

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

MANASOTA-88, INC.,)

Petitioner,)

and)

PEACE RIVER/MANASOTA REGIONAL)

WATER SUPPLY AUTHORITY,)

ENVIRONMENTAL CONFEDERATION OF)

SOUTHWEST FLORIDA, LEE COUNTY,)

and SARASOTA COUNTY,)

Intervenors,)

vs.)

Case No. 01-1080

IMC PHOSPHATES COMPANY and)

DEPARTMENT OF ENVIRONMENTAL)

PROTECTION,)

Respondents.)

CHARLOTTE COUNTY, FLORIDA,)

Petitioner,)

and)

PEACE RIVER/MANASOTA REGIONAL)

WATER SUPPLY AUTHORITY,)

ENVIRONMENTAL CONFEDERATION OF)

SOUTHWEST FLORIDA, LEE COUNTY,)

and SARASOTA COUNTY,)

Intervenors,)

vs.)

Case No. 01-1081

IMC PHOSPHATES COMPANY and)

DEPARTMENT OF ENVIRONMENTAL)

PROTECTION,)

Respondents.)

DESOTO CITIZENS AGAINST)
POLLUTION, INC., ALAN BEHRENS and)
JOSEPH FERNANDEZ,)
))
Petitioners,)
))
and)
))
PEACE RIVER/MANASOTA REGIONAL)
WATER SUPPLY AUTHORITY,)
ENVIRONMENTAL CONFEDERATION OF)
SOUTHWEST FLORIDA, LEE COUNTY,)
and SARASOTA COUNTY,)
))
Intervenors,)
))
vs.) Case No. 01-1082
))
IMC PHOSPHATES COMPANY and)
DEPARTMENT OF ENVIRONMENTAL)
PROTECTION,)
))
Respondents.)
_____)

RECOMMENDED ORDER

Pursuant to notice, the Division of Administrative Hearings, by its duly-designated Administrative Law Judge, Charles A. Stampelos, held a final hearing in the above-styled case on July 24 through August 21, 2001, in Bradenton, Florida.

APPEARANCES

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STATEMENT OF THE ISSUE

Petitioners and Intervenors challenge the Department of Environmental Protection's (Department) Notice of Intent to Issue Environmental Resource Permit (ERP) No. 0142476-003 to IMC Phosphates Company (IMC) for proposed mining of phosphate at the Manson Jenkins Property (Property) located in Manatee County, Florida. The ultimate issue is whether IMC has provided

reasonable assurance that the applicable requirements of Chapters 373 and 403, Florida Statutes, and relevant rules promulgated thereunder, have been satisfied justifying entitlement to an ERP.

PRELIMINARY STATEMENT

On February 8, 2001, the Department issued IMC a Notice of Intent to Issue ERP No. 0142476-003, which authorizes phosphate mining, reclamation, and associated activities on the Property in Manatee County, Florida.

In early March 2001, Charlotte County, Manasota-88, Inc., DeSoto Citizens Against Pollution, Inc. (DCAP), Alan Behrens, and Joseph Fernandez filed timely Petitions, requesting an administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes. The Petitions were transferred by the Department to the Division of Administrative Hearings (Division) for the assignment of an administrative law judge to conduct all necessary proceedings pursuant to Sections 120.57(1) and 120.569(2)(c), Florida Statutes, and to submit a recommended order to the Department. The Petitions were consolidated on March 19, 2001.

Subsequently, the Peace River/Manasota Regional Water Supply Authority (Authority), Environmental Confederation of Southwest Florida (ECOSWF), Lee County, and Sarasota County filed Petitions for leave to intervene, which were granted.

On July 23, 2001, the parties filed a Joint Prehearing Stipulation.

The final hearing was held on July 24-27, 31, August 1-3, 6-9, 13-17, and 20-21, 2001. During the hearing, IMC and the Department agreed to the standing of all Petitioners and Intervenors.

During the hearing, IMC filed a Motion to Exclude Unreliable and Untimely Opinion Testimony of Hans Zarbock, in part, on the ground that his opinion testimony failed to meet the reliability standard for the admissibility of expert testimony set forth in Frye v. United States, 293 F. 1013 (D.C. Cir. 1923) and its progeny. Argument was presented during the final hearing and a ruling on the Motion was deferred until the issuance of this Recommended Order. The Motion is denied. The testimony and exhibits offered by Mr. Zarbock have been considered in the preparation of this Recommended Order.

IMC's Exhibits 1-23, 24A & B, 25A & B, 26-28, 29A & B, 31 (composite), 32-38, 40-49, 51-54, 58, 60-66, 69-74, 76-79, 80(1)-80(43), 80(45)-80(53), 82-88, 96-98, 106-115, 118, 119(1)-119(10), 128-131, 134-136, 138 (composite), 142, 143, 151, 155-159, 238, and 539-551, were admitted into evidence. IMC presented the following witnesses: Robert H. Kinsey; Alan F. Blumberg, Ph.D; Andre F. Clewell, Ph.D.; Douglas J. Durbin, Ph.D.; Anthony N. Arcuri; John E. Garlanger, Ph.D., P.E.;

Thomas E. Lodge, Ph.D.; Peter J. Schreuder, P.G., C.P.G.; Gary P. Uebelhoer; G. Gregory Williams; Phillip W. Simpson; and Doreen B. Donovan.

The Department's Exhibits 1, 2A-2E, 2G-2I, 3, and 4 were admitted into evidence. The Department presented the following witnesses: Orlando E. Rivera; Stephen Partney, P.E.; and James W. H. "Bud" Cates.

Charlotte County's Exhibits 2, 6-16, 18-21, 23-33, 35, 37-52, 54, 57-82, and 84-88 were admitted into evidence. Charlotte County presented the following witnesses: William J. Dunn, Ph.D.; David Clayton; Anthony J. Janicki, Ph.D.; Hans W. Zarbock, P.E.; Thomas H. Fraser, Ph.D.; Janet G. Llewellyn; and Richard McLean.

The Authority's Exhibits 2, 5-9, 17-18, 30, 36-40, 42, 44, 46, 48-49, 52, 56-57, 62-64, 67-68, 71-75, 78, 80, and 84-86 were admitted into evidence. The Authority presented the following witnesses: Patrick J. Lehman, P.E.; C. Lynn Miller, P.E.; Robert J. Moresi, P.G.; and Karen F. Burnett, P.G.

Manasota-88's, DCAP and ECOSWF's Exhibits 1-3, 9, 13, 19, 23-39, and 41-46 were admitted into evidence. Manasota-88, et al., presented the following witnesses: Alan Behrens and Sydney T. Bacchus, Ph.D.

Sarasota County's Exhibits 1-3 were admitted into evidence. Sarasota County presented the following witnesses:

Edward Gosicki, P.E. and Gary Stephen Comp.

Lee County's Exhibits 1 and 2 were admitted into evidence. Lee County did not present any witnesses.

Alan Behrens did not present any exhibits or witnesses.

A special session was held on August 7, 2001, in Sarasota, Florida, to consider public testimony regarding the case. Several documents were received during the session and have been made a part of this final hearing record and have been considered in the preparation of the Recommended Order.

On October 5, 2001, the Transcript (volumes 1 through 39) of the final hearing was filed with the Division. On October 5, 2001, the one-volume Transcript of the public hearing was also filed with the Division.

The parties submitted Proposed Recommended Orders and IMC and Charlotte County filed Memoranda of Law.

By Order dated November 2, 2001, IMC, the Department, Charlotte County, Manasota-88, the Authority, and ECOSWF filed Replies to the Proposed Recommended Orders, and IMC and Charlotte County filed Replies to the Memoranda of Law. All of these post-hearing submissions have been considered in preparing this Recommended Order.

FINDINGS OF FACT

A. The Parties

1. Respondent, IMC, is a general partnership authorized to do business in the State of Florida and is the applicant in these proceedings. IMC has applied for an ERP to mine, reclaim, and conduct associated activities on the Property in Manatee County, Florida. These activities shall be referred to as the "Manson Jenkins Project."

2. The Department administers the ERP program for various activities including phosphate mining and reviewed the ERP application for the Manson Jenkins Project.

3. Petitioner, DCAP, is a not-for-profit corporation. Alan Behrens and Joe Fernandez reside in DeSoto County and joined in the DCAP Petition.

4. Petitioner, Charlotte County, and Intervenors, Sarasota County and Lee County, are political subdivisions of the State of Florida.

5. Intervenor, the Authority, is a regional water supply authority established under Section 373.196, Florida Statutes, and created by interlocal agreement to supply wholesale drinking water to its member governments and to approximately 100,000 residents of Charlotte, DeSoto, and Sarasota counties, most of whom reside in Charlotte County.

6. Intervenors, ECOSWF and Manasota-88, are not-for-profit environmental organizations.

7. IMC and the Department agreed to the standing of the Petitioners and Intervenors to participate in these proceedings.

B. Environmental Resource Application

1. General

8. In 1993, the Legislature directed the Department and the water management districts to combine the Management and Storage of Surface Water (MSSW) program, administered by the water management districts pursuant to Chapter 373, Florida Statutes, and the Dredge and Fill Program, administered by the Department pursuant to Chapter 403, Florida Statutes, into a single permitting program, the ERP Program. The Department and the water management districts worked jointly to merge the two programs. The process was completed in 1995, when the rules implementing the ERP Program took effect.

9. The MSSW permits were issued by the water management districts for construction activities that would significantly alter surface water flow or otherwise affect surface water management systems. The dredge and fill permits were issued by the Department for activities proposed in surface waters and wetlands. The ERPs are now issued by the Department pursuant to Chapter 373, Florida Statutes, which requires the issuance of an

ERP for any construction activities in or seeking to alter certain waters and wetlands.

10. ERP applications for phosphate mining are submitted to, processed and evaluated by, the Department's Bureau of Mine Reclamation (Bureau) pursuant to Chapter 373, Florida Statutes, and specific rules. By law and interagency agreement, the Department issues ERPs for proposed phosphate mining operations. The Bureau conducts an initial review and may request additional information. Upon review of the initial application and responses, the Bureau determines whether the application is complete. Unless waived by the applicant, the Bureau has 90 days within which to take agency action, i.e., either grant or deny the application.

11. ERPs are divided into the construction and operation phases. During the construction phase of a phosphate mining operation, an applicant conducts the mining and related activities, including the actual preparation and mining of the land. After mining, an applicant pumps sand tailings back into the mine cuts, re-contours the land and plants the appropriate vegetation, also known as the reclamation process. After reclamation, the Department inspects the site and determines whether on-site wetlands can be properly reconnected to waters of the state. Reconnection typically occurs when the Department determines that the site functions as a self-sustaining natural

system, and water quality standards are met. Following reconnection, the operational stage of the ERP begins because the property is then a natural site and self-sustained. Throughout the construction and operation phases, the Department continually inspects the property. A site will not be released from permit requirements until all permit conditions have been met.

12. For ERP permits issued within the Southwest Florida Water Management District (SWFWMD), the Department incorporated by reference certain sections of Chapters 40D-1, 40D-4, 40D-40, and 40D-45, Florida Administrative Code, and specific provisions of the Basis of Review for Environmental Resource Permit Applications (1995) (ERP BOR), as its permitting criteria. See Rule 62-330.200(3)(a)-(e), Florida Administrative Code.

13. The main permitting criteria followed by the Department in issuing ERP permits for activities within the SWFWMD are contained in Rule 40D-4.301, Florida Administrative Code (Conditions for Issuance of Permits), and Rule 40D-4.302, Florida Administrative Code (Additional Conditions for Issuance of Permits). Both rules became effective in 1995.

14. Prior to the merger of the Department and the water management districts' functions under the Department's regulatory umbrella, the various districts had slightly different conditions for the issuance of permits. The

Department and all of the districts developed one version of these rules, which were then adopted by the four districts (without the Northwest Water Management District, which does not implement the program) to promote uniformity. In turn, the Department incorporated the above-mentioned rules by reference. Thus, for example, Rules 40D-4.301 and 40D-4.302 are a blending of the previous MSSW rules with the previous dredge and fill rules.

15. In evaluating ERP permit applications, the Department considers the SWFWMD's (as well as other water management districts) historical interpretation of the rules which have been adopted by the Department, although the Department is not bound to adopt former SWFWMD interpretations nor does the Department defer to the SWFWMD's interpretation of these rules.

16. Until this proceeding, the Bureau evaluated adverse water quantity and flow impacts based on a standard that limited post-mining flows and mass volume to 105 percent and 85 percent of the pre-mining flows and volumes, respectively. As a direct result of the filing of a challenge to this policy, the Department will not rely on this policy as a basis for decision in this proceeding. See Charlotte County, Florida, and Peace River/Manasota Regional Water Supply Authority v. Department of Environmental Protection and IMC Phosphates Company, DOAH Case

Nos. 01-2399RU and 01-2412RU (Settlement Agreement July 6, 2001).

17. In this de novo proceeding, IMC has the burden to establish reasonable assurances in a variety of contexts. See, e.g., Rules 40D-4.301 and 40D-4.302, Florida Administrative Code.

2. The Manson Jenkins ERP Application Review Process

18. On October 1, 1999, IMC submitted to the Department an application for an ERP for authorization to mine phosphate, reclaim, and conduct associated activities on the Property. The Manson Jenkins Project is an extension of the existing Fort Green Mine, which is contiguous to the Property. The Department reviewed the information contained in the initial application and issued a series of requests for additional information. IMC provided responses to these requests on February 7, June 5, July 15, September 6, and October 11, 2000. Thereafter, the Department determined that the application was complete and issued a Notice of Intent to Issue (NOI) an ERP to IMC on February 8, 2001. This NOI was published in the Bradenton Herald on February 12, 2001.

19. The parties stipulated that "Chapters 373 and 403, Florida Statutes, and the rules promulgated pursuant thereto are the applicable law in this proceeding." However, the parties disagree regarding which specific statutes and rules apply here.

3. Draft Environmental Resource Permit

20. The Department's NOI includes a draft ERP. This permit is issued under the authority of Part IV of Chapter 373, Florida Statutes, and Chapter 62, Florida Administrative Code.

21. The draft ERP authorizes IMC, in part, "to mine or disturb approximately 361 acres of wetlands for phosphate mining and associated activities The mitigation/reclamation will consist of approximately 537.8 acres of wetlands The project will also disturb 1988.1 acres of uplands for phosphate mining and associated activities [and t]he reclamation will consist of 1811.3 acres of uplands . . ." in a variety of land formations.

22. IMC voluntarily agreed to provide a two-phased Conservation Easement consisting of not less than 521 acres, consisting "of [during phase one] not less than 182 acres associated with the no-mine area of the West Fork of Horse Creek, which shall be preserved from mining associated disturbance" and, during phase two, "an additional 339 acres of created wetlands and encompassed stream associated with the West Fork of Horse" Creek. The Conservation Easement is not considered part of the mitigation offered by IMC. The Conservation Easement authorizes the Property owners to use these areas after reclamation and release of the Property.

23. The draft ERP contains general conditions, and specific conditions requiring, in part, monitoring to assure that the proposed mitigation of waters and wetlands is completed in accordance with success criteria contained in the draft ERP; monitoring to assure that groundwater levels are maintained at appropriate levels in areas undisturbed by mining or mining related activities; and numerous other legally enforceable conditions of approval.

C. Phosphate Mining

1. Geological Background and Phosphate Mining Process

24. Millions of years ago, the oceans were rich in phosphorous. At that time, central Florida was under water. Over geological time, certain organisms decayed and settled to the bottom of the ocean. After the waters receded, deposits of phosphate were covered by land. Essentially, phosphate is the product of marine deposits.

25. Although deposits are located in other states, such as Idaho and North Carolina, the largest phosphate rock deposit in the United States is in Central Florida, including the Manson Jenkins Property.

26. The deposits of phosphate-bearing material are referred to as the "matrix," which consists of one-third phosphate, one-third sand, and one-third clay. On the Manson

Jenkins Property, the entire matrix or ore body is approximately 15 to 18 feet thick.

27. This phosphate matrix layer is buried under a layer of soils, rocks, sand, and clay, known as the "overburden," which is up to approximately 33 feet thick.

28. There is a layer beneath the matrix which is 150 to 200 feet thick which is a confining layer of dense clay and separates the surficial aquifer from the intermediate aquifer.

29. The phosphate to be mined on the Property is above the bed clay and the top of the intermediate aquifer system.

30. Because the matrix is overlain by the overburden, the only way that it can be accessed and removed is through a surface mining operation.

31. The first step prior to any land disturbance associated with phosphate mining is the installation of a "ditch and berm" system around the proposed mining area. The ditch and berm system is referred to by the Department and the United States Environmental Protection Agency (EPA) as a "best management practice" (BMP).

32. The ditch and berm system for the Property will be designed and installed pursuant to specific criteria. This system is designed to preclude a direct release of impacted water from the mining area to adjacent land, and wetlands or waters, such as streams. The ditch and berm system can be

expected to operate appropriately and efficiently if it is constructed, operated, and inspected in accordance with the design criteria described by IMC engineers.

33. A properly designed, constructed, and operated ditch and berm recharge system will effectively maintain water levels outside of the mine areas.

34. A berm is a small embankment which has an inspection roadway on top which is typically 12 to 15 feet wide and has a fairly flat downstream slope. The berm is designed to be flat and stable. The primary purpose of the berm is to prevent water that is collected in the ditch from overflowing into the preserved areas and other undisturbed areas and creating, among other things, potential water quality problems.

35. This system is also designed to prevent water that may be associated with the mining activity from moving off-site to adjacent, undisturbed areas, including wetlands or waters and to protect the ecology of the area outside of the berm. Another function of the system, including the recharge ditches, is to maintain groundwater along the boundaries of the property line so that undisturbed areas outside the mining area will remain at pre-mining conditions. Water levels are actively maintained in the ditches surrounding mining areas to assure that the mining excavations do not drain groundwater from adjacent areas.

36. Preserved areas are also surrounded by ditch and berm and recharge systems that hydrate the area so that, for example, existing wetlands are not degraded.

37. Prior to mining a to-be-disturbed area, the ditch portion of the ditch and berm system acts to collect water and carry it to an area where it is pumped into a recirculation system. The ditch and berm system also typically acts as a recharge system.

38. IMC will design, construct, and operate a recharge system that will maintain the water level in the area immediately adjacent to the mine cuts.

39. The water that is in the recirculation system consists of rainfall, water from the deeper aquifer systems, water from the surficial aquifer system that drains into the mine cuts, and runoff that is captured behind the ditch and berm systems.

40. Prior to mining, IMC will install monitor wells at regular intervals along the recharge ditches, which will be located adjacent to either preserved areas or adjacent to property owned by someone else other than IMC, who would be concerned about drawing the water level down beneath his property. The monitor well gauges will give an indication as to the baseline water levels, the fluctuations of the water level, and the high water levels along the preserved areas. The monitor well gauges can also be read to ensure that the water in

the recharge ditch is getting into the ground and maintaining the water table at the same level it was prior to mining.

41. Water can also be drawn from nearby wells which can be used to make up the water that seeps out of the recharge system.

42. IMC currently operates approximately 75 miles of perimeter ditches and berms at various mining operations. IMC has resolved compliance issues relating to recharge ditches (because of dewatering concerns) on the Fort Green Mine. Compliance issues, including the Four Corners Mine, have been reported by IMC to the SWFWMD. Also, IMC has had other unpermitted discharges related to its ditches and berms, which have been resolved by consent orders.

43. Compliance issues regarding the East Fork of the Manatee River have not been resolved completely, as the SWFWMD has not closed its enforcement files. IMC will continue to act to resolve these issues until reclamation is completed around the East Fork.

44. Notwithstanding these compliance issues and the related problems, the weight of the evidence indicates that IMC is capable of designing, constructing, and maintaining the proposed ditch and berm system, including the recharge ditches, on the Property in order to avoid past problems which resulted in, for example, dewatering of property. These problems can be significant and, if left undetected and unremedied, can cause

serious consequences. Careful and timely monitoring, and continued self-reporting of non-compliance by IMC is imperative.

45. The SWFWMD has issued a consolidated water use permit for the Property. Under this permit, IMC has reduced its daily permitted pumping by an average of over 50 percent.

46. Prior to mining, an alternate flow way (AFW) will also be constructed to carry water that was previously flowing from the northwestern portion (boundary) of the Property to the preserved area to the south of the Property. The AFW will temporarily replace the conveyance and storage of the portions of the West Fork of Horse Creek that will be mined. The AFW is likely to be removed in years 5 to 6 of mining. See Findings of Fact 87-94.

47. Once the ditch and berm system is in place, the land is cleared to prepare for mining.

48. The area is mined in strips or rows. After clearing, large electrically powered draglines remove the overburden layer to expose the phosphate-bearing matrix. The overburden is cast into an open adjacent mine cut, exposing the matrix for mining. These same draglines then extract the matrix and place it in depressions created at the mine which are called "slurry wells" or "pits." The matrix is then mixed with water in the pits to form a slurry which is conveyed hydraulically through a series

of pipes and pumps to a "beneficiation" plant to remove the phosphate rock product from the matrix.

49. The recovered phosphate matrix contains phosphate rock, clay, and sand. At the beneficiation plant, the phosphate rock, sand, and clay are physically separated. The phosphate rock is stored prior to additional processing required to convert it to fertilizer at off-site facilities. The sand is hydraulically transported back to the mining areas for use in land reclamation. The clays are generated from the beneficiation process and hydraulically transported to a clay settling area (CSA) where they are dewatered prior to reclamation.

50. IMC plans to construct and operate two CSAs on the Property. However, the weight of the evidence indicates that approval of the ERP application at issue here, does not approve these CSAs because they have to be permitted and operated under separate Department regulations. See Findings of Fact 244-247 and 268.

51. CSAs are a repository for the clay material. They are generally built in mined-out areas and built with the overburden material that is dragline cast in the mine cut. CSAs are necessary because, unlike sand which readily drains through water, clay materials are very light; and it takes time for the

clays to settle out of the water, so the water can be reused in the re-circulation system.

52. IMC expects that the two CSAs on the Property will ultimately be designed to handle the equivalent amounts of clays that will be mined from the Manson Jenkins Project. There will also be two CSAs immediately to the east of the Property on the Fort Green Mine, which will be operating as a result of the mining on the Property.

53. Specifically, the CSAs proposed for the Property are expected to be constructed in mined-out areas (the northeast portion of the Property) and are expected to be surrounded by engineered dams approximately 40 feet above the surrounding land surface grade. One of the CSAs will encompass approximately 540 acres and the other 520 acres.

54. After the clay is initially settled, specialized equipment will be used to dig drainage ditches and take other steps to expedite the settling process. This will allow a "crust" to form on the top of the clay surface. Thereafter, the dams surrounding the CSA (which are composed of overburden material) will be pushed in to cover a portion of the settled clays. The area will then be primarily uplands with relatively small wetland systems present.

55. Years ago, settling areas would be reclaimed in 10 to 15 years. Today, with special mobile equipment, CSAs can be

reclaimed within 3 to 5 years. Reclamation of the CSAs on the Property is expected to be completed within the 15 year timeframe contemplated for mining and reclamation activities.

56. Once the matrix has been removed from a mining area segment, land reclamation commences.

57. IMC expects to use four, different land reclamation techniques, including but not limited to, crustal development reclamation and land and lakes reclamation. These methods were described in detail during the hearing.

D. Manson Jenkins Project

1. Pre-Mining Conditions (Historical and Current Conditions of the Property)

58. The Property encompasses approximately 2,808 acres in northeast Manatee County, Florida, which is largely owned by FP-1 and FP-2 Corporations. IMC has a lease to mine the Property, having obtained these rights in 1993 when IMC entered into a partnership with Agrico Chemical Company, who, in turn, acquired the mining lease in 1986. The lease prohibits the owners from using the Property during mining, until it is released from reclamation. The owners have the right to use the Property prior to mining and after reclamation.

59. The Parties stipulated that there are no archeological or historical resources located at the Property.

60. The Peace River starts in Polk County, north of Bartow, and flows through Wauchula and Arcadia, and southwesterly to Charlotte Harbor.

61. Horse Creek begins in the southern portion of Polk and Hillsborough Counties and flows south through Hardee County, approximately 40 miles to the confluence of Horse Creek and the Peace River in DeSoto County.

62. The eastern boundary of the Property is the Manatee County-Hardee County boundary line. The Property abuts land to the east that is being mined and reclaimed by IMC as part of its Fort Green Mine, and the Manson Jenkins Project is an extension of that mining operation.

63. According to a 1940 composite aerial, as interpreted, the Property contained wetlands that had not been ditched or drained. At the time, the West Fork of Horse Creek had not been channelized. The aerial indicates that there was a line of wetlands and a series of elongated marshes strung together, like a string of sausages, running south along the West Fork, and a distinct, yet not continuous, channel running southeast toward the southern boundary of the Property.

64. The 1940 aerial, as interpreted, also indicates that the upland areas of pines had been cut. Cattle grazing is also apparent. The upland, however, consisted of very dense and rich

undergrowth of range grasses, palmettos, low shrubs, and other assorted species.

65. As of 1950, herbaceous wetlands existed at the north end of the Property and a vegetative cover existed between that wetland and the forested portion of the Property at the southern end. At that time, there was no channelization.

66. As of 1965, the West Fork of Horse Creek, in or around the middle of the Property, had been channelized and heavily ditched. The area in the northeastern portion of the Property had been impacted by agriculture and row crops. The wetlands had been drained and tied into these ditches. The native range had been removed. IMC and its predecessors did not participate in the drainage of the Property for agricultural purposes. The present condition of the Property is very similar to the condition as of 1965.

67. There is an approximately 3-square-mile area north of the Property which drains through a marsh, down to the West Fork of Horse Creek.

68. The West Fork of Horse Creek, which enters the northwest portion of the Property, bisects the entire length of the Property in a north-south direction, and is channelized. The West Fork of Horse Creek is a first order stream because of its location in the watershed. See Findings of Fact 234-236.

69. There is a headwater marsh area which leads into the northwestern portion of the Property and is part of West Fork of Horse Creek. The uppermost portion of the West Fork on the Property, which will be mined, has been referred to as "a channelized or ditch portion" or a "wide ditch." This includes the headwater marsh area. There is a "complex of wetlands" in the northwest corner of the Property which contribute water flow down the West Fork.

70. There is a large ditch in the middle of the headwater marsh which conveys most of the water through the system and down the center of the Property. This portion of the West Fork of Horse Creek does not have the upland vegetation that is usually associated with a stream bank. Its ecological value is less than what is generally found in other first order stream or headwater systems.

71. While the experts diverge on this issue, the weight of the evidence indicates that while the headwater marsh area to the north of the Property and in the northern portion of the Property has hydrological importance, the West Fork of Horse Creek is not a regionally significant stream.

72. The weight of the evidence indicates that the West Fork of Horse Creek is a tributary of Horse Creek which, in turn, is a tributary of the Peace River. However, it is unclear whether the West Fork of Horse Creek is a work of SWFWMD.

Assuming that it is, reasonable assurances have been provided that this project will not cause adverse impacts to the West Fork of Horse Creek in light of the mitigation offered by IMC and the proposed reclamation of the area and the reasonable expectation that this area will be improved from its current state. See Finding of Fact 257.

73. There is also an area on the West Fork of Horse Creek and to the southeast of the Property (Section 13) which will be preserved and not mined, which is a combination of a channel system and forested uplands and wetlands.

74. Walker Road runs north and south and is located in the middle and west of the West Fork of Horse Creek on the Property. Walker Road follows the proposed AFW. There is also a dirt or shell road which runs west to east across the West Fork of Horse Creek on the Property and a spillway structure at this location. The spillway structure was used by the landowner in agricultural practices to control the flow of water to irrigate the crops in the northeastern portion of the Property.

75. The Property is located in the West Fork of Horse Creek, Manatee River, and Myakka River Basins, and in the far western part of the Peace River Basin.

76. IMC's ERP Application contains approximately 300 acres, west of Walker Road (part of Sections 2 and 11) and in the northwestern portion of the Property in the Manatee River

Basin. (Approximately 17 acres of wetlands in this area will be mined and will be replaced with approximately 51 acres of wetlands. See Findings of Fact 95-96 and 211.) This area is not part of the Development of Regional Impact approved by Manatee County, although IMC plans to request permission from Manatee County to mine this area, and if approved, IMC would mine less than 200 acres. This portion essentially drains into the Manatee River. Further, IMC has included the southwest triangle of these 300 acres as a preservation area. This area contains, among other land covers, mixed wetland hardwoods and freshwater marshes.

77. There is another portion of the Property in the Myakka River Basin, approximately 32 acres, located in the southwest corner of the site. (There is also a small wetland in this area consisting of approximately 4 acres of wetlands which will be replaced with approximately 12 acres of wetlands. See Findings of Fact 95-96.) This portion drains through a drainage ditch and eventually enters Wingate Creek and the Myakka River.

78. The balance, and by far the largest portion of the Property, is located in the Peace River Basin.

79. After leaving the Property boundary to the south, the West Fork of Horse Creek joins the main branch of Horse Creek approximately 3 to 3.5 miles south of the Property line. Horse Creek then joins the Peace River approximately 30 miles from the

Property boundary. The Peace River then empties into Charlotte Harbor approximately 40 miles from the Property.

80. Today, the predominant land use on the Property are improved pasture and agricultural ditches. In order to achieve this cover and use, an extensive surface drainage system was constructed to drain isolated marshes into the West Fork of Horse Creek and to reduce the flood stage elevations within the creek itself. In areas with less extensive ditching, the existing vegetative communities more closely approximate natural systems. The improved pasture has been planted with bahia grass and other exotic pasture grasses. In recent years, a large portion of the pasture area has been converted into a sod farm and the sod has been stripped from that area leaving a large area of bare semi-vegetative soil.

81. The Property is not pristine or close to its original condition, although, as argued by Charlotte County and others, portions of the Property do provide ecological functions.

82. The wetlands on the Property have been subjected to extensive agricultural ditching. The main ditch is quite wide and deep, and there are many side ditches that proceed into smaller wetlands. There are also some lands that have not experienced conversion to improved pasture which, for the most part, are scheduled for preservation.

83. IMC plans to mine, in part, the channelized portion of the West Fork of Horse Creek from north to south to the preserved area where the more heavily vegetated and forested portion of the natural stream channel of the West Fork of Horse Creek is located. This area will be blocked off during mining by a ditch and berm system.

84. IMC will construct an AFW to carry the water that was previously flowing from the northern area (that is not part of this project and is not owned by IMC) around the area to be mined in the stream channel, which will be reconnected into the preserved area to the south. See Findings of Fact 87-94.

85. From a hydrological standpoint, the to-be-mined marsh and channelized stream segment will be replaced with a flow-through marsh and recreated stream segment that connects the area to the north with the preserved portion of the West Fork of Horse Creek. The uplands will be placed back to the same elevations existing pre-mining and additional wetlands added. The marsh and the vegetative part of the stream will be slightly bigger.

2. Proposed Mining Activities (Mine Sequence for the Property)

86. IMC proposes to mine 2,348 acres of the 2,808 acres on the Property in approximately 6 to 9 years. The mining activities at the Property will follow the general sequence

outlined above. Reclamation is expected to begin within 3 to 4 years after the commencement of mining operations, except for the CSAs. The mining and reclamation activities are expected to be completed within 15 years.

87. IMC will construct an AFW in year one (and prior to mining) of the mining activities. The AFW should be tied into the preserved area in the southern portion of the Property as soon as feasible in order to minimize the impacts to this area and downstream.

88. The AFW is necessary because IMC intends to mine approximately 1.6 miles of the channelized or ditched marsh and stream portion of the West Fork of Horse Creek located in the northwest to middle portion of the Property.

89. The AFW is designed to temporarily replace the conveyance and storage of the portions of the West Fork of Horse Creek that will be mined north of the preserved area. The AFW will carry water that was previously flowing from the northwestern boundary of the Property to the preserved areas to the southern portion of the Property. In this manner, if constructed and operated properly, it is expected that the proposed mining and related activities at the project area will not cause adverse flooding to on-site or off-site property and will not cause adverse impacts to existing surface water storage and conveyance capabilities. Further, the AFW and downstream

areas will not be expected to suffer from erosion as a result of the installation of the AFW.

90. The slopes and bottom of the AFW will be a vegetated channel designed to receive surface water runoff from the area north of the Property and convey it southward and then eastward back into that portion of the West Fork of Horse Creek on the Property which is part of the area being preserved in the southern portion of the Property. The bottom of the AFW will be vegetated with wetland type vegetation and will provide a habitat for fish and other wildlife. The AFW will not be used until the vegetation has become established. Vegetation is an effective method for minimizing erosion in a flow way or stream as described here.

91. The design recommendations also require that the ends of the access corridor be stabilized so if they are subjected to overflow during the 25-year or 100-year storm event, they will be protected from erosion. Any sharp bends in the AFW will be stabilized prior to being put into service.

92. The size of the AFW (50 feet wide) was revised and adjusted so it could carry the expected flows without backing the water up and causing water elevation to be above that which existed historically. The actual design of the AFW has been modified in accordance with the ERP conditions.

93. The Draft ERP, "Specific Condition 4. c." provides:

An alternate flow way shall replace the headwater marsh and wetlands of the West Fork of Horse Creek during site preparation, mining, and until the reclamation is reconnected. The alternate flowway will begin south of the north project boundary and end at the north end of the preserved wetlands, as shown on Figure IV F. The alternate flowway will convey water from areas north of the north project boundary south into the unmined portions of the West Fork of Horse Creek. The AFW shall be constructed as a trapezoidal channel with a minimum bottom of with [sic] of 50 feet and side slopes no steeper than 3 ft horizontal to 1 foot vertical, (3H to 1V). A recharge ditch and associated berms shall be placed along the entire east side and portions of the west side of the alternate flowway as noted in Figures IV F and IV F(a). To ensure maximum water quality treatment, the flowway will be planted with a variety of herbaceous wetland species such as pickerel weed Peak level recording devices will be placed at the north end, south end, and just north of the half Section line of Section 11. The top of the recording tube and the cross section elevations of the alternate flowway will be surveyed at the time of installation. This data will be submitted with the first monitoring report. Stream flows will be measured in conjunction with the quarterly mine inspection at each peak level station until the reclamation is reconnected to the West Fork unmined area. IMC-Phosphates shall submit monthly flow data and rainfall data to the bureau for review and approval. IMC-Phosphates shall not conduct any activities that result in a violation of Class III water quality standards within the West Fork [of] Horse Creek flowway. If at any time the water quality fails to meet [C]lass III standards, the bureau shall be immediately notified and corrective measures implemented.

94. The reconstructed stream channel, like the AFW, will be vegetated and not placed into service until the vegetation is established.

95. IMC proposes to disturb 361 acres of jurisdictional wetlands on the Property. This acreage comprises approximately 4, 17, and 330 (approximately 351 acres according to Dr. Durbin) acres in the Myakka, Manatee, and Peace River Basins, respectively. The balance of the Property will be reclaimed as uplands. See Findings of Fact 218-219.

96. IMC will reclaim 538 acres of wetlands for the 361 acres of disturbed wetlands, consisting of approximately 12, 51, 475 acres of wetland mitigation in the Myakka, Manatee, and Peace River Basins, respectively.

97. IMC proposes to preserve approximately 316 acres (approximately 45 percent of the wetlands on-site) of jurisdictional wetlands on the Property, including over 70 percent of the forested wetlands on-site.

98. By eliminating existing agricultural ditching and providing appropriate mitigation, and by providing upland buffers around the wetlands, the post-reclamation condition of the Property is expected to be better than the current condition of the Property.

E. Conditions for Issuance

(1) Water Quantity Impacts

a. Surface Water

1. General

99. During the final hearing, substantial evidence was presented concerning the potential impact of mining on surface water flows across the Property and downstream.

100. Pursuant to Rule 40D-4.301(1)(a) and (b), Florida Administrative Code, an ERP applicant must provide reasonable assurance that its proposed activities will not cause adverse water quantity impacts to receiving waters and adjacent lands and will not cause adverse flooding to on-site or off-site property.

101. Dr. Garlanger is an expert in hydrology and hydrologic modeling with special expertise in surface and ground water systems associated with phosphate mining operations and reclaimed mined lands. IMC requested Dr. Garlanger to assess the potential impacts of the proposed mining and reclamation on the hydrology of the Property, and also to assess the potential hydrological or hydrogeological impacts downstream from the site to wetlands or waters of the state.

102. Dr. Garlanger used models to assist him in assessing the nature, scope, and the extent of any future impacts

resulting from the phosphate mining. Modeling requires the making of calculations relating one variable to another.

103. Scientists, such as Dr. Garlanger and others who testified during this final hearing, who run comparative water balance models to calculate the differences in daily stream flow leaving a project site at the project boundary, must take into account several factors associated with the hydrological cycle, including the following: 1) the typography of the site; 2) the hydraulic conductivity or permeability of different soil levels; 3) the transmissivity of the different aquifer systems; 4) the geometry of the stream channel; 5) the amount and timing of rainfall on-site; 6) the amount of surface runoff; 7) the amount of evapotranspiration (ET); 8) the amount of deep recharge to the Floridan aquifer system; 9) the amount of groundwater outflow, including that portion of which makes it to the stream and becomes base flow; and 10) the temperature, wind speed, and amount of solar radiation, because they control ET. Each of these issues was reasonably evaluated by Dr. Garlanger.

104. The weight of the evidence supports the accuracy, completeness, and conclusions of Dr. Garlanger's modeling work. Dr. Garlanger has been reviewing hydrological aspects of mining projects since 1974 for phosphate mining projects that require hydrological and hydrogeological analysis reflecting the unique aspects of mining operations.

105. Dr. Garlanger explained how professional judgment was applied in his engineering calculations and how his model input data are reasonable. He also explained that he used reasonable information estimates to conduct this particular modeling work, which are consistent with measured data.

106. Surface water flows are dependent on two sources: rainfall runoff from adjacent areas and groundwater that enters surface water streams and is sometimes referred to as "base flow."

107. The weight of the evidence demonstrated that during mining activities the act of confining mining areas by the ditch and berm system would capture the rainfall runoff on these areas and thus reduce that rainfall runoff contribution to the ditched segment of the West Fork of Horse Creek (prior to the time that it is mined), the AFW during its operation, and the reclaimed West Fork of Horse Creek (during the time that mining continues to occur in the vicinity).

108. During the active mining and reclamation activities, the ditch and berm system operates to maintain groundwater levels in areas undisturbed by mining at pre-mining conditions. Water levels are actively maintained in the ditches surrounding mining areas to assure that the mining excavations do not drain groundwater from adjacent areas. Thus, during the active mining and reclamation activities, the base flow component of surface

water is not likely to be affected. The weight of the evidence demonstrates that the base flow contribution to surface water flows through the AFW, when operational, will be somewhat higher than is present in the West Fork of Horse Creek during pre-mining conditions.

109. After mining and reclamation are complete, the ditch and berm systems will no longer be needed and present at the Property, and thus rainfall runoff is not expected to be captured thereby. More wetlands, however, will be present at the Property after reclamation is completed than are now present. These wetlands tend to "use," through ET, more water than a comparably sized upland area. Thus, after reclamation is completed, there will be a reduction in the amount of water contributed from the Property to the flow of water in the reclaimed and preserved portions of the West Fork of Horse Creek.

110. The weight of the evidence indicates that the proposed mining and reclamation activities at the Property will not cause any adverse impacts on surface water quantity at the Property during active mining and reclamation or thereafter, and that there will be no adverse impacts at downstream locations.

2. Rainfall

111. Predictive modeling was carried out by Dr. Garlanger to assess the potential significance of rainfall runoff capture

and base flow reductions anticipated during mining and after reclamation of the Property. The model efforts simulated stream flow conditions on a daily basis, assuming that the Property experienced rainfall of the same frequency and duration as had occurred during a 19-year period from 1980 to 1998 at the Wauchula rainfall gauge.

112. The amount of rainfall drives the hydrological model because it determines the amount of groundwater outflow, the amount of surface water runoff, and basically determines the amount of stream flow. The volume and timing of rainfall are important factors to consider; information regarding the variability of rainfall is a critical input into any model.

113. In mining operations, discharge volumes correspond directly to rainfall. When rainfall volumes increase, mining operations' discharges increase. When rainfall volumes decrease, mining operations' discharges decrease. Thus, rainfall is the primary controlling factor in the volume of water discharge from a phosphate mine.

114. The Property is located in the Peace River Basin. See Finding of Fact 75. Information is available from the National Climatic Data Center (Center), the government archive for climatic data, which indicates the occurrences of annual rainfall in the Peace River Basin between 1933 and 2000. The Center is a reasonable source of rainfall data.

115. From 1933 through 2000, the arithmetic average of the rainfall in the Peace River Basin was 52.3 inches. (The average rainfall was collected from five stations throughout the Peace River Basin and then averaged.) However, within this period, there is significant variation in rainfall between the high and low rainfalls. There have only been four occurrences when the rainfall has been between 51 and 54 inches during this time frame. The record low rainfall of 35.9 inches occurred in 2000 in a significant drought year. The highest rainfalls have been in the 72 to 75-inch range and near 75 inches on two occasions; thus, a model must be based on more than one year of data.

116. Dr. Garlanger examined the daily rainfall for a 19-year period between January 1980 and December 1998. This rainfall was measured at Wauchula, which is a town in the Peace River Basin almost due east of the Property and located on the Peace River. The weather station collects daily rainfall data and the Center is the source of this information.

117. The average rainfall at Wauchula for this 19-year period is 52.17 inches, similar to the 1933 through 2000 period mentioned above, and also indicates that there is significant daily variability of rainfall.

118. The claim that the accuracy of Dr. Garlanger's modeling is questionable because IMC's modeling "only uses

rainfall information from the Wauchula rain gauge" is not persuasive.

119. Dr. Garlanger reasonably chose this particular period of time, 1980 to 1998, and the location for several reasons. First, the data was available from the Center and is reliable. Second, the average rainfall that he used in the Peace River Basin is the average from five stations in the Basin, not just from one station. Third, Dr. Garlanger also considered the data from a rain gauging station approximately 3 miles downstream from the Property where Horse Creek crosses State Road 64, and the average rainfall was about 52.2 inches, which is similar to the 19-year period of data for the Peace River Basin.

120. It is also argued that Dr. Garlanger "fabricated certain rainfall data." In rebuttal, Dr. Garlanger agreed that a data gap of approximately 7 months existed in the rainfall record at the Wauchula station, which he used. He described the efforts made by his assistant in supplying data for the missing period of record, which included an examination of the average rainfall for the other 18 years, for a particular day which was missing from the original data set. The weight of the evidence shows the calculations for these missing months out of the entire 19-year record did not adversely affect the overall conclusions of Dr. Garlanger's modeling work, including the predicted impacts.

121. It is also suggested that Dr. Garlanger's modeling work improperly "omits a 3 square mile of the West Fork of Horse Creek watershed . . . that is critical to judging environmental impacts and changes in flow on the Manson Jenkins Property." While the entire Horse Creek watershed exceeds 200 square miles, an area of approximately 10 square miles composes the Horse Creek watershed upstream of the Property. A portion of IMC's Fort Green Mine is located in the West Fork of Horse Creek watershed. This portion of the Fort Green Mine includes approximately 3 square miles of catchment area. While IMC's Fort Green Mine is not currently contributing surface runoff to the West Fork of Horse Creek, the 3 square miles lying in the Fort Green Mine catchment area still comprise part of the overall Horse Creek Basin.

122. In order to properly evaluate any impact on existing flow expected from Manson Jenkins activities, Dr. Garlanger reasonably did not select the 10-square mile historic basin, which would include the 3 square miles of Fort Green Mine catchment area and which, if included in the modeling assumptions as part of the watershed, would produce more favorable, higher flows. Rather, Dr. Garlanger reasonably used the current condition or baseline condition, which is the approximately 10 square miles of the historic basin minus the 3-square mile catchment area of the Fort Green Mine, approximately

6.2 square miles, in order for a valid comparison to be made of the potential effects that Manson Jenkins activities would have on existing flow. Dr. Garlanger's exclusion of this 3-square mile area in his modeling for the project was prudent to predicting what, if any, flow impacts would occur on a daily basis and under existing conditions.

123. Dr. Garlanger's modeling work reasonably predicted both (1) the runoff that would occur on a daily basis over the next twenty years if no mining were to occur and (2) the runoff that would occur given the same rainfall record during mining and post-reclamation conditions at the Property. It was reasonable to use the same rainfall record in comparing these two scenarios in order to get a model comparison that accounted for pre-mining, during-mining, and post-reclamation conditions.

3. Evapotranspiration

124. The reasonableness of Dr. Garlanger's modeling work is illustrated by the predictive accuracy of Dr. Garlanger's ET data as compared to measured data. Dr. Garlanger's model estimated ET on a daily basis, and the same ET values were used by Dr. Garlanger for the same types of vegetation cover.

125. Dr. Garlanger compared the predicted daily ET with the ET calculated on actual, measured stream flow data along with the estimate of the rainfall in the Horse Creek Basin for the period from 1980 through 1998. Dr. Garlanger's predicted ET

for the Property was 39.2 inches per year. The ET data from Horse Creek at State Road 64 is 40.3 and at State Road 72 is 39.9. Thus, Dr. Garlanger's predicted ET was within 2 percent or 3 percent of the data from these stations where the stream flow was measured.

4. Flow Impacts

126. Using the reasonable meteorological data assumptions noted above and applying accepted hydrological and other physical laws, Dr. Garlanger used the model to predict anticipated flow conditions at the Property and downstream.

127. The modeling results demonstrate that flow in stream segments which receive rainfall runoff and base flow contribution from the Property would be reduced only during the relatively small percentage of time that the streams would normally exhibit high flow conditions. For example, at the southern Property boundary line, the flow in the West Fork of Horse Creek during active mining and reclamation activities is predicted to be reduced only during the higher flow periods which exist for 10-20 percent of the time during the year. For the remaining 80-90 percent of the year flow reductions are not anticipated. After reclamation is completed, flow in the West Fork of Horse Creek at the Property line is predicted to be reduced only during approximately 5 percent of the time during the year when high flows are experienced in the stream.

128. The only impact of the anticipated flow reductions during high flow periods at the Property boundary will be to reduce the depth of the water within the channel of the stream at that point.

129. At the southern boundary of the West Fork of Horse Creek as it leaves the Property boundary, during the operation of the AFW, there should be no decrease in average stream flow, and there may even be a net increase in stream flow. During years 6 through 13 of the mining/reclamation sequence, or the mine life, Dr. Garlanger calculated there would be a decreased stream flow leaving the Property boundary of approximately 1.4 cubic feet per second (cfs) on an annual average basis as a result of mining activity, assuming the average rainfall during that period is 52 inches and the area has the same rainfall distribution as in Wauchula from 1980-1998. (The 1.4 cfs decrease applies downstream as well, but reflects Dr. Garlanger's worst case assumption.)

130. Dr. Garlanger further testified that the slight decrease in flow in the Horse Creek, corresponding to a decrease in flow depth of a few inches when the flow depth in the Horse Creek is between 7.5 feet and 12.8 feet, will not cause adverse water quantity impacts.

131. Dr. Garlanger compared on a daily basis the predicted reduction in stream flow resulting from mining to the baseline

pre-mining condition. This allowed Dr. Garlanger to predict the effect on the depth of water in the stream channel at various points in time during both high flows and low flows.

Significantly, Dr. Garlanger's modeling work indicates that during higher rainfall events, that is, high flows, when most of the runoff would occur, the greatest effect as a result of mining occurs. Predictably, during the period when there are no rain events or small rain events, that is, when there is low flow, Dr. Garlanger's calculations show the Manson Jenkins activities have virtually no impact on flow. Consequently, the effects of IMC's proposed mining and reclamation activities are consistent with the permitting rules because IMC's mining activities will reduce rather than cause adverse flooding.

132. Water leaving the Property travels downstream to Horse Creek and the Peace River and ultimately to Charlotte Harbor, about 40 miles downstream from the Property's southern boundary. Dr. Garlanger also assessed the timing and magnitude of flow reduction impacts at several points in these downstream locations. Once again, slight flow reductions during high flow conditions were predicted for downstream segments of Horse Creek and the Peace River with the magnitude of the flow reductions decreasing significantly as one moves farther downstream from the Property. It is expected that such reductions in depth will have no ecological significance. During low flow periods, no

flow reduction impacts were predicted at these downstream locations.

133. The flow in the Peace River at Arcadia and at Charlotte Harbor over the next 19-year period is not expected to be lower than the measured flow existing during the previous, historic 19-year period, such that any change will have an adverse water quantity impact.

134. Water flowing from the Property ultimately enters the Peace River at a point downstream from the Arcadia gauging station where measurements are taken to control the ability of the Authority to withdraw water for municipal water supply purposes. Accordingly, the predicted reduction in flow during high flow conditions resulting from the permitted activities at the Property cannot be reasonably expected to adversely affect the Authority's legal rights to withdraw such water. See Findings of Fact 248-249.

135. The Authority's water intake structure is located upstream (on the Peace River) of the confluence of Horse Creek and the Peace River. The predicted small reduction in flow during high flow conditions attributed to activities at the property, will have little or no impact on the Authority's capacity to withdraw water at that point.

136. Furthermore, the freshwater-saltwater interface in the Peace River will be well downstream of the intake structure

and cannot be expected to be impacted by any reasonably predicted reduction in freshwater flow caused by activities at the Property.

137. The persuasive evidence in the record indicates that the predicted impacts calculated by permit opponents on the Peace River flow resulting from mining were not accurate. For example, pre-mining flow from both the wet season and the dry season is not identical and the calculation of average annual flow does not properly match wet and dry season flows. Additionally, the water quantity calculation errors included using the wrong number of days for both wet and dry season average flows, which overestimated the impact by 50 percent for the dry season and 100 percent for the wet season.

138. Certain assumptions made by permit opponents concerning flow reductions due to industry-wide mining are not reliable. The assumptions concerning the amount of land that would be mined after 2025 exceeded actual available land to be mined by a significant percentage. It was assumed the area to be mined after 2025 is approximately 161,000 acres, when the amount of land that could be added to mining is less than 20,000 acres. (A high-side number might result in another 40,000 acres mined after 2025, which is approximately 25 percent of the estimates.) The overestimate of these assumptions resulted in a 100 percent higher reduction in flow in the Peace River at the

Authority's water withdrawal point than would modeling estimates using reasonable assumptions.

5. "No-Flow Days" Analysis

139. The record does not support the claim of an increase in the number of no-flow days in West Fork of Horse Creek at the Property boundary. The record shows there was no accounting (by party opponents) for the fact that flow from direct runoff is actually distributed over a period of time. The model incorrectly had runoff from a storm occur all on the day of the storm, rather than over a period of days. Contributing stream flow from the undisturbed area located upstream of the Property was also not considered. Dr. Garlanger's modeling data was not accurately transferred, and there is evidence that had the correct flow data from Dr. Garlanger's work been used, the increase in no-flow days would not have been calculated as they were and relied upon.

140. Further, in rebuttal, and contrary to permit opponent's suggestion that Dr. Garlanger did not estimate no-flow days, Dr. Garlanger reevaluated his calculations and reconfirmed that, while there is an expected reduction in the flow, there is no increase expected in the number of no-flow days. Dr. Garlanger's modeling work is both professionally competent and reasonable in predicting Manson Jenkins activity flow impacts.

6. Model Calibration

141. It is also argued that Dr. Garlanger's modeling work was "not calibrated." However, this argument is rejected based on the weight of the evidence.

142. Dr. Garlanger explained that the model used for the Manson Jenkins Project was calibrated by the models used at another phosphate mine (the Ona Mine tract) located a few miles east of the Property. He also used the same input parameters for the Farmland-Hydro Mine in Hardee County. In this light, the model provided Dr. Garlanger with a reasonable estimate of both pre-mining or baseline condition and the post-reclamation condition, and also furnished him with a basis to estimate impacts during mining. In Dr. Garlanger's professional judgment, every input parameter used for the project's modeling work was reasonable and is accepted.

143. Additionally, Dr. Garlanger compared the project groundwater outflow for the different sub-basins and found the outflow averaged 7.5 to 7.8 inches per year for all basins. Dr. Garlanger testified the measured groundwater outflows reported by W. Llewellyn, United States Geological Survey, averaged 7.7 to 8.9 inches per year in the Horse Creek Basin. Thus, Dr. Garlanger's modeling work, as to the groundwater component, was reasonably good predictive work.

144. Furthermore, as discussed herein, the ET rate is one of the most important factors in determining the amount of water available to be discharged through the stream system. There is persuasive evidence that Dr. Garlanger calibrated the IMC model for ET.

145. When referring to calibration, Dr. Garlanger referred to estimated ET from the different vegetative types on the Property. In this manner, Dr. Garlanger used the estimate of the average annual ET for the upland and for the upland wetlands.

146. ET cannot be directly measured. Rather, it must be determined indirectly. Thus, estimates of the average annual ET are made by the modeler exercising professional judgment.

147. The average daily ET value used in the modeling was determined based on total ET from the entire 218-square mile Horse Creek Basin down to the gauging site at Arcadia. Dr. Garlanger then determined what portion of the basin was upland, wetlands, or riverine wetlands, and what the ET values were for each of those systems. In disagreeing with Dr. Garlanger's model, permit opponents imply that Dr. Garlanger's ET numbers are unreliable as they "came from information . . . that indirectly measured ET for wetlands in the Everglades."

148. Dr. Garlanger's initial ET used 50 inches per year for both riverine and upland wetlands. However, Dr. Garlanger

knew that total ET rates for the system-types on the Property range between 36 and 39 inches per year. Thus, he had discussions with other hydrologic experts about his concern of using 50 inches of ET per year for both riverine and upland wetlands. In order to evaluate the appropriate ET rate for the Property, Dr. Garlanger also reviewed data from a study containing indirectly measured ET for wetlands in the Everglades, which systems can be compared to the wetlands at the Property. The Everglades data was contained in a scientific paper concerning a study performed in the Everglades by ecologists, limnologists, and physicists where they indirectly measured ET under various conditions. The Everglades professional study assisted Dr. Garlanger and other experts in determining, based on their professional judgment, what would be the appropriate and reasonable ET rate to use in the IMC model.

7. The Department's Review of the Models

149. The Department, by and through the Bureau, reviewed the ERP Application for, among other things, comparison of pre-mining with post-mining conditions, the use of the AFW, and the best management practices of IMC, and concluded that reasonable assurances to issue the permit were provided under the permitting rules. Furthermore, the Department will continually evaluate the project's effects by the ongoing monitoring for impacts to site conditions, and the Department will perform

quarterly inspections. It is typical for the Department to rely on the models and permit information that is submitted by the permit applicant's professional engineer.

150. While Mr. Partney did not necessarily agree with portions of Dr. Garlanger's model analysis, he stated that "this approach is fine for planning and checking the feasibility of a plan." Mr. Partney maintained that, in his professional opinion, because the reclamation activity would result in a net improvement of the environment on the Property, an approximate 5 percent annual average decline in flow was not a concern.

(Dr. Garlanger stated that a 5 percent or greater reduction of annual average flow is significant. However, for the reasons stated herein, Dr. Garlanger felt that the impacts would not be adverse.)

b. Groundwater

151. In the vicinity of the Property, groundwater is present in the unconfined surficial aquifer within the overburden and matrix and in the underlying confined intermediate and Floridan aquifer systems.

152. Surficial groundwater levels in areas not disturbed by mining will be maintained by use of the ditch and berm system. Dr. Garlanger presented credible evidence that after reclamation, groundwater levels return to pre-mining elevations. Credible evidence was presented that in some cases, slightly

more groundwater outflow to the streams and preserved areas is expected than to the same areas prior to mining.

153. During active mining operations, there will be a short-term reduction in recharge of groundwater to the deeper aquifer systems in the immediate area of mining. This short-term reduction has no adverse impact upon water supply availability in the underlying aquifer systems and is largely offset by the increase referred to above.

154. Underlying the CSAs, deep groundwater recharge will be increased over that experienced normally during the timeframe that the clays are settling. Once the clays are fully settled, deep recharge in these areas will be within the range that occurs naturally in the vicinity of the Property.

(2) Flooding

1. General

155. Modeling submitted by IMC as part of the ERP application demonstrated that off-site flows after mining and reclamation would be in compliance with design requirements set forth in the 1995 SWFWMD Basis of Review adopted by reference by the Department.

156. The AFW is specifically designed to assure that during its operation it had the capacity to carry anticipated flows from the drainage area north of the Property during high

peak flow conditions without causing water to back up and flood that area or to cause flooding at downstream locations.

157. After mining and reclamation, the reclaimed West Fork of Horse Creek will have sufficient capacity to handle anticipated storm events without causing flooding. The increased wetland acreage after reclamation will provide additional storage and attenuation of flood flows and, therefore, may actually reduce the possibility of flooding.

158. It is asserted that IMC "did not evaluate the impact of long-duration flooding events." But, the ERP permitting criteria did not require long-duration flooding analysis of the natural systems as a condition for issuance of the permit. Even if IMC were obligated under the rules to specifically address long-duration flooding, the record shows there are no predicted adverse impacts from Manson Jenkins activities concerning long-duration flooding because the modeling shows any "event flooding" is likely to drain off before an adverse impact to a natural system would occur.

2. Recharge Ditches

159. There is no substantial evidence to support permit opponents' claim that the flood analysis needs to be "redone" because of IMC's failure to account for the effects of seepage from the recharge ditches on the AFW. Dr. Garlanger predicted that the recharge ditches would result in an additional 3.26 cfs

of flow in the AFW. Opponents' expert Mr. Zarbock testified that this additional increase was a reasonable calculation.

160. Adding 3.2 cfs to the peak flow in the AFW predicted by the HEC-RAS model for the 100-year storm event results in a relatively small percent increase in the peak flow. This small increase in peak flow is an insignificant increase with no meaningful effect on the flood analysis and on actual water levels either upstream or downstream of the Property. Adding an additional 3.2 cfs of groundwater outflow to the West Fork of Horse Creek's average annual flow of 5.5 cfs resulted in a 59 percent increase (not 99 percent as asserted by opponents) in the average annual flow, and is not expected to have a detrimental effect on the average flow in West Fork of Horse Creek, Horse Creek, Peace River, or Charlotte Harbor.

3. Integrity of Clay Settling Areas

161. The weight of the evidence indicates that this ERP permit is not intended to address dam construction or to evaluate the sufficiency of dam design, both of which will be considered under other permitting processes. However, the record shows the proposed Manson Jenkins CSAs must be engineered dams designed, built, and operated to achieve full compliance with the stringent requirements of Rule 62-672, Florida Administrative Code, according to exacting standards concerning site investigation, soil testing, cross-section design work,

stability analysis, and design safety factors. After construction, the dam will be inspected weekly.

162. The Department does not require flood inundation studies for the type of dam proposed by IMC, although it is characterized by Mr. Partney as a significant hazard dam. These studies are only required by the Department for high-hazard dams, which the IMC dams are not.

163. Additionally, Mr. Partney, Florida's Dam Safety Engineer, advised that the Department has made recent changes that ensure that construction of the CSAs is improving. See Findings of Fact 244-247.

164. Dr. Dunn admitted that "the probability of failure is low" for a CSA.

165. IMC has been issued its Federal Clean Water Act NPDES Permit which authorizes IMC to conduct its operations, involving the use of water. The NPDES Permit also regulates the discharge of waters to the surface and ground. The NPDES permit has specific conditions to assure the safety of dams that IMC must comply with related to the construction and operation of the CSAs.

(3) Surface Water Storage and Conveyance Capabilities

1. General

166. Rule 40D-4.301(1)(c), Florida Administrative Code, requires the applicant to provide reasonable assurance that the

project will not cause adverse impacts to existing surface water storage and conveyance capabilities.

167. These issues are addressed in the prior section. However, additional issues are addressed below.

2. Depressional Storage

168. Dr. Garlanger provided a reasonable explanation regarding whether an increase in depressional storage can be expected.

169. Dr. Garlanger performed calculations based on the average thickness of phosphate matrix being mined. The removal of the phosphate rock from the matrix generally reduces the depth of the soil profile components by 1.7 feet. The overburden that is removed in order to access the phosphate matrix is "cast" back into the adjacent mine cuts and occupies a greater volume after it is removed for mining than it will prior to mining. In other words, the overburden "swells" after it is removed to expose the phosphate matrix. This "swelling" results in an increase in volume of the overburden somewhere between 10 percent and 15 percent. Thus, based on the measurements of the density of spoil piles performed by Dr. Garlanger, the overburden actually increases in thickness by about 3.3 feet, which would more than make up for the 1.7 feet reduction in thickness of the soil profile components resulting from the removal of the phosphate rock.

170. Additionally, the sand and clay components of the matrix also increase in thickness after having been mined, processed at the beneficiation plant, and through the reclamation processes, which further increase the average thickness of the soil profile components. If there is an increase in the average thickness of the soil profile components, even though most of the increase is associated with the reclaimed clay areas, there cannot be an increase in depressional storage.

3. Reclaimed Land Forms and Reestablishing Hydrologic Regimes

171. The storage and conveyance capabilities provided by the flow-through marsh and the stream segment that are proposed to replace the existing ditched segment will greatly enhance the surface water conveyance and storage capabilities on the Property. Specifically as to the AFW, IMC's engineers and consultants from Ardaman & Associates reasonably designed the AFW to adequately replace the conveyance and storage capabilities of the portion of the West Fork of Horse Creek that will be mined.

172. Also, a Storm Water Management Plan, which is a required document by the Bureau, analyzed surface water discharges under both historic conditions and under post-reclamation conditions and determined sufficient storage and

conveyance capabilities will exist during mining and post-reclamation.

173. A primary purpose of the reclamation plan developed by IMC is to create a land use topography on the Property that will allow runoff to occur as it did under the pre-mining condition prior to the ditching that was completed decades ago. Even though land surface on average is higher due to the "swelling" of the materials used in reclamation, the reclamation is contoured so that there is no storage except for the storage that is purposefully left in the recreated wetlands.

174. Party opponents claim that a review of other mine permit applications shows a hydrologic characteristic of "reduced runoff from storm events by approximately 15 percent of the pre-mining condition." However, Mr. Zarbock, in reviewing approved phosphate mine applications, did not see any such phosphate mine applications that showed a 15 percent (not higher than 12 percent) reduction in flow, nor could he identify any mine that experienced the percentage reduction in flow that he assumed in performing his calculations.

(4) Water Quality Impacts

a. Surface Water

175. Rule 40D-4.301(1)(e), Florida Administrative Code, requires reasonable assurance that the project will not

adversely affect the quality of receiving waters such that enumerated water quality standards will be violated.

176. The waters and associated wetlands of the West Fork of Horse Creek located on or downstream from the Property are Class III waters. Downstream from the Property, the West Fork meets Horse Creek and both Creeks continue as Class III waters until Horse Creek becomes Class I waters in DeSoto County.

177. The Myakka River is Class III waters through Manatee County. (Approximately 4 acres of wetlands will be mined on the Property located in the Myakka River Basin, to be replaced with approximately 12 acres of wetlands. See Finding of Fact 77.)

178. The Manatee River to the west of the Property, including the North and East Forks of the Manatee River, are Class I waters. See Rule 62-302.400(12)41, Florida Administrative Code (The Manatee River is a Class I river from "[f]rom Rye Ridge Road to the sources thereof")

179. The far northwestern portion of the Property is in the Manatee River Basin. (Approximately 17 acres of wetlands in this area are proposed for mining and will be replaced with approximately 51 acres of wetlands. See Findings of Fact 76 and 211.) These wetlands have a ditched connection between the these wetlands and other wetlands, which ultimately lead to the East Fork of the Manatee River. As a limnologist, Dr. Durbin

agreed that these existing wetlands, even after reclamation, are part of the water source for the Manatee River watershed.

180. Dr. Dunn stated that if the "[BMPs] operate as designed [he assumed], that there will not be water quality impacts" to the East Fork of the Manatee River during actual mining. Rather, he was concerned about (after mining and reclamation and before release) "potential water quality problems for those areas that contribute flow to the East Fork of the Manatee River," as Class I waters.

181. Dr. Durbin reasonably explained that after mining and reclamation, the existing wetlands will be severed from the Manatee River because the agricultural ditching will be removed, which leads to the reasonable conclusion that the replaced wetlands will not have a surface water discharge into other wetlands which are ultimately tributaries to the East Fork of the Manatee River. Thus, the wetlands will not flow to surface waters that then enter Class I waters.

182. Further, there are no expected measurable decreases in depth of flow to the Manatee and Myakka Rivers resulting from mining and reclamation activity on the Property, which might reasonably be expected to adversely impact the water quality of these rivers.

183. There are no measurable impacts to any Outstanding Florida Waters (OFW) (no OFWs are located on the Property),

including aquatic preserves, or to Class I or II waters, which are likely to result from this project. See Findings of Fact 193-195.

184. The ditch and berm system around active mining and reclamation areas will preclude the direct release of waters impacted by mining to surface water bodies on the Property. The system is designed to isolate the unmined areas from surface water runoff that may be present in the mine area and to maintain water levels in undisturbed wetlands. See Findings of Fact 31-42.

185. Waters collected in the ditch and berm system will be reused and recycled by IMC in the mining operations. Some portion of that water will be discharged through permitted discharge outfalls not located on the Property in accordance with IMC's currently valid Department NPDES Permit. Such discharges must comply with discharge water quality criteria set forth in the NPDES Permit. Permitted water discharges from these outfalls is necessary because IMC will need the ability to release water from the mine into nearby waters and streams.

186. The activities on the Property are regulated pursuant to the Fort Green Mine NPDES Permit, and, in particular, outfalls 3 and 4 which discharge water into Horse Creek. (Outfalls number 1 and 2 discharge water into Payne Creek.)

187. Over the past 5 years, in measuring the water quality of the water leaving the permitted outfalls, IMC is unaware of any violations of permit limits, including surface water quality standards at the Fort Green Mine site based on samples taken at the outfalls.

188. In the event there is a concern regarding water quality at an outfall, a gate constructed at the outfall can be quickly closed to stop off-site flows.

189. Water quality data from Payne Creek, where over two-thirds of the watershed has been mined and a good portion reclaimed, demonstrate that phosphate mining has not adversely impacted dissolved oxygen (DO) levels in the receiving stream, i.e., the concentrations are comparable to other streams. Payne Creek has had lower nitrogen concentrations in most years than other measured streams, such as Joshua Creek, which has had no mining.

190. Water used to recharge the ditch and berm system and maintain groundwater levels will be of high quality and is not expected to cause or contribute to adverse water quality impacts should they reach area surface waters as a part of base flow.

191. The predicted reductions in stream flow, either during active mining and reclamation or after reclamation is complete, are not expected to have an adverse impact on the

water quality of surface waters flowing through the Property or at any point downstream.

192. Freshwater flows have a major role in determining the salinity in an estuary. The small reduction in fresh water flow during high-flow conditions predicted during mining and after reclamation of the Property is not expected to cause adverse impacts to salinity levels in the Charlotte Harbor Estuary. The small predicted impact is of insufficient magnitude to be measurable and, therefore, to warrant a reasonable concern.

193. During active mining and reclamation activities at the Property, off-site drainage entering the Property will be unaffected by mining operations. Augmented base flow will be of high quality and runoff from undisturbed areas that reach surface waters on the Property will be the same as prior to the time mining commenced. Evidence presented at the final hearing demonstrated that, once mining and reclamation activities have been completed and the West Fork of Horse Creek has been reclaimed, surface water bodies on the Property or downstream in the Horse Creek and Myakka River are expected to achieve all applicable Class III surface water quality criteria. The proposed mining and reclamation activities at the Property are not expected to cause or contribute to a violation of Class I standards in the Manatee River. Charlotte County's expert witness, Dr. Janicki, opined that the proposed mining and

reclamation project will not cause a violation of any currently applicable numerical water quality standards.

194. Water quality sampling at the Property indicates that DO levels lower than the Class III standards currently occur in the West Fork of Horse Creek and in wetland systems at the Property. This is not an uncommon occurrence in natural systems. The DO levels in reclaimed wetlands at the Property will essentially mimic conditions in naturally occurring wetlands, and it is not anticipated that DO levels in the reclaimed wetlands will be depressed any more than occurs in a natural system. With regard to the reclaimed West Fork of Horse Creek, the reclaimed stream will be at least equivalent to the current ditched segment with regard to DO levels, and it is likely that DO levels will be improved overall since the design of the system will provide for a meandering channel and for the placement of logs or other obstructions in the channel which should increase aeration and thus potentially elevate DO.

195. Opponents' expert Dr. Dunn agreed the existing water quality in the West Fork of Horse Creek is not as good as it is in the main channel of Horse Creek.

196. Water quality monitoring carried out by IMC on reclaimed areas demonstrates that water leaving the reclaimed areas and entering surface water bodies meets applicable water quality standards. IMC will be required to monitor the quality

of water in the reclaimed wetlands areas on the Property and will not be authorized by the Department to connect the reclaimed areas to the surface water system unless monitoring data demonstrate that water quality criteria are met.

197. Under IMC's ERP Application, prior to any reclaimed wetland being reconnected to the off-site surface waters, there is one full year of water quality sampling required in order to demonstrate that water quality standards are met before the wetland is connected to the natural system, which is an extra safeguard not required in non-mining ERP applications.

198. Moreover, there is credible evidence in the record of IMC's historical and successful use of AFWs and their effect on water quality. A study done by the Department in 1994 stated that the water quality indicators in an operational AFW were better than those same indicators at a natural site that did not have alternate flow-way characteristics. The weight of the evidence indicated that the water quality and biological integrity of the AFW will be in full compliance with the permitting requirements and with the state water quality standards.

199. The weight of the evidence in the record does not indicate that the mining and restoration of the West Fork of Horse Creek will result in violations of water quality standards, as the water quality leaving the site during mining

and after reclamation will be similar to the water quality that currently exists on-site. There are several reasons why water quality will not be adversely impacted: (1) a substantial portion of the watershed for the West Fork of Horse Creek lies north of the Property, and the water coming from this area will still move through the Property into the preserve area and off-site; (2) IMC will use best management practice berms to keep any runoff from active mine areas or cleared areas from entering the wetlands and streams associated with the flow way over the reclaimed wetlands precluding degradation of the water quality from those areas; and (3) IMC will use clean water in the recharge ditch system which will be seeping into the surrounding wetlands and the stream that is essentially feeding the wetlands with clean water augmenting the flow downstream.

b. Groundwater

200. Groundwater quality monitoring in the vicinity of the phosphate mining operations has demonstrated that such operations will not adversely impact the quality of groundwater in the vertical aquifer adjacent to mining operations or in the deeper intermediate or Florida aquifer systems.

(5) Impacts to Wetlands and Other Surface Waters

a. Functions Provided to Fish and Wildlife

201. Pursuant to Rule 40D-4.301(1)(d), Florida Administrative Code, an ERP applicant must provide reasonable

assurance that its proposed activities will not adversely affect the value of functions provided to fish and wildlife, and listed species including aquatic and wetland dependent species, by wetlands, other surface water, and other water-related resources of SWFWMD.

202. Prior to mining, pedestrian-type surveys of the Property will be conducted of the Property to determine the listed wildlife in order to avoid impacting particular species. Some species, including gopher tortoises, would be relocated to an unmined area.

203. The weight of the evidence shows that IMC will minimize impacts to fish and wildlife through (a) a Conservation Easement, which preserves those areas with an abundance of habitat diversity, (b) through best management practice berms, which protect water quality of adjacent systems, and (c) through the AFW, which will allow continuous movement of fish and wildlife from areas north and south of the Property as well as creation of additional habitats. IMC's efforts to avoid and minimize the potential for impacts to fish and wildlife during mining and reclamation satisfy permitting rule requirements.

204. Fish and wildlife functions in areas to be mined or disturbed at the Manson Jenkins Project will be temporarily impacted. The areas to be impacted typically are of lower ecological value while IMC has agreed to preserve a substantial

amount of the higher quality wetlands on the Property together with, in some cases, important adjacent upland habitats. The impacts that do occur will be mitigated by the replacement of the impacted systems by more and higher quality systems than existed prior to mining. This includes the enhancement of the project with the wildlife corridor through the middle of the Property and improvements to the stream system. The Conservation Easement can be expected to protect the "habitat mosaic of the corridor." (The Conservation Easement on the Property includes approximately 521 acres.)

205. Credible evidence also shows that IMC will satisfy permitting rule requirements after mining. Under the reclamation plan there will be diverse, connected habitats instead of the existing pre-mining single ditch and, primarily, agricultural land cover. There is also empirical data in the record concerning reclamation indicating that reclaimed areas were equal to or better for fish and invertebrate use when compared to natural systems, and similar results are also expected for IMC's reclamation.

206. Both state and federal agencies approved the work plan of IMC used to survey wildlife at the Property. IMC's wildlife surveys are reasonable, which enabled the preparation of a comprehensive wildlife management plan.

b. Avoidance and Mitigation

1. Avoidance

207. Phosphate ore underlies the land surface beneath waters and wetlands. Thus, it is not possible to avoid disturbance of these systems and still mine the valuable resource. See generally Section 378.201, Florida Statutes. IMC and the Department evaluated the quality of the waters and wetlands proposed for disturbance at the Property as part of the permit application process.

208. Most of the wetlands systems deemed to be of higher quality through the application of the WRAP (Wetland Rapid Assessment Procedure) analysis are being preserved. (The WRAP Procedure is an accepted procedure to evaluate wetland functions and assign a value based on several criteria. The first WRAP was developed by South Florida Water Management District. WRAP scores generally are numerical values that can be assigned on a per-unit-acre basis to wetlands that are an index of their functional value.)

210. For all areas that are not avoided, IMC is required to take steps as part of its land reclamation process to mitigate the unavoidable impacts associated with mining the Property.

211. It was suggested that IMC did not avoid impacts due to IMC's determination to mine approximately 17 acres of

wetlands in the Manatee River Basin. This suggestion is not persuasive because over 316 acres of wetlands will be left unmined on the entire Property, which equates to approximately 45 percent of the wetlands on the Property, including over 70 percent of the forested wetlands on the Property. The weight of the evidence shows that IMC was prudent in balancing between avoidance of appropriate environmentally significant areas, such as some wetland systems, and the operational needs to reach the phosphate matrix that is underlying the Property. Also, approximately 3.7 tons of phosphate rock reserves underlie the preserved areas with a projected loss of total income of over \$55 million.

2. Mitigation

212. In the ERP Program, the term "mitigation ratio" refers to the wetlands or other surface waters and areas the applicant is proposing to, for example, create, restore, enhance, donate in kind, or preserve, versus the impacted wetlands. For example, a mitigation ratio of two to one means the applicant is proposing to mitigate or recreate two acres of wetlands for every acre that is being disturbed or impacted.

213. Section 373.414(6)(b), Florida Statutes, provides that wetlands reclamation activities for, in part, phosphate mining undertaken "pursuant to chapter 378 shall be considered appropriate mitigation for [Part IV of Chapter 373] if they

maintain or improve the water quality and the function of the biological systems present at the site prior to the commencement of mining activities." See also Section 3.3.1.6., Basis of Review.

214. Mining, reclamation, and revegetation on the Property is expected to be completed within 15 years, including reclamation of the CSAs. The conceptual reclamation plan, which includes the Property, was approved by Department final agency action on March 20, 2001, pursuant to Chapter 378, Part III, Florida Statutes, and Chapter 62C-16, Florida Administrative Code. However, this approval does not mean that IMC is not required to prove reasonable assurances regarding its mitigation plan, which is discussed herein.

215. Rule 62C-16.0051(4), Florida Administrative Code, requires the restoration of impacted wetlands on at least an acre-for-acre and type-for-type basis. Compliance with this provision is mandatory for phosphate mines.

216. IMC's mitigation plan satisfies this acre-for-acre, type-for-type mitigation requirement. In addition to satisfying the mitigation guidelines contained in the permitting requirements, other factors such as (a) the low quality of the wetlands that are being disturbed due to historical ditching and draining to accommodate historical agricultural land uses, (b) the significant on-site preservation effort, and (c) the

Integrated Habitat Network (IHN) that provides a regional benefit to wildlife and their habitats and to water quality and which represents mitigation beyond applicable requirements, all taken together demonstrate the appropriateness of IMC's mitigation plan.

217. The total cost to IMC for wetlands mitigation at the Property is approximately \$3.6 million.

218. The number of acres of wetlands affected by the Manson Jenkins activities in the Myakka, Manatee, and Peace River Basins total approximately 361 acres. See Findings of Fact 76-77 and 95-96. IMC will reclaim 538 acres of wetlands as mitigation for the 361 acres of generally low quality wetlands that will be disturbed at the Property. The reclamation area wetlands will be designed to provide a diversity of habitat and function that does not presently exist at the Property.

219. IMC's reclamation plan adequately mitigates for any impacts by creating approximately 538 total wetland acres distributed among these three basins. Additionally, those wetlands that are created will have associated upland buffers, which the existing wetlands do not, and these newly created buffers will provide additional, enhanced wildlife and water quality benefits at each created wetland. In the reclaimed landscape, a forested buffer is expected which will provide some wildlife and water quality benefits to each wetland. The

created wetlands will be hydrated by the groundwater outflow from the recharge system.

220. IMC has had experience in the reclamation of wetland systems in Florida. Since 1975, IMC and its predecessor company, Agrico Chemical Company, have reclaimed approximately 6,850 acres of wetlands.

221. Biologists and reclamation experts Dr. Durbin and Dr. Clewell presented persuasive evidence that IMC is capable of successfully completing the proposed reclamation activity and that the ultimately reclaimed wetlands systems will restore long-term ecological value to the Property and adjacent areas.

222. Nevertheless, restoration and reclamation of wetlands is not a perfect science; mistakes have been made, e.g., Dog Leg Branch, and are documented in this record. To his credit, Dr. Clewell agreed. However, several studies, including Charlotte Exhibits 29 and 31 and others, do not persuasively indicate that IMC's proposed reclamation and restoration proposal for the Manson Jenkins Project will not be successful or that IMC does not have the wherewithal and overall professional expertise to accomplish the desired result.

223. The weight of the evidence demonstrates that IMC can effectively carry out the proposed reclamation plan as set forth in the ERP and that, with regard to waters and wetlands impacted by mining operations at the Property, it will effectively

mitigate the unavoidable ecological losses associated with mining those areas.

224. The ERP contains detailed success criteria for the required wetlands reclamation. Extensive monitoring is required and Department personnel carry out regular inspections of reclamation sites. Only after reclamation success criteria are achieved, including attainment of necessary water quality criteria, will the reclaimed wetlands be approved by the Department and reconnected to the natural system. Stated differently, the project will only be deemed to be officially successful after release by the Department.

225. This does not mean, however, that reclaimed wetlands, including wetlands reclaimed by IMC, have not been or are not functional before release. This includes the Big Marsh. (It appears that the existence of nuisance species currently precludes the release of Big Marsh. Dr. Clewell advised that Big Marsh is very close to meeting all criteria for release right now. See Findings of Fact 231 and 265.)

3. Acre-for-Acre/Type-for-Type

226. As noted above, Chapter 378, Florida Statutes, contains an acre-for-acre, type-for-type mitigation strategy for phosphate mining reclamation, and IMC's reclamation plan exceeds the one-to-one mitigation ratio contained in the mine reclamation rules of Chapter 378, Florida Statutes.

227. Substantial evidence in the record exists to support the claim that the ecological value of the wetlands proposed to be reclaimed will be higher than the current ecological value of the wetlands that will be disturbed and are currently existing at the Property. There are two types of reclamation: herbaceous and forested reclamation. IMC has reclamation experience, and based on IMC's experts' evaluation of many reclaimed sites, the average WRAP value assigned to herbaceous systems is .64 and for forested systems is .73. The wetlands proposed to be disturbed at the Property have an average pre-mining score for herbaceous systems of .54 and for forested systems of .51. Once reclamation occurs, the reclaimed herbaceous systems at the Property will score 1.19 times the existing the value, or an approximate 20 percent improvement from the existing wetland systems at the Property. Significant ecological improvement is also evidenced for the Property's reclaimed forested wetlands that will have an improved value of approximately 43 percent.

228. The evidence shows IMC used the WRAP procedure to value wetlands and the functions wetlands provide to fish and wildlife as well as the accompanying water quality and quantity issues at the Property. WRAP was used for the Manson Jenkins Project because it was required by similar permitting under the Clean Water Act for the United States Army Corps of Engineers. The Department participated in the evaluation of the methodology

used, including auditing the results in the field and on paper. But the Department did not accept or reject the methodology per se.

229. On the other hand, the "King Formula" used by permit opponents' expert Dr. Dunn to critique IMC's reclamation proposal is a "completely different approach" from the regulatory requirement of acre-for-acre, type-for-type that is applicable to this ERP application. Further, the "King Formula" has not been accepted by the Department as an appropriate methodology for ERP evaluations, nor has Dr. Dunn ever before relied on the "King Formula" to support any ERP permit that he assisted in obtaining.

230. There is credible evidence that even if the permit opponents' mitigation calculation (or "King's Formula") is applied, IMC would need 1.15 to 1 replacement for herbaceous systems and 1.27 to 1 replacement for forested systems. The record reflects IMC is required under the proposed ERP permit to have 1.38 to 1 replacement for herbaceous systems and 2.28 to 1 replacement for forested systems. Thus, IMC is committed to a more functionally equivalent mitigation objective than is calculated using the opponents' method for evaluating mitigation ratios.

4. Restoration of the West Fork of Horse Creek and Headwater Marsh

231. The record shows that IMC has a successful history of restoration generally and, specifically, reclaiming headwater marshes as part of their overall mitigation experience. IMC's reclamation efforts have been recognized with both state and federal awards. Two examples of reclamation projects which appear to be functionally successful, although not yet released by the Department, are Big Marsh, which is a 229-acre headwater marsh flowing into Horse Creek, and the approximately 200-acre, P-20 Marsh, which is a headwater of Horse Creek, and next to Big Marsh. Both Big Marsh and P-20 Marsh show comparable features, placement, and functions when compared to their pre-mining condition and their current post-reclamation condition. The restoration efforts at the P-20 Marsh are relevant because it is similar to the Property in that it too was cleared of vegetation and ditched.

232. Testimony shows that the benthic macroinvertebrate organisms, which are important to the successful functioning of a headwater marsh, are reasonably expected to be recolonized in the reclaimed system at the Property in a variety of permit-required habitats, which habitats are ecologically better than the existing habitat conditions on the Property. Further, the benthic invertebrate populations existing in the area north of

the Property will be connected to the reclaimed Property enabling recolonization of the reclaimed marsh. IMC presented credible evidence that the excavated portions of the West Fork of Horse Creek will have ongoing, functional value and the reclaimed headwater marsh and stream system will at least maintain, but likely improve the water quality and function of the excavated portions of the West Fork of Horse Creek.

233. IMC's reclamation plan is to recreate West Fork of Horse Creek to more resemble a natural Florida stream with a meandering flow-away with trees that shade the stream and provide improved habitats for fish and wildlife.

234. Moreover, the existing West Fork of Horse Creek, though properly identified as a "first order stream," is a very small system with intermittent flow.

235. The stream ordering system is a method of classifying the size of streams in terms of watershed basins and sub-basins. A "first order stream" is the smallest of the set of streams making up an entire drainage basin and is more a landscape or hydrologic indicator and does not necessarily indicate a stream's ecological value.

236. The West Fork of Horse Creek is not a regionally-significant stream because the existing conditions at the West Fork of Horse Creek are degraded as a result of agricultural ditching, the ecologically poor uplands surrounding the area,

and the overall presence of agricultural land. More specifically, the area proposed for mining in the West Fork of Horse Creek is of "very low ecological value, relative to what another first-order or headwater system might be."

5. Temporal Lag

237. It has been asserted that there will be some temporal lag of ecological function at the Property because certain reclaimed systems will take some time to become mature.

(Temporal lag is the phrase given to a lag time between the impact to a wetland system and the replacement of the functions once offered by the wetland system. Chapter 62C, Florida Administrative Code, does not require consideration of temporal lag in determining reclamation requirements.

238. The weight of the evidence presented, however, shows that more acres of wetlands will be reclaimed than are being disturbed and the reclaimed systems will be of higher ecological value than the stressed systems proposed for mining.

Furthermore, the evidence at hearing demonstrated that the total amount of wetland acreage at the Property is not significantly reduced. Also, fairly early in the mining and reclamation sequence, the total number of wetland acres on the Property are reasonably expected to exceed pre-mining conditions.

239. Even using the worst-case scenario as proposed by opponents to the permit application with longer temporal lag (6

years instead of 3 years for herbaceous systems and 40 years instead of 20 years for forested systems), the resulting calculated required herbaceous system ratio of 1.21 to 1 is still less than the permit's requirement of 1.38 to 1. Similarly, the forested system's worst-case calculated ratio using permit opponents' unwarranted temporal lag assumptions is 1.74 to 1, which is still less than the 2.28 to 1 permit requirement. Further, the evidence shows that doubling the time between the removal of the systems and mitigation, from 4 to 8 years, results in a herbaceous ratio of 1.39 to 1 and a forested ratio of 2.04 to 1, which indicates that even if the time between impacts and mitigation were doubled, IMC's reclamation plan would still be adequately mitigating for any impacts.

6. Iron and Manganese

240. IMC's expert explained the scientific research performed on behalf of the Florida Institute of Phosphate Research involving 11 phosphate mines and more than 40 exploratory wells and borings to evaluate the water quality of mined lands. There were no exceedances of standards with the exception of iron and manganese, which were expected to exceed standards because Florida has high background concentrations of iron manganese oxide in the soil. There is no reason to believe Manson Jenkins' activities will cause adverse impacts to wetlands due to "groundwater perturbations."

7. "Flocculation" (Iron Bacteria)

241. There is credible evidence that iron bacteria is a naturally-occurring substance and is common in Florida soils. Dr. Durbin testified that iron bacteria is not a reasonable concern for the Manson Jenkins Project. A benefit provided by the proposed reclaimed streams, wetlands, and lakes is that these are natural treatment systems that, in the case of iron bacteria, will remove iron from the water and will not cause any off-site concerns.

(6) Secondary Impacts

1. General

242. Rule 40D-4.301(1)(f), Florida Administrative Code, requires an applicant to provide reasonable assurance that the project will not cause adverse secondary impacts to the water resources.

243. IMC presented credible evidence that the proposed mining and reclamation activities at the Project will not cause any adverse secondary impacts to the water resources.

2. Stability of CSA's and Associated Dams

244. Mr. Partney, the Department's dam safety engineer, has been involved with the state of Florida's current dam safety program since its inception approximately six years ago, and has been in charge of the dam safety program since its inception. He testified that no inundation studies are necessary for the

clay-settling ponds and their associated dams in this project because these are not high hazard dams. The record does not support permit opponents' statement that the proposed Manson Jenkins CSAs are considered high hazard dams. As a result, inundation studies are not required to be performed to determine the risk and consequences of a discharge.

245. The Department's dam safety program rules are contained in Rule 62-672, Florida Administrative Code, and regulate the construction of the dams surrounding CSAs by specifically requiring soil testing, cross-section design work, and stability analysis, among other design safety factors that incorporate engineering practices employed by the United States Army Corps of Engineers under their dam construction rules. The dam failures that have occurred in the past were dams constructed prior to the implementation of this rule except for one, IMC's Hopewell Mine dam. This dam failure was investigated by a "blue ribbon panel," including Mr. Partney. The cause of the failure was determined, and the problem with that failure corrected in the current version of the rule.

246. The weight of the evidence also supports IMC's commitment to dam safety as evidenced by IMC's response to this dam failure. IMC voluntarily agreed to remove all pre-rule, non-engineered dams from operations, and within one and a-half

years, IMC had categorized, inventoried, and taken out of service all non-engineered structures.

247. Also, IMC has a Site Preparedness Plan, otherwise called an emergency plan, that prescribes actions should the signs of a potential failure be detected. Weekly inspections are required and documented. The testimony of permit opponents' expert Dr. Dunn supports the fact that the probability of a failure of a CSA and its associated dam is low. Mr. Partney shares this view, i.e., CSAs are "extremely safe" and there is about a "one in two million chance or so of one of them failing."

3. Authority's Withdrawals from the Peace River

248. The weight of the evidence indicates that the Manson Jenkins Project will not adversely affect the Authority's permitted limits on the withdrawal of water from the Peace River because the activities at the Property will not physically affect the flow of the Peace River, upstream of its confluence with Horse Creek at the Arcadia gauge station, which is the station that determines the Authority's permitted allowance to withdraw water.

249. IMC's expert in environmental hydrodynamics and estuarine physics, credibly testified that the slight potential reduction in freshwater flow due to Manson Jenkins' activities

has little or no potential to negatively impact salinity concerns in downstream water bodies.

4. Ditch and Berm Protection of Wetlands

250. There was credible testimony that the ditch and berm system is a best management practice to ensure the protection of the hydrologic systems adjoining the Property. See Findings of Fact 31-42.

251. IMC's expert, Dr. Garlanger, is one of the co-authors of the criteria used by IMC to engineer these BMPs ditch and berm systems, and the weight of the evidence indicates that the proposed ditch and berm system will protect the water quality of the surrounding wetlands systems as well as maintain the hydrologic regime of the off-site systems.

(7) Minimum Flows and Levels

252. Pursuant to Rule 40D-4.301(1)(g), Florida Administrative Code, an ERP applicant must provide reasonable assurance that its proposed activities will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, Florida Statutes. This subsection references minimum flows and levels.

253. The Department has not established minimum flows and levels. The water management districts establish minimum levels for aquifers and surface waters and minimum flows for surface water courses pursuant to Section 373.042, Florida Statutes.

254. The Department is "very involved with the districts in developing those minimum flows and levels as part of [the Department's] supervisory authority." In the case of ERP applications filed with the Department for facilities located within SWFWMD's jurisdiction, it is the minimum flows and levels established by SWFWMD that are protected from adverse impact pursuant to Subsection 40D-4.301(1)(g). However, the weight of the evidence, especially the testimony of Department witnesses, indicates that minimum flow and levels adopted pursuant to Section 373.042, Florida Statutes, must be established by rule, and not a permit condition that only applies to one permittee, such as the Authority.

255. SWFWMD has not established, by rule, a minimum flow or level pursuant to Section 373.042, Florida Statutes, for any water body impacted or potentially impacted by the proposed mining or reclamation at the Property, including the Peace River. The proposed mining and reclamation activity, therefore, will not adversely impact the maintenance of any minimum flows and levels established by law.

(8) Works of the District

256. Rule 40D-4.301(1)(h), Florida Administrative Code, provides that reasonable assurance be given that a project will not cause adverse impacts to a work of the district, here

SWFWMD, established pursuant to Section 373.086, Florida Statutes.

257. The weight of the evidence indicates there will be no adverse impact to any surface water body on or downstream of the Property either from a water quality standpoint or from a water quantity standpoint. Accordingly, there will be no adverse impacts to a "work of the district" established pursuant to Section 373.086, Florida Statutes. See also Finding of Fact 72.

258. This proceeding is to determine IMC's entitlement to an ERP, not a "work of the district" permit. It has been the practice of the Department, that if an ERP is issued by the Department, the permittee does not need to also obtain a separate "work of the district" permit. However, SWFWMD's "work of the district" rule has not been adopted by the Department.

(9) Effective Performance and Function

a. Engineering and Scientific Capability

259. The mining and reclamation activities proposed for the Property are capable, based upon generally acceptable scientific principals, of being effectively performed and functioning as proposed, including the AFW, ditch and berm systems, the reclaimed wetland areas, and the reclaimed West Fork of Horse Creek Stream Channel. See Rule 40D-4.301(1)(i), Florida Administrative Code.

b. Financial, Legal and Administrative
Capability

260. IMC has all necessary legal property rights to mine and reclaim the Property as lessee under a mining lease issued by the Property owners.

261. IMC has demonstrated by the weight of the evidence that it is an entity with financial, legal and administrative capability of ensuring that the activities proposed at the Property will be undertaken in accordance with the terms and conditions of the ultimately issued ERP, including the additional agreed permit condition referenced below. See Rule 40D-4.301(1)(j), Florida Administrative Code.

262. IMC is a large business with assets in excess of \$1.6 billion. IMC also presented credible evidence that it has provided Manatee County with a reclamation bond in the amount of \$17 million to cover all reclamation liability existing in Manatee County at that time, including the upcoming year that IMC plans to mine. IMC has agreed to provide Manatee County with a general surety bond of \$1 million and an environmental risk insurance policy in the amount of \$10 million.

263. At hearing, the Department requested and IMC agreed to have the following permit condition added to the ERP upon issuance:

At least thirty (30) days prior to the initiation of mining operations, the final

version of the financial responsibility mechanism required by Section 3.3.7.6 of the Basis of Review shall be provided to and approved by the Department as required by Rule 40D-4.301(1)(j), Florida Administrative Code (October 1995) and Rule 62-330.200(3), Florida Administrative Code.

264. After reclamation of the Property, IMC has in place a Conservation Easement that places restrictions, such as requiring all regulatory approvals to be obtained, and imposes required management practices in the event that agricultural operations are initiated by a third party.

265. Credible evidence in the record supports IMC's historical efforts in reclaiming wetland systems such as Big Marsh despite suggestions that IMC has not demonstrated the capability to restore marsh systems because, e.g., Big Marsh has not been "released" by the Department. Although this system has not been "released," this system is ecologically valuable. See Findings of Fact 225 and 231.

F. Public Interest Test

266. Several statutory and rule criteria must be considered and balanced to determine whether IMC's proposed activity's on the Property are not contrary to the public interest. See Section 373.414(1), Florida Statutes; Rule 40D-4.302(1)(a)1-5, and 7, Florida Administrative Code.

1. Public Health Safety or Welfare or the Property of Others

267. As noted elsewhere in this Recommended Order, the proposed project will not cause adverse water quality, water quantity or flooding on the Property or at any point off the Property. The mining and reclamation activities will be carried out within private property subject to security and control by IMC.

268. The CSAs proposed to be constructed at the Property will be designed and constructed in accordance with strict regulatory requirements. A separate Department permit must be applied for and issued before construction of a CSA may commence. The weight of the evidence indicates that the chance of failure of any dam designed and constructed in accordance with current rule provisions is remote, e.g., one in two million according to Mr. Partney. See Findings of Fact 50-57, 161-165, and 244-247.

2. Conservation of Fish and Wildlife

269. The proposed activity at the Property will not cause adverse impacts to natural systems that are not directly subject to disturbance. The ditch and berm system will protect adjacent areas from direct surface water impacts and will maintain groundwater conditions so that preserved wetland systems will continue to function during mining activities.

270. The mining activities will be conducted in a sequence designed to minimize impacts on mobile wildlife species. By mining in the area farthest away from the preserved wetlands in the south and moving in that direction, these wildlife will be able to relocate into the preserved areas.

271. During active mining operations, the mining areas provide value to wildlife. Many bird species use CSAs and active mine cuts during mine activities. Other animals, including raccoons, deer, possums, armadillos, snakes, and frogs use the mine areas while mining is being conducted.

272. IMC has surveyed the Property to identify plant and animal species present at the site and developed a wildlife management plan which was included as part of the application with the ERP. This plan addresses potentially listed threatened or endangered species that could be found on the Property now or in the future and prescribes measures for protecting those listed species. The wildlife management plan comports with good scientific practice.

273. The proposed reclamation will enhance conservation of fish and wildlife values over that currently present at the Property. Currently the site contains several small wetland systems spread out over the site connected by ditches. These wetlands are generally surrounded by pasture. The proposed reclamation plan will consolidate the wetlands into a larger

contiguous mass along the West Fork of Horse Creek and will provide for an adjacent upland corridor. The upland corridor will provide additional habitats for species that may use it as a transitional zone between a wetland and an upland.

274. IMC's voluntary establishment of a Conservation Easement over the preserved wetlands in the south portion of the Property and the reclaimed wetland system within and adjacent to the West Fork of Horse Creek in the north provide reasonable assurance that the fish and wildlife values inherent in these areas will be protected. (The Conservation Easement covers approximately 521 acres of wetlands on-site.)

275. In addition, this system upon completion will act as a wildlife corridor of approximately 2.5 miles in length along the West Fork of Horse Creek and will connect to a larger network of habitat corridors known as the IHN. See Finding of Fact 216. IHN is a regional conceptual plan developed by the Department in 1992 for the entire Southern Phosphate District of Florida (1.3 million acres in Polk, Hardee, Hillsborough, Manatee, and DeSoto Counties) and is intended to link existing wildlife habitats, thereby allowing wildlife populations the ability to travel throughout reclaimed areas and publicly owned lands.

3. Navigation, Flow or Harmful Erosion or Shoaling

276. The West Fork of Horse Creek on the Property is not a navigable waterway.

277. The AFW will be vegetated before it is put into operation. It is specifically designed to handle high flow stream events, including the 100-year flood event, and will not erode or cause downstream erosion. Any sharp bends in the AFW way will be stabilized prior to use.

278. The reclaimed West Fork of Horse Creek will be reclaimed as a natural system and will be able to manage high flows without experiencing erosion in the reclaimed stream channel or causing erosion downstream.

4. Fishing, Recreational Values or Marine Productivity

279. The Property is privately owned and does not support public recreation or fishing activities. Following completion of mining reclamation activities, fish and wildlife values in the reclaimed wetlands and waters will be enhanced.

5. Temporary or Permanent Nature

280. Phosphate mining, by its very nature, strips and deprives the land of existing resources, and its effects cannot be underestimated. Dr. Dunn characterizes phosphate mining as destroying the land. Nevertheless, phosphate mining is considered a temporary disturbance of the land, see Section

378.201, Florida Statutes, when compared to other types of activities. Unlike other types of activities, such as commercial or residential development, mining is completed within a finite period of time, and land reclamation follows thereafter resulting in the return of the land to other valuable land forms.

6. Current Conditions and Relative Value of Functions Performed by Affected Areas

281. The proposed activity on the Property will not have an adverse effect on the condition and relative value of functions currently being performed at the Property in areas that will not be disturbed by mining. The areas to be disturbed by mining reflect man-induced changes over the years and provide relatively limited ecological value on the whole.

G. Cumulative Impacts

1. General

282. The Department's method for evaluating the potential impacts from individual ERPs satisfies regulatory consideration of cumulative impacts of a project because so long as phosphate mines mitigate in the same drainage basin as the impacts of the proposed activity and meet the statutory and rule requirements, there will be no cumulative impacts. See Section 373.414(8)(b), Florida Statutes. The Department's evaluation includes the conceptual reclamation plan, which is mandated by Chapter 378,

Florida Statutes, that describes the complete mining plan and activities for a site as well as the site's reclamation plans and the Integrated Habitat Network plan. Further, the Department's policy of analyzing similar projects (in the case of IMC's permit application that means other phosphate mines) is reasonable because phosphate mining is a temporary activity that reclaims the land to an enhanced natural system. Other types of development, such as residential and industrial, are not temporary in nature.

283. Additionally, the Manson Jenkins Project received regional review and approval as part of IMC's Development of Regional Impact process from the Tampa Bay Regional Planning Council, which distributed information concerning the Manson Jenkins Project to the Central Florida Regional Planning Council and Manatee County.

284. The weight of the evidence indicates that there will be no adverse water quality impacts on undisturbed areas at the Property or at any downstream location. There are no adverse water quantity impacts on or off the Property. Implementation of the reclamation plan approved by the Department pursuant to Chapter 378, Florida Statutes, and the mitigation which will be provided, as proven in this proceeding, will maintain or improve the water quality and the function of the biological systems present at the site prior to the commencement of mining

activities and thus constitute appropriate mitigation. Such mitigation will occur on the Property and will be in the same drainage basins where the activities are proposed.

2. IMC's Cumulative Impact Calculations

285. Although the Department does not require the type of cumulative impact analysis permit opponents suggest is needed, Dr. Garlanger testified that IMC performed an analysis on the Horse Creek Watershed Basin involving the existing Ft. Green and Four Corners Mines and the future Ona Mine. IMC assessed the impact of past, current, and future mining activities in the Peace River Basin on the flow in the Peace River Basin and on Horse Creek on a cumulative basis. The predictive cumulative impact assessment modeling performed by Dr. Garlanger analyzed the future long-term potential impacts on stream flow by determining the capture during previous mining activities as a baseline period and the resulting impact from the reclamation activities for that baseline. This was then compared with the potential decreases in runoff due to the capture in the areas that are planned to be mined and reclaimed in the future. The cumulative impact analysis performed by IMC made a predictive assessment through the year 2020, which includes mining at the Property as well as mining proposed for three new mines (Ona Mine, Pine Level Mine, and Farmland-Hydro Hardee County Mine)

that are in the Horse Creek Basin and existing mines that would be mining at times up to the year 2020.

286. In order to ensure a worst-case prediction, Dr. Garlanger in his analysis assumed that all the direct surface runoff from all of the mining areas would be captured within the mine recirculation systems and consumed in the process and not available to contribute to stream flow in the area. The analysis then assumed that to the extent an area was captured, it would reduce stream flow by that amount in the areas that normally would have flowed to the natural surface water systems. A cumulative impact analysis performed by IMC concluded that for approximately 70 to 80 percent of the time there is essentially no impact on the flow in Horse Creek. Further, reduction in flow during high-flow periods, which is approximately 10 percent of the time, would reduce the flow depth from 7.46 feet to approximately 7.18 feet or less than .3 of a foot and for one percent of the time the reduction in the flow would be from 12.8 to 12.6 feet. These are the predicted impacts if all the potential capture for Horse Creek occurred. The changes in the depths of these waters, during high-flow periods, will likely have a positive impact on decreasing the amount of flooding during a high-flow period. During other times there is no adverse impact from decreasing water by just a few inches out of several feet of water.

287. The same type of cumulative analysis was performed for the entire Peace River Basin. The areas mined and the areas reclaimed were determined using the same maximum potential capture and decreased runoff due to reclamation. Calculations were performed as to the potential decreased stream flow in the Peace River above Arcadia and at Charlotte Harbor due to past, current, and future mining activities. Similar to the Horse Creek Basin analysis, Dr. Garlanger used the maximum potential capture and maximum decrease in the stream flow resulting from reclamation and calculated the maximum expected decrease in stream flow in the Peace River Basin above Arcadia and at Charlotte Harbor for both the baseline condition and the future mining period through the year 2020. This analysis determined that for approximately 80 percent of the time there will be no impact on the Peace River. The only impact is a small increase in flows during high-flow periods at the Arcadia station. Similarly, at the point where the Peace River empties into Charlotte Harbor, the differences in stream flow are practically immeasurable and, if anything, there is predicted a slight increase in flow. The flow will increase slightly because the average area that was captured during the baseline period decreases over time, meaning there is less area for rainfall capture within mining recirculation systems.

288. Though the cumulative impact analysis performed by IMC does show a slight reduction in flow in the Horse Creek, the impact will be a decrease in the stream flow depth of less than 3 or 4 inches in water that is already 7.5 feet and 12.8 feet deep, respectively, which few inches will not cause any adverse impact. Further, the analysis showed that for the same rainfall the overall flow in the Peace River at Arcadia and at Charlotte Harbor through the period 2020 will actually be greater than during the past 19-year period.

289. Furthermore, phosphate mining operations do pump water from the Floridan aquifer system to use in their operations. Deep groundwater pumping can contribute to reduced flow in the Peace River, but phosphate mine operators have substantially reduced their withdrawal of deep well groundwater over the last decade, and it is not anticipated that any substantial increase in use will occur in the future. IMC's withdrawals of groundwater for mining activities conducted at the company's mines, including the Property, have been authorized by the issuance of Water Use Permit No. 20114000 by SWFWMD.

3. Flow Impacts

290. There is significant testimony concerning an analysis of the impacts of phosphate mining and reclamation on a watershed. IMC's expert Peter Schreuder performed an analysis

involving the Peace River, Alafia, and Withlacoochee River Basins. Phosphate mining activities take place in the Peace River and Alafia River Basins and no phosphate mining activities taken place in the Withlacoochee River Basin. Each of these watersheds has a gauging station (a place where flows are electronically measured on a continual basis going out of a watershed) maintained by the United States Geological Survey.

291. The analysis performed by IMC's expert compared the pattern of flow in watersheds where no phosphate mining was taking place with flow patterns in watersheds where phosphate mining was occurring. IMC's expert gathered data from the farthest downstream gauging station at each of these three watersheds; the data dated back to nearly 1935. This data provided actual measured flow data, with rainfall as the driving variable. The purpose of the analysis was to determine if phosphate mining was having an influence on flow.

292. It is alleged that phosphate mining reduces flow. If the allegation is correct, the trend would be downward because less flow in the river would be expected. However, the weight of the evidence showed that under normal flow conditions, mined basins have more flow than unmined basins and in storm events the mined basins moderate the runoff to some minor degree by attenuating runoff and allowing for a slower and later release as beneficial, normal, base flow instead of flood flows.

4. Non-Mining Impacts

293. There is convincing evidence in the record that other types of developments expected in the Peace River Basin, which include commercial and residential development as well as agricultural development, do not have the potential to capture surface runoff to the extent of mining activities.

Additionally, residential and commercial development, because they result in lower evaporation due to the abundant impervious areas, result in an increased runoff in the basin. Thus, if these types of developments were included in the impact analysis, there would be an additional increase in runoff.

G. Specific Conditions

294. The draft ERP sets forth numerous general and specific conditions. Petitioners and Intervenors question the sufficiency of several specific conditions. In particular, Specific Condition 4.c. requires IMC to collect and report flow data from the AFW, but does not identify a reference stream or indicate what the Department is to do with the data and how the data is to be evaluated. Mr. Partney convincingly suggested that these issues should be included in Specific Condition 4.c.

295. On this record, it is difficult to conclusively determine which stream should be used as a reference stream. Pursuant to its special expertise, the Department should consider adding supplemental language to clarify these issues.

See generally Reedy Creek Improvement District v. State, Department of Environmental Regulation, 486 So. 2d 642 (Fla. 1st DCA 1986).

296. Specific Condition 12.b.i. requires that "[t]he created replacement stream for the West Fork of Horse Creek shall have a similar hydroperiod to the upper reaches of the preserved area of Horse Creek." Mr. Partney suggested that while "there may be some impacts going on," "they're not as significant in terms of the ratio of the impact to the ratio of the project area at that point. There would be--certain to be significant area of watershed that was not experiencing impacts. And a substantial portion of the Horse Creek in this area is preserved. So there is some assurance at that point that there will be sufficient natural conditions to give [the Department] the data [the Department] needs." Nevertheless, the monitoring of flow patterns is critical to the success of this project. In this light, the Department should endeavor to assure itself that the portion of the Horse Creek to be used for comparison is suitable for the purposes reflected in Specific Condition 12.b.i.

CONCLUSIONS OF LAW

1. Jurisdiction

297. The Division of Administrative Hearings has jurisdiction over the subject matter of and the parties to this

proceeding pursuant to Sections 120.569 and 120.57(1), Florida Statutes.

298. The Department has the exclusive jurisdictional authority over the ERP and is not bound by opinions of SWFWMD when considering an ERP for phosphate mining activities, although the Department may consider SWFWMD's interpretations.

2. Standing

299. Respondents agreed that all Petitioners and Intervenors have standing for the purpose of this particular proceeding.

3. Burden of Proof

300. This is a de novo proceeding designed to formulate final agency action. As the applicant, IMC has the burden of showing by preponderance of the "credible and credited evidence" that it is entitled to the ERP, i.e., that reasonable assurances have been shown. Department of Transportation v. J.W.C. Company, Inc., 396 So. 2d 778, 789 (Fla. 1st DCA 1981). If this preliminary showing is made by IMC, the permit cannot be denied "unless contrary evidence of equivalent quality is presented by the opponent of the permit," here the Petitioner and Intervenors. Id.

301. In the context of this proceeding, IMC must provide reasonable assurances that the applicable statutory and rule criteria and conditions for issuance of the ERP have been

satisfied. Petitioners and Intervenors cannot carry the burden of presenting contrary evidence by mere speculations concerning what might occur. Chipola Basin Protective Group, Inc. v. Department of Environmental Regulation, Case No. 88-3355, 1998 WL 1855974 (Fla. Dept. Env. Reg. Dec. 29, 1988).

302. "Reasonable assurances" contemplates "a substantial likelihood that the project will be successfully implemented". Metropolitan Dade County v. Coscan Florida, Inc., 609 So. 2d 644, 648 (Fla. 3d DCA 1992); Save Anna Maria, Inc. v. Department of Transportation, 700 So. 2d 113, 117 (Fla. 2d DCA 1997).

303. IMC must provide reasonable assurances which take into account contingencies that might reasonably be expected, but an applicant is not required to eliminate all contrary possibilities, however remote, or to address impacts which are only theoretical and not reasonably likely. Hoffert v. St. Joe Paper Co., Case Nos. 89-5053 and 89-6381, 1990 WL 282370 (Fla. Dept. Env. Reg. Dec. 6, 1990); Alafia River Basins Stewardship Counsel, Inc. v. Southwest Florida Water Management District, Case Nos. 98-4925, 98-4926, 98-4930, and 98-4931, 1999 WL 1486358 (Fla. Div. Admin. Hrgs. Recommended Order July 2, 1999, Final Order July 29, 1999); Ginnie Springs, Inc. v. Craig Watson and Department of Environmental Protection, Case Nos. 98-0258, 98-0266, and 98-0265, 1999 WL 1483647 (Fla. Div. Admin. Hrgs. Final Order April 8, 1999). IMC is "not required to

disprove all the 'worst case scenarios' or 'theoretical impacts' raised by" Petitioners and Intervenors. Ginnie Springs, Inc., 1999 WL 1483647.

304. Competent, substantial evidence based on detailed site plans and engineering studies, coupled with credible expert engineering testimony, is a sufficient basis for a finding of "reasonable assurances." Hamilton County Board of County Commissioners v. Florida Department of Environmental Protection, 587 So. 2d 1378 (Fla. 1st DCA 1991).

4. Permitting Criteria

305. Chapter 378, Part III, Florida Statutes, is known as the "Phosphate Land Reclamation Act." Section 378.201, Florida Statutes. The Legislature expressly finds, in part, that "[t]he extraction of phosphate is important to the continued economic well-being of the state and to the needs of society. While it is not possible to extract minerals without disturbing the surface areas and producing waste materials, mining is a temporary land use. Therefore, it is the intent of the Legislature that mined lands be reclaimed to a beneficial use in a timely manner and in a manner which recognizes the diversity among mines, mining operations, and types of lands which are mined." Section 378.202(1), Florida Statutes.

306. The Legislature directed the Department to adopt statewide criteria and standards for reclamation of mined lands

that take into account the geologic, topographic, and edaphic conditions at each mine site and recognize technological limitations and economic considerations. The reclamation rules are to "require the return of the natural function of wetlands or a particular habitat or condition to that existing prior to mining." Section 378.207(1), Florida Statutes.

307. Pursuant to Section 373.414(1), Florida Statutes, the Department may not issue the ERP unless IMC provides "reasonable assurance that state water quality standards . . . will not be violated" For the reasons stated herein, IMC has provided reasonable assurance that state water quality standards will not be violated.

308. Pursuant to Section 373.414(1), Florida Statutes, an ERP applicant must also provide reasonable assurance that the proposed activity "is not contrary to the public interest" based upon a balancing of the six remaining factors (adverse affects on significant historical and archeological resources is not at issue here) listed in Section 373.414(1)(a)1-5, and 7, Florida Statutes, see also Rule 40D-4.302(1)(a)1-5, and 7, Florida Administrative Code, and take into account measures proposed by the applicant to mitigate adverse effects as contemplated by Section 373.414(1)(b), Florida Statutes. Determining whether a project is not contrary to the public interest is a fact-intensive determination that must be made on a case-by-case

basis. Shablowski v. Department of Environmental Regulation, 370 So. 2d 50, 53-54 (Fla. 1st DCA 1979).

309. As noted throughout this Recommended Order, the Department has adopted Rules 40D-4.301 and 40D-4.302, Florida Administrative Code, to implement the provisions of Chapter 373, Part IV, Florida Statutes. See Rule 62-330.200(3), Florida Administrative Code. As provided in Rule 40D-4.301(3), Florida Administrative Code, "[t]he standards and criteria contained in the Basis of Review for Environmental Resource Permit Applications shall determine whether the reasonable assurances required by subsection 40D-4.301(1) and Section 40D-4.302, F.A.C., have been provided."

310. IMC provided reasonable assurances that the proposed mining activities, when mitigated by the proposed reclamation activities, are not contrary to the public interest.

311. In the event that a project would result in some adverse impact to water quality or other areas considered under the seven-part test pursuant to Section 373.414(1)(a), Florida Statutes, an applicant may propose measures "to mitigate adverse effects that may be caused by the regulated activity." Section 373.414(1)(b), Florida Statutes. "Such measures may include, but are not limited to, onsite mitigation" Id.

312. "Wetlands reclamation activities for phosphate . . . mining undertaken pursuant to chapter 378 shall be considered

appropriate mitigation for [Part IV of Chapter 373] if they maintain or improve the water quality and the function of the biological systems present at the site prior to the commencement of mining activities." Section 373.414(6)(b), Florida Statutes. See also Section 378.203(9), Florida Statutes ("'Reclamation' means the reshaping of lands in a manner that meets the reclamation criteria and standards in this part."); Section 378.203(10), Florida Statutes ("'Restoration' means the recontouring and revegetation of lands in a manner, . . . which will maintain or improve the water quality and function of the biological systems present at the site prior to mining. In requiring restoration of an area, the department must recognize technological limitations and economic considerations.")

313. Chapter 62C-16, Florida Administrative Code, implements Part III of Chapter 378, Florida Statutes, and governs mandatory phosphate reclamation and restoration activities. In particular, Rule 62C-16.0051, Florida Administrative Code, sets forth the minimum criteria and standards for phosphate reclamation and restoration, including the reclamation of wetlands and other water bodies impacted by mining. Reclamation activities must be conducted under a strict time schedule and all reclamation and restoration must be completed within a specified time after completion of mining operations. Rule 62C-16.0051(11), Florida Administrative Code.

314. The legislative intent discussed above indicates that restoration of wetlands in phosphate mined lands must be accomplished pursuant to the special rules established for phosphate mine reclamation and not pursuant to the more general mitigation standards contained the SWFWMD Basis of Review.

315. When the applicant proposes reclamation that meets the requirements of Chapter 62C-16, Florida Administrative Code, that reclamation will also constitute appropriate mitigation to offset adverse impacts to wetlands if the reclamation will maintain or improve the water quality and the function of the biological system present at the site, prior to mining. Section 373.414(6) (b), Florida Statutes.

316. By final agency action taken on March 20, 2001, the conceptual reclamation plan, which included the Property, has been approved by the Department pursuant to Chapter 378, Florida Statutes. See Section 378.205(1) (a), Florida Statutes (The Department shall have the power and duty "[to] issue conceptual reclamation plan approvals requiring an operator to take such actions as are necessary to comply with this part.") However, approval of this plan does not mean that IMC is not required to prove, in this proceeding, that the proposed reclamation will "maintain or improve the water quality and the function of the biological systems present at the site," prior to mining.

317. The greater weight of the evidence introduced at the final hearing demonstrated that IMC's proposed reclamation activities will maintain or improve water quality and the function of the biological systems currently present at the site prior to mining, and, therefore, the proposed reclamation is sufficient mitigation for the temporary adverse impacts associated with proposed mining at the Property.

318. Further, pursuant to Section 373.414(8)(a), Florida Statutes, the Department shall "consider the cumulative impacts upon surface water and wetlands" of certain types of activities, and IMC is required to provide reasonable assurance that the proposed project will not cause unacceptable cumulative impacts upon wetlands and other surface waters. See also Section 373.016(2), Florida Statutes.

319. The requirements of Section 373.414(8)(a), Florida Statutes, are addressed in Rule 40D-4.302(1)(b), Florida Administrative Code, which requires an applicant for an ERP to provide reasonable assurance that the proposed activity "[w]ill not cause unacceptable cumulative impacts upon wetlands and other surface waters, as delineated pursuant to the methodology authorized pursuant to subsection 373.421(1), F.S." Likewise, the SWFWMD Basis of Review provides detail concerning the manner in which cumulative impacts are to be reviewed where such review

is required. See, e.g., Sections 3.2.8 and 3.2.8.1., SWFWMD Basis of Review.

320. Section 373.414(8)(b), Florida Statutes, provides that:

If an applicant proposes mitigation within the same drainage basin as the adverse impacts to be mitigated, and if the mitigation offsets these adverse impacts, the . . . department shall consider the regulated activity to meet the cumulative impact requirements of paragraph (a)

See also Sections 3.3.1.6 and 3.3.2.1(g), SWFWMD Basis of Review.

321. The only adverse impacts that will arise from the proposed mining and reclamation activities would be those direct impacts to the land surface at the Property. As noted above, IMC proposes mitigation through the reclamation plan approved pursuant to Chapter 378, Florida Statutes, which will offset these temporary adverse impacts and which will occur within the same drainage basins as the impacts. See Conclusion of Law 317.

322. Nevertheless, IMC has submitted additional credible evidence relating to the anticipated cumulative impacts of current and anticipated phosphate mining operations up to the year 2020. Therefore, cumulative impacts have been considered in accordance with Section 373.414(8)(a), Florida Statutes.

323. Pursuant to Section 373.413, Florida Statutes, an applicant for an ERP is required to demonstrate that the

proposed activities will not be harmful to water resources and will not be inconsistent with the overall objectives of the Department. IMC has provided reasonable assurance of compliance with each of the applicable criteria contained in Chapter 40D-4, Florida Administrative Code, including Rules 40D-4.301(1)(a)-(j) and 40D-4.302(1)(a)1-5, and 7, Florida Administrative Code, as well as the applicable 1995 SWFWMD Basis of Review for ERP applications, as adopted by reference by the Department. Based upon the reasonable assurances proven by IMC, IMC has demonstrated that the proposed activities at the Property will not be harmful to water resources, will not be inconsistent with the overall objectives of the Department, and will not be contrary to the public interest.

RECOMMENDATION

Based on the foregoing Findings of Fact and Conclusions of Law, it is recommended that a final order be rendered as follows:

1. Petitioners and Intervenors have standing to challenge the issuance of ERP No. FL 0142476-003;
2. IMC provided reasonable assurance that it has the ability to comply with the conditions of draft ERP No. FL 0142476-003;
3. IMC has complied with all conditions for final issuance of draft ERP No. FL 0142476-003;

4. ERP No. FL 0142476-003 be issued with the following additional permit condition:

At least thirty (30) days prior to the initiation of mining operations, the final version of the financial responsibility mechanism required by Section 3.3.7.6 of the Basis of Review shall be provided to and approved by the Department as required by Rule 40D-4.301(1)(j), Florida Administrative Code (October 1995), and Rule 62-330.200(3), Florida Administrative Code.

DONE AND ENTERED this 8th day of March, 2002, in Tallahassee, Leon County, Florida.

CHARLES A. STAMPELOS
Administrative Law Judge
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Filed with the Clerk of the
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this 8th day of March, 2002.

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NOTICE OF RIGHT TO SUBMIT EXCEPTIONS

All parties have the right to submit written exceptions within 15 days from the date of this Recommended Order. Any exceptions to this Recommended Order should be filed with the agency that will issue the Final Order in this case.