-4C) and the concrete pad located both sumps in the outside condenser tube withdrawal pit.
5. Removed ~800 gallons of oil water mixture from the west 12" pump out casing located in the 21 Main Transformer containment moat.
6. Received hard boom from Miller Environmental for installation into discharge canal at the backup service water pump bridge. Working with Miller, Clean Harbors, Security and Project Manager to arrange for crane support and a hanging man-basket to install boom.
7. Sample monitoring wells MW-36, MW-37 and MW-50. MW-36 was found to contain standing product. Consulted with hydrologist and OSROs. Plans and materials are being gathered to begin product recovery from all three elevations in this well on Sunday 11/19/10. The well has two 1-inch and one 2-inch casing that will be used for this purpose. MW-37 and MW-50 showed no product.
8. Porta-Tank is full at ~19,000 gallons of oil/water mixture. Baker Tank is at ~4,200 oil water mixture. Vac Truck is currently at ~800 gallons and still collecting from pump-out casing in yard. A total oil product volume will be determined tomorrow after settling occurs.

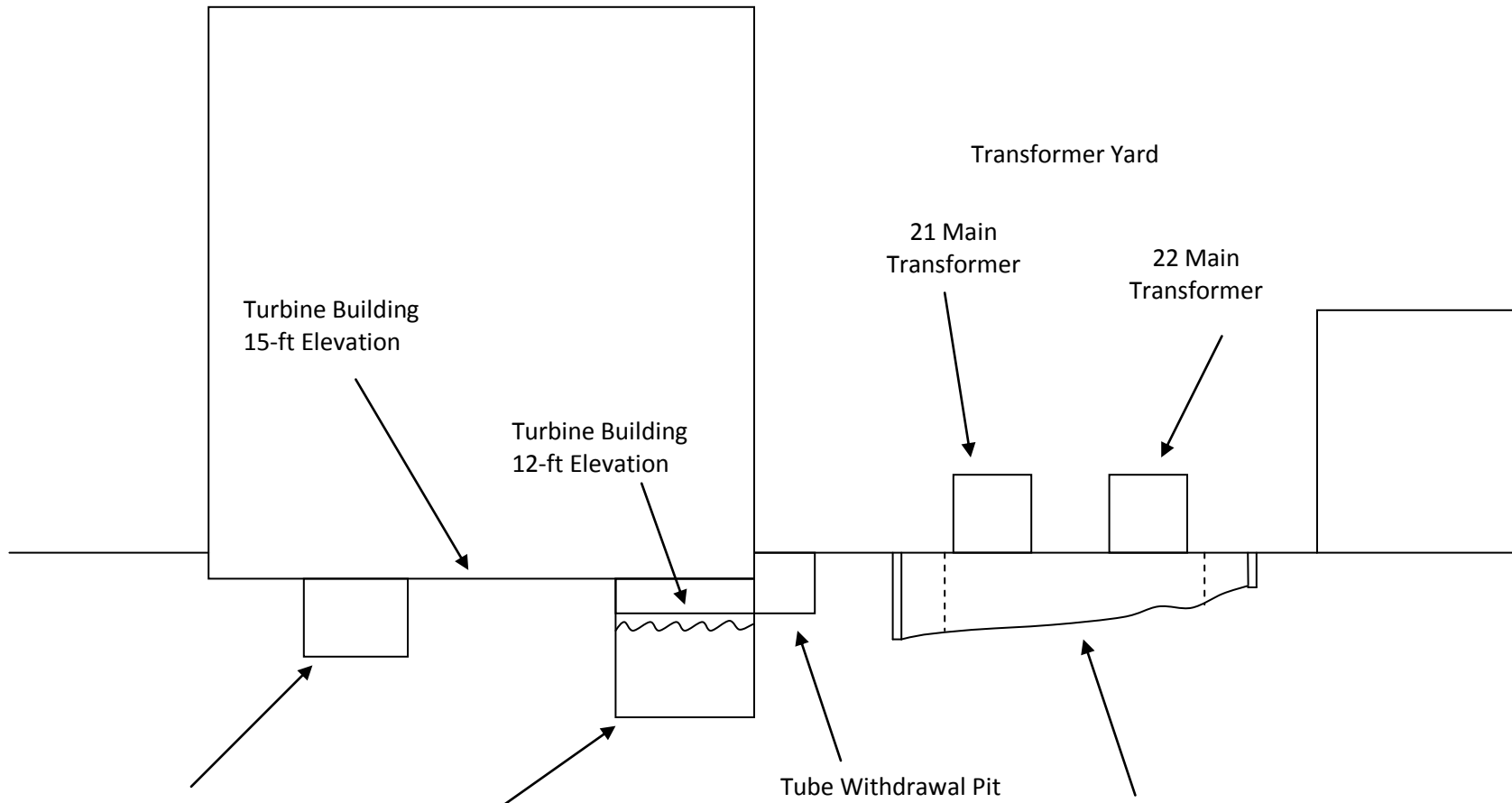
Sunday, November 21, 2010:

1. OSROs MEG and CH are onsite.
2. Walkdown of the length of the canal reveals little recoverable product or sheen.
3. Installed hard boom in the canal with an 40-lb anchor on each end. The boom is located immediately south of the backup service water pump bridge. The hard boom is on sliding cable and will adjust with the water level.
4. All three elevations of MW-36 were pumped out to remove product and to measure recharge rate. No significant recharge rate was noted after several hours. This well continues to be monitored closely by GZA GeoEnvironmental.

5. Volumes in all trucks and tanks was measured as follows:
 - a. Porta-Tank: 19,236 oil/water mixture; 7,770 oil product.
 - b. Baker Tank: 5,041 oil/water mixture; 1,901 oil product.
 - c. Miller Vacuum Truck: 487 oil/water; 235 oil product.
 - d. Clean Harbors Vacuum truck: Empty
 - e. Total oil recovered to date: 9,906 gallons.







5-ft elevation

Discharge Canal

Tube Withdrawal Pit

Moat:
 Poured concrete walls down
 to bedrock and backfilled with
 blue stone. Transformers
 reside on concrete pads
 poured to bedrock.

Turbine Building
 15-ft Elevation

Turbine Building
 12-ft Elevation

21 Main
 Transformer

22 Main
 Transformer

Transformer Yard