PT Freeport Indonesia Response to MWH 2008 Audit Recommendations

Recommendations are in black text. PTFI Response is in blue text.

REPORT SECTION	SPECIFIC AREA	RECOMMENDATIONS (BLACK) RESPONSE UPDATED JUNE 2010 (BLUE)
3.3 Environmental Management Systems	EMS Policy	1. Post single page Environmental Policy in all operational locations of the Papua Project area. The policy is posted in all operating areas as well as at selected security checkpoints in billboard format. It is also available on the company intranet. (CLOSED) 2. Reinforce the importance of the Environmental Policy at toolbox meetings through the use of "monthly environmental hot topics". The monthly "hot topic" should link back to the priority areas identified by the Environmental Department if possible. Environmental Policy is discussed during safety meetings in most of the areas. Environmental topics are usually derived from the routine environmental inspections. (CLOSED) 3. Linkages between the ten ICMM sustainable development principles and the PTFI environmental policy should be clarified. PTFI Environmental Policy directly refers to the environmental principles addressed in the ICMM ten principles, and to the requirements of the FCX corporate Environmental Policy (which actually lists all ten principles). The linkage will be clarified during the next review of the policy. (CLOSED)
3.3 Environmental Management Systems	EMS Planning	4. Complement EMP action plans by linking to documents related to best international practice for specifications and further guidance. Links to basic project management tools such as a WBS (work breakdown structure) may also help to secure the desired environmental outcomes. The WBS would detail specific tasks required to achieve the desired outcome and lower the risk factor(s). Environmental Management Plans reference the appropriate Aspect or Impact from the Register which also links to guidance from Global Reporting Initiative, ICMM Principles, Best Practices or Environmental Impact

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		Assessments. Project management tools are used on selected Environmental Management Plans. (CLOSED). 5. Continue to reduce the risk factors for the aspects addressed by specific action plans to ensure all 5M and higher aspects will receive appropriate action over time. This will be continued. (CLOSED). 6. Whenever EMP actions are not complete for the year of issue, outstanding actions should be re-issued into the EMP for the subsequent year. When not feasible, an explanation should be documented. SOP-E 04-01 (effective date February, 2007) requires this action. Implementation will be reviewed and audited in the next Internal Audit.(CLOSED)
	EMS Implementation and Operation	7. Prioritize making the outstanding 5% of work-controlling documents available in both Bahasa Indonesia and English. This is a dynamic process as documents are revised or new documents are produced. (CLOSED). 8. Announce updates to the EMS manual, SOPs and COPs on the intranet home page for communication to the wider PTFI community. The amended item(s) should be included in a monthly "hot topics" correspondence for staff toolbox meetings. For external Contractors, announcements of updates should be via a nominated contact point and controlled documents made available in downloadable format. We have resumed using internal Interoffice Memoranda to communicate additions or updates of EMS documentation. Additionally, all revised EMS documents are now being put into PTFI website and also available to all contractors via a downloadable format. (CLOSED) 9. Annual review of the EMS manual, COP's and SOP's required by COP-08 should be carried out and documented and updates recorded. A logbook to document the review process of all EMS documents is now available. (CLOSED) 10. Where practical, integrate the Employee Self Service and QMS competency records in an accessible area of the QMS database that is available on the intranet to allow rapid and

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		accurate enquiry of records. Limit accessible information to avoid data protection issues. QMS records are the formal PTFI documentation on skills and training. QMS competencies include environmental skill components as covered under SOP QMS 05-01 (effective date, September, 2007). (CLOSED) 11. Future Audits should review a broad sample of contracts for environmental management aspects as per COP-11 and COP-13. This is on the Internal Audit item check list.(CLOSED)
3.3 Environmental Management Systems	EMS Checking	12. Continue compliance with all monitoring and sampling regulatory requirements while correlating the same data with the detailed ecological risk assessment completed by PTFI for the region. This is being continued and the ecological risk assessment is being updated. (CLOSED) 13. Amend COP-15 to reflect the planned ISO accreditation of the sampling methods used by PTFI for environmental sampling. May also want to obtain independent third party cross-laboratory comparisons of some samples every quarter for benchmarking for the TEL. SOP E-15-06 under COP 15 references standard sampling methods. KAN and MoE auditors have recommended certification of sampling procedures under ISO, and the appropriate amendments of documentation have been made. The laboratory is certified under ISO 17025, and participates in check sample programs and round robins with Indonesian and international laboratories. The latest results from proficiency testing continue to show very good results. (CLOSED) 14. TEL entry and exit procedures and cleanliness of personal protective equipment stored and worn in the clean room are two key areas for improvement. A Work Instruction of EA room cleanliness has been created, socialized and implemented (CLOSED) 15. TEL should expedite the planned capital upgrades of the positive extraction system. Proper maintenance and regular servicing of the existing acid scrubbing fume hoods will help improve performance in the meantime. Upgrades were completed in July 2009. (CLOSED)

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		16. The larger contaminated waste bins must be secured whilst awaiting transport and there must be adequate labeling to identify their contents. A secure Hazardous Waste Storage Area is available at the Laboratory. A Work Instruction for domestic waste handling has been created, socialized and implemented (CLOSED) 17. Maintain traditional sampling in parallel with the new data loggers until field reliability has been proven. Manual sampling will continue to be maintained until data loggers have been proven to be reliable. (CLOSED) 18. The new air quality monitoring facilities need to be included in the update of SOP-E15-02 (2004). The SOP has been revised and posted. (CLOSED). 19. For some sites, monthly compliance matrices may be helpful to track samples and identify sample gaps earlier. Documentation accounting for missing sampling data must be filed. Monthly compliance matrices to track samples have been implemented. Note this is also a requirement of ISO17025 for sampling. (CLOSED) 20. The corrective action request matrix should include timeframe and name the responsible individual to ensure accountability. An additional column for sign-off that close out has been achieved would be a useful cross-check. A standard matrix for corrective action request has been revised to include time frame, responsible person, and signatures.(CLOSED)
3.4 Regulatory Compliance Status	Regulatory Compliance Status	1. Modify PTFI's RKL & RPL requirements to comply with new interrelated regulations, primarily the provisions in the Spatial Planning Act Amendment of 2007, the Investment Act Amendment of 2007 for the effectiveness of EMA of 1997. A modified RKL and RPL have been produced and are under management review prior to discussions with GOI regulators. (CLOSED) 2. Continue to work closely with the regional government on environmental management issues in preparation for the implementation of the Autonomous principles that encourage regional government to develop and adjust technical directives for operational level of

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		compliance monitoring. PTFI will continue to work closely with regional government on environmental issues in line with increased Papuan Autonomy. (CLOSED) 3. Develop a continuous adjustment process to meet the dynamic amendments and the frequent changing of Ministerial Decrees for technical directives at the operational level. PTFI maintains a formal group (State Law and Regulation Monitoring) to review any new regulations that relate to PTFI operations. Additionally, PTFI submits an annual RKL and RPL Plan outlining plans for the coming year, and reports against that plan on a quarterly basis with an annual summary at the end of the year. (CLOSED)
3.5 Best Management Practices	Exploration Activities	1. The PTFI EMS Plan should clarify the applicability of the EMS to exploration activities. The new register of environmental aspects and impacts addresses exploration activities. The SOP for exploration activities is developed and implemented.(CLOSED) 2. Physical examination of representative exploration sites (active and closed) should be included in the next internal compliance/EMS audits undertaken. Inspections should be conducted regularly to assure optimum environmental management is being achieved at each exploration site. Field audits/inspections related to implementation of the EMS will be conducted at representative exploration sites. (CLOSED) 3. Continue to provide appropriate levels of training to exploration staff on the requirements of any updated SOPs, pursuant to EMS requirements. Updates to EMS documentation will be communicated to exploration groups, and training will be provided as necessary. (CLOSED) 4. Aspects and impacts associated with exploration operations need to be evaluated under the next update of the applicable Part (A or B) of the PTFI Register of Ranked Aspects and Impacts. The comprehensive review of environmental aspects and impacts related to all PTFI operations (including exploration) is conducted annually as required by the EMS. (CLOSED)
3.5 Best Management Practices	Overburden Managment	1. Evaluate whether building longer slopes with bigger benches is more effective and less costly from a construction, operations and maintenance perspective. The bench size and width should consider the size of the equipment (blade width) that will be used to clear interslope

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		failure debris and maintain lateral drainage systems. It is important to determine if the overall slope angle has an acceptable toe out in Wanagon Valley. Proposed slope geometry after resloping will be 60 meters high by 15 meters wide benches. Over-all slope 2H:1V. Bench widths include drainage ditch plus access for equipment. Final OBS toes into natural topography. (CLOSED) 2. Detailed geotechnical stability analysis is required to verify that the upper stockpiles do not require regrading, if the rationale is based on the regraded Lower Wanagon OBS serving as a buttress for the middle and upper stockpiles. Plans are to construct southern-most part of Middle Wanagon bottom up with overall slope of 2H:1V. Upper Wanagon stockpiles are constructed bottom up with overall angle at less than repose. Lower Wanagon will be re-sloped. Upper and Middle Wanagon are stable without buttress from Lower Wanagon. (CLOSED) 3. Reconsider the plan to place additional 3-meters of erosional cover on the regraded slopes. This may not be necessary and could be extremely difficult to built ramps down to each bench to place the rock cover material. Currently, field trials of different options for final slope treatment are in progress. Trials will continue for at least two years before final conclusions can be developed. (CLOSED) 4 Complete 3D models of the final configuration to better quantify the amount of regrading l m more effectively design the closure plan (i.e. access, egress, equipment scheduling, rading patterns, etc) to reduce the excess amount of OBS material rehandle depicted in the cross-sections provided in the PTFI report (i.e. seven times for the lower pile). The final 3D models were completed in March 2009 and the final design of the ramp is planned to be complete in June 2010. The construction of the ramp itself will be continued until April 2011 to initiate the tie-in with the 232 and 233 OHS system. (CLOSED). 5. Regularly monitor the Wanagon underdrain systems to determine phreatic levels in the OBS, which is the largest single issue for stability. It has not yet been possible to

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		successfully install and maintain pore pressure monitors on this active stockpile. The toe of the pile will be drained into the Wanagon Drainage Drift scheduled for completion in the second half of 2012. (CLOSED)
3.5 Best Management Practices	Stormwater and Groundwater Management	1. Continue to aggressively manage, monitor and maintain the stormwater and surface water system at the mine and Mill area, including the following: a. Continue to use the Ertsberg Pit as a stormwater collection basin and source of makeup water for Mill operations. This use will continue. (CLOSED) b. Prioritize dredging of the Ertsberg pit to provide adequate stormwater storage (volume) protection from peak storm events. This has become a routine project. (CLOSED) c. Study methods to reduce sediment flowing to the Macken Dam, and remove Macken Dam sediment regularly. Additional sediment traps are in various stages of construction or planning. (CLOSED) d. Optimize design and maintenance of control boxes that capture sediment (study ongoing). This is an ongoing program. Maintenance of control boxes is conducted daily. (CLOSED) 2. Integrate the final mine and mill stormwater plans and include a comprehensive map showing the integrated plans. Specifically address the impacts of the potential failure of the mine stormwater plan to the operation of the Mill stormwater plan. Develop contingency plans and preventive measures and incorporate into SOPs for implementation by PTFI staff wherever possible. Integrated plan has been developed. (CLOSED) 3. Complete contingency plans for the failure of the current Wanagon OBS dewatering system be completed to final design level and include detailed scheduling and planning to implement emergency corrective actions. These contingency plans should be codified into SOPs for implementation by mine staff and should be fully integrated with the regular monitoring of piezometric levels in the OBS. A Contingency Plan and the associated Work Instruction have been prepared. This activity will continue to receive review. (CLOSED)

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		4. Study the current stockpile runout model (O. Hungr, Geotechnical Research, March, 2003) to link the sensitivity of water level rises in the OBS to slope instability. Review of the recommendations in the 2003 report concluded that updating the current model will not provide significant updates to the existing knowledge base. All recommendations of the 2003 report have been implemented, and additionally, a failure early warning system has been installed. (CLOSED) 5. Production of a detailed topographic map (scale 1:1000) for the area covering the city of Timika, Kwamki Lake, Ajkwa Diversion and ModADA (approximately 10 x 5 km2) is important to allow the examination of potential hydraulic connections between groundwater and surface water systems in these areas. Completion of the lowland groundwater flow update to include regional and local parameters has been completed and issued. (CLOSED) 6. Develop a SMP for the port site to include site grading and stormwater discharge management plans including SOPs for implementation by PTFI staff. The project is planned to start in third quarter 2010 and complete in 2011. (CLOSED)
3.5 Best Management Practices	Tailings Management (ModADA)	1. Complete the engineering design for East, West and New West Levees and include an analysis of as-built material properties, foundation conditions and stability analysis (to include under rapid drawdown conditions) and liquefaction potential. Prepare a set of as-built drawings that document levee construction methods. Design is +95% complete and scheduled to complete in first quarter 2011. (CLOSED) 2. Complete and improve the TIAP, as follows: a. Complete the TIAP team assignments to identify those on the TIAP team. . TIAP team assignments have been completed. (CLOSED) b. Immediately implement a rigorous training program that includes regular drills to simulate varying emergency conditions and develops TIAP team coordination. A desk-top drill was conducted in 2009. Drills will be scheduled annually. (CLOSED) c. Institute a quarterly review including quarterly survey updates and identify levee

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		zones that pose the greatest risk due to freeboard. These reviews are being held. (CLOSED) 3. Levee construction material should be strategically stockpiled along the East Levee, New West Levee and West Levee in order to be able to rapidly respond to overtopping or differential settlements that could potentially result in a breach. The availability of emergency gravel material has been addressed in TIAP and stockpiling is essentially completed. (CLOSED) 4. Evaluate the environmental implications of the Otomona River post-closure. How the Otomona River is incorporated into closure scenarios is important and it would be prudent to seriously evaluate the environmental impacts of all options. Each option poses engineering and environmental challenges that should be carefully evaluated so the preferred options can be correlated with regulatory TSS requirements and incorporated in planning activities today. Previously developed information related to the Otomona post-closure will be reviewed and a plan developed for further evaluation of options. A consultant for the development of the plan has been selected. (In Progress) 5. Continue various efforts to evaluate and test sediment retention methodologies and techniques for the ModADA, including the following approaches: a. Continue completing a series of pilot and full scale test plots to determine the appropriate flow velocity and effective methods to transform the Otomona River flow from a channel environment to sheetflow. b. Consider the possibility of having a meandering channel designed to engage the vegetation-covered floodplain as often as possible in lower segments of the ModADA where the Phragmites is currently well developed and rooted. PTFI should identify test sections in these areas that include existing channels that can be forced outside of their current regime and trained to sheetflow across the biofilter zone. c. The “where and when” to apply various sediment retention approaches (i.e. dikes, sediment traps, gabions etc.) cannot be defined by prescriptive design criteria, but will instead require a series of trial and error attempts to determine the maximum flow

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		velocity of the channel and volume of discharge that can be effectively transformed from channel flow to sheetflow. Efforts to evaluate and field test sediment retention methods and techniques for the tailings deposition area will be continued. Results and technical information developed are included in the TRMP monthly report. (Relates to 5a, 5b, and 5c). (CLOSED) 6. A more detailed study on the possibility that groundwater in Timika could be impacted by ModADA tailing constituents should be conducted based on production of a detailed topographic map (scale 1:1000) for the area covering the city of Timika, Kwamki Ponds, Ajkwa Diversion and ModADA (approximately 10 x 5 km2). The study has been completed and the report has been issued. (CLOSED) 7. Finalize groundwater flow and transport model for ModADA, including potentiometric levels and local and regional groundwater gradients. The impacts of local ModADA conditions on regional trends should be better defined, including evaluating the potential impact of the groundwater mounding effects from the elevated ModADA on groundwater in Timika. The report has been issued. (CLOSED) 8. Continue to analyze the groundwater monitoring data for both quality and groundwater level data. Program is being continued. (CLOSED) 9. Continue to analyze the quality of Kwamki Ponds and Ajkwa river to identify the possibility of tailing deposition impacting surface water through groundwater. Program is being continued. (CLOSED) 10. Where time allows, future Audits should investigate current and historical geochemical trends for the ModADA and compare them to current international toxicological data for similar high sediment environments. This will be considered. Additional study of potential sediment toxicity is being conducted in an update of the Ecological Risk Assessment. Geochemical trend analysis is being completed. (CLOSED)

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		11. PTFI could utilize the east-west transect data for a longitudinal cross section of ModADA to identify the concentration trend in the direction of flow. This analysis is being performed. (CLOSED) 12. Consider maintaining the ANC of the tailings at a level that it can accommodate preferential deposition in the upper ModADA should be considered. Perform periodic reviews to determine whether there is a significant volume of PAF material. If so, remedial action should be carried out. Any zones with total sulphur greater than 0.5%S, NAGpH less than 4.5, and ANC less than 20 kgH2SO4/t should be mixed by dozer with surrounding higher ANC material or pushed into channel flow areas where mixing with higher ANC material will occur. Documentation has been modified to incorporate this recommendation. (CLOSED) 13. To define an acceptable pyrite grade in Mill tailings over time, the PTFI Tailings ARD Model that was developed in 2003 should be revised and updated. Continuously monitor the model performance to ensure that tailings discharges satisfy the SOP criteria to minimize long term geochemical risks. The 2003 ARD model has been revised to address this recommendation. (CLOSED)
3.5 Best Management Practices	Hazardous/ Non-hazardous Waste Management	1. A site wide waste management plan with accompanying waste management procedures to allow PTFI to classify its waste streams is strongly recommended. This should be based on a waste audit program to identify all waste streams, classify waste types, and identify opportunities to minimize harmful waste streams and substitute with non-hazardous alternatives. A waste audit has been completed by the environmental department and the site-wide Waste Management Plan has been developed and reviewed. (CLOSED) 2. Improve segregation and disposal of non-hazardous waste material by separating waste streams at the source and at the disposal point (as per planned acceptance criteria, i.e. MP38 Landfill). Avoid contamination of inert laydown areas and lined landfill cells. Implement improvements in communication, clear marking of boundaries, and permanent engineered berms to a level exceeding the lift surface to ensure encroachment of the stream adjacent to

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		the inert lay down area is avoided. Signs have been attached to RORO bins illustrating the detailed waste classifications in addition to the existing color coding system. Enforcement support from the Environmental Department will be directed to area owners if violations occur. Socialization in the form of training/road shows will continue to be conducted by the Environmental Department. The Master Plan for landfill areas includes boundaries for laydown areas and cells, and drainage management. (CLOSED) 3. Ensure adherence to daily inspection and maintenance schedules for the landfill leachate capture system and that monitoring wells are in good condition at the time of sampling. If not, a corrective action should be raised. The leachate capture system is maintained through a daily visual inspection with a check list, and by monitoring the leachate incoming flowrate. (CLOSED) 4. The planned excavation of lined landfill cell number one at MP38 for composting purposes is not recommended. Environmental consequences are likely due to the diversity of non-compostable materials and the extremely moist nature of the fill material. There are several benefits of excavating the cell, including the reduction of construction a new cell, recovery of compost material and reduction of area required for waste. If the excavation is pursued, appropriate measures will be taken to prevent environmental impacts. (CLOSED) 5. Ensure proper capping of lined landfill cells to avoid unnecessary saturation of the site and the resulting increase in environmental risk. The availability of daily cover has been improved by opening a closer borrow pit. A drainage system has been constructed to collect the run-off from Cell 2 and from the area between Cells 1 and 2 for transfer to the leachate treatment plant. (CLOSED), 6. Limit access to high risk areas to minimize the chances of an emergency event occurring and the associated environmental impacts. If high risk areas cannot be secured, the items of risk must be effectively isolated. It is strongly suggested that the upper active tipping area at the MP73 landfill be isolated from the lower lobe where trespassers have set up camps when in use. Access to high risk areas will continue to be limited and the trespassers have been

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		removed. (CLOSED) 7. The location of fuel tanks at the Mill area at the bottom of a failure slope remains a high risk. Supplement the limited geotechnical modeling with further detailed site specific geotechnical risk assessment. As the Mill area continues to increase in size, the 1.5 million and 3 million gallon diesel fuel tanks should be decommissioned as fuel storage cells and instead be used for storage of water. The evaluation of the location of future fuel tank storage sites should be the subject of an amendment to COP-10 with regard to environmental aspects such as geotechnical stability. Rock fall hazard areas have been identified throughout the MP74 area. Measures, including protective fencing to mitigate risk of rockfall in the fuel storage areas, have already been implemented. Additional measures as approved in AFE 97807021 are in progress. (CLOSED) 8. Improve hazardous materials storage areas by: a. Sealing and berming handling areas to prevent material from migrating outside of designed containment The area has been sealed temporarily with geomembrane. A replacement site has been planned to improve security and productivity. A construction estimate has been produced and formal approval of the project is underway. (CLOSED) b. Centralize the storage of all hazardous (B3) materials if possible The number of storage areas for hazardous waste will be minimized to the extent possible. (CLOSED) c. Develop a B3 storage facility at the MP38 landfill. However it is acknowledged that security at this site may be an issue. Storage areas for hazardous waste will be evaluated with security in mind. There is a permitted B3 waste storage facility already at the location. (CLOSED)
3.5 Best Management Practices	Emergency Preparedness and Response Programs	1. See Hazardous/Non-hazardous Waste Management recommendations #6 and #7. See above 2. Ensure that performance improvements are closed out following emergency responses to situations (actual and simulated). Where performance is less than satisfactory, hold a repeat

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		exercise within the same quarter to ensure lessons learned are reinforced. Designate authority to area owners for emergency preparedness, ensuring all staff is aware of their assigned duties and that they will be held accountable for their performance at the emergency response review. Procedure on conduct of Emergency Drills is covered under SOP E 14-01 and PTFI Standard 3.09 Safety Management System. Management will ensure the follow-up is completed and documented within the quarter. (CLOSED) 3. Modify COP-14 to give clear guidance on extended spills involving hydrocarbons and waterways, with particular reference to the unique environmental circumstances found in the Lowlands. COP-14 is a general guideline for environmental emergency preparedness and response. For technical guidance, SOP E 14-02 has been developed to cover handling of hydrocarbon spillage in waterways. (CLOSED) 4. Adopt a validation sampling approach to provide verification of successful land-based remediation of spill sites. International best practice dictates that validation samples are taken before, during and after remediation to assess the spatial extent of contamination, confirm the depth of affected material and then validate a successful clean up has been achieved. Post - remediation samples can be compared to international and/or Indonesian best practice target levels for remedial soil concentrations of specific contaminants of concern. The samples can be analyzed at the TEL. This sampling approach has been specified in the new SOP E 14-02. (CLOSED) 5. Implement a TIAP emergency response training program designed to simulate emergency conditions and hone the response time and reaction precision. TRMP conducted a desk-top drill in 2009. Annual drills are planned. (CLOSED)

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3.5 Best Management Practices	Biodiversity Considerations (Highlands Reclamation)	1. On very steep slopes, tighter spacing is recommended for the grass plug plantings (on 1 m centers or 1x1 m), and combining this technique with hydro-seeding should be tested. The current Five Year Reclamation Plan includes hydro-seeding these areas in addition to transplanting, and the use of jute net as additional protection in steeper areas.(CLOSED) 2. Continue establishment of permanent plots in the highland areas where mining is complete and monitor against similar communities (e.g., reference plots) outside the COW area. Current practice is to use undisturbed areas inside the COW as reference areas. (CLOSED) 3. Continue to adapt and improve hydro-seeding technique for highland reclamation. Hydroseeding will be one of the techniques utilized in overburden reclamation. (CLOSED) 4. Continue experimental programs to develop and use compost and organic fertilizers to enhance reclamation of overburden areas with limestone sand as cover layer to achieving a neutral Ph. Use of fertilizers and substrate development will be continued. (CLOSED) 5. Publish and more broadly disseminate the knowledge PTFI has developed regarding sub-alpine re-vegetation reclamation techniques, which is extremely valuable. PTFI will continue to work with universities to disseminate this information. (CLOSED)
3.5 Best Management Practices	Biodiversity Considerations (ModADA Reclamation)	6. Once tailings deposition ceases, develop more formal re-vegetation plans (e.g., work plan, priority locations and re-vegetation targets) TRMP annual planning covers revegetation activity in the ModADA. These will become more focused with experience. (CLOSED) 7. Continue monitoring programs (e.g., flora and fauna diversity, including migratory birds and several endemic species (Megapodius sp)) and consider expanding to document the developing ecosystem in areas of natural succession (e.g., near fishermen houses) PTFI will continue these monitoring programs in accordance with the RKL/RPL requirements and, where practical, will expand the program as recommended. (CLOSED) 8. Continue monitoring of metals uptake by plant and aquatic organisms in the ModADA to

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		assess any potential risks to human health or wildlife. Program will be continued. (CLOSED) 9. Continue to raise awareness and disseminate results of site (MP21) activity that clearly illustrates successful, natural ecological succession on the tailings, as well as the feasibility of agricultural production on tailings. Action plan to use MP21 due to education purposes has been created and utilization of MP21 to educate and disseminate results will continue. (CLOSED)
3.5 Best Management Practices	Biodiversity Considerations (Ajkwa Estuary Reclamation)	10. Continue to utilize Rhizophora mucronata, R.apiculata, and Avicennia marina species for stabilization, as the island forms from tailing sedimentation. Consider additional mangrove species for the reclamation program, specifically Avicennia officinalis and A. marina. Species used in vegetating new wetlands will be expanded as suggested. In 2009, 41,800 propagules & seedlings of Rhizophora mucronata & Avicennia marina have been planted in new wetland. (CLOSED) 11. Recommend mangrove planting with spacing of 1x1 m to 2x1 m. Spacing will be adjusted appropriately. (CLOSED) 12. Discontinue use of Nypa fructicans for the planting program based on research suggesting that the presence of Nypa fructicans retards biomass decomposition, which could potentially have an adverse effect on estuarine productivity. The existing Nypa fructicans on Waii Island should be monitored and removed if they prove invasive. The presence and effect of nypa palm will be closely monitored. (CLOSED)
3.5 Best Management Practices	Biodiversity Considerations (Marine and Estuarine Aquatic Biodiversity Monitoring)	13. Continue program of research and monitoring of aquatic diversity. Program will be continued (CLOSED) 14. Continue program assessing any potential risks for human health from consumption of estuarine species (e.g., mollusks, crabs, fish). Program will be continued. (CLOSED) 15. Consider expanding the monitoring program to include migratory bird populations. In

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		2009, a bird monitoring program at Ajkwa Island and nearby Ajkwa estuary was initiated. (CLOSED)
3.5 Best Management Practices	Biodiversity Considerations (General Biodiversity Programs)	16. Develop the biodiversity management SOP to incorporate the following: a. Consider two potentially conflicting aspects within the Project Area: Indigenous peoples' rights and their traditional use of biodiversity; and, the exploitation of biodiversity resources by non-indigenous migrants (e.g., illegal logging, hunting) b. Build a relationship and better understanding of indigenous peoples usage of biodiversity (e.g., harvest areas, seasonal use, key species) to enable development of compatible conservation programs c. Consider the naturally occurring seasonal fluctuations (e.g., rainy vs. dry season) in species present as well as population size within the biodiversity monitoring program, and monitor at appropriate frequency. The Biodiversity SOP will incorporate AMDAL requirements, Indonesian regulations, and ICMM biodiversity protocols. These additional issues will be considered for inclusion (Relates to 16a, 16b, 16c). The final draft has been produced, and is in the approval process. (CLOSED) 17. Continue and consider further joint development of biodiversity demonstration programs, knowledge sharing, research and documentation. PTFI presently has over 20 cooperative studies in progress with Indonesian universities, publishes books on local biodiversity, sponsors research work on site by students from Indonesian universities, utilizes experts from Indonesian scientific organizations in research related to environmental impacts and sponsors publication of their work, and presents papers at conferences across Indonesia and the world. During April – July 2009, students (S1, S2 & S3) from Sriwijaya University were involved in biodiversity research in tailings natural succession area. During July – October 2009, students (S1) from University of Indonesia on an intern program are conducting research at the mangrove ecosystem surrounding Ajkwa estuary. (CLOSED) 18. The results at MP21 growing vegetables and other commercial crops and the positive results of the tissue testing for metal content should be more widely disseminated. A

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		summary of results has been compiled by an Indonesian consultant. In addition, the Reclamation and Biodiversity showcase area at MP 21 has been renovated and more visitors have come to this area compared to the previous year to get information about the subject. Additionally, during the Indo-Green exposition in Jakarta in 2010, we provided this information to exposition attendees. (CLOSED) 19. PTFI could use the MP21 facility to convey its environmental management information and message beyond just reclamation information. A biology display and diorama has been completed and is in use for educational purposes. (CLOSED) 20. Examine management and assist in awareness raising opportunities targeting invasive exotic plants and animals, such as: a. Work with government to increase awareness of issues related to the introduction of exotic species b. Initiate internal PTFI staff/staff family awareness raising programs (e.g., flower, vegetable, pets) and monitoring and control by the eradication programs A company policy relating to protected flora and fauna is established. GOI Immigration Officials monitor incoming material and confiscate restricted items according to GOI regulations. Additional employee and community awareness efforts are incorporated into our routine programs (Relates to 20a, and 20b) (CLOSED)